

SECOND YEAR POLICY ANALYSIS (SYPA)



*Credit: F. Muci*

# **An Economic Framework for Venezuela's Debt Restructuring**

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The work presented here builds and expands upon prior work done at CID and Lazard by the authors and others with hopes of advancing the conversation surrounding debt restructuring in Venezuela. Specifically, our SYPA draws on CID's policy proposals for Venezuela's reconstruction, and on the broader findings of Venezuelan scholars, intellectuals, politicians and other civil society members that have been working on a Plan to reconstruct Venezuela once the country re-establishes democracy.

## Executive Summary

**Venezuela's extraordinary economic collapse likens episodes of state collapse or war and calls for exceptional measures.** In the five years between 2013 and 2018, GDP per capita has halved, oil production has fallen over 50%, imports per capita have contracted over 85% and the economy has completely demonetized amid hyperinflation. Survey data shows that over two thirds of Venezuelans have lost weight involuntarily for two consecutive years, with minimum wages dropping to under US\$ 10/month. Between 10% and 16% of the population has left the country.

**Venezuela's economic reconstruction will require large-scale international financial assistance and external debt restructuring to stabilize the economy and lay the foundations for sustained long-term growth.** Official financing will be necessary to jumpstart the economy and the oil sector, rapidly address the humanitarian crisis and end hyperinflation. An external debt restructuring exercise will be critical to restore debt sustainability and macroeconomic resilience, two critical pre-conditions for growth, investment and a smooth return to international capital markets.

**In this SYPA, we propose an economic framework for Venezuela's external debt restructuring based on ambitious but realistic assumptions for the recovery of the economy and oil sector.** Specifically, we assume that oil prices remain in the current 65-70\$/bbl price range and that in a ten-year period, overall real GDP doubles and oil production recovers to 3mbpd. The GDP growth trajectory is based on what we believe is a “politically and socially sustainable economic recovery path”. It is also consistent with our in-depth understanding of the economy, the oil sector and of historical post-crisis recoveries.

**Venezuela's external funding needs before debt service total US\$ 55bn in the first four years of adjustment in our baseline scenario,** highlighting the large upfront funding required to recover GDP, the oil sector, and imports within a ten-year period. Debt service repayments could add another US\$5-25bn depending on the nature of the restructuring. These numbers will likely grow as the economy and oil sector continue to deteriorate amid economic sanctions and the political standoff between *de facto* President Maduro and interim President Guaidó. Our modeling work is extremely flexible and can be readily updated to incorporate new information.

**At current oil prices, our external debt sustainability analysis points to the need for significant debt relief.** A “soft” restructuring that extends maturities with limited face value haircuts and reduces interest rates is insufficient to restore debt sustainability. Instead, it sets the

country up for repeated defaults and restructurings. Conversely, an “aggressive” restructuring that involves 70% nominal haircuts and large interest rate reductions on most market and non-market debt instruments (and around 85% market value haircuts) brings Venezuela’s external debt metrics to safer levels in the medium to longer run.

**We propose a design for *oil warrants* that would partly “immunize” Venezuela’s external debt and dynamics from oil price and production volatility.** Oil warrants could help to reach a faster and more optimal resolution by addressing uncertainty and disagreements about the path of future oil prices and oil production with creditors during debt restructuring negotiations.

**Venezuela’s debt restructuring will be one of the most complex in history.** Complicating factors include the large size of the debt stock, the uncertainty associated with oil prices, the risk of asset seizures stemming from the U.S. legal system, the large heterogeneity of private creditors and debt instruments outstanding, the lack of legal restructuring provisions for many debt instruments, the presence of a China, the largest non-Paris club official creditor, and the possibility that some debts will be considered odious or illegitimate.

**Our SYPA outlines a comprehensive debt negotiation strategy that considers the political, legal and administrative challenges that Venezuela’s new government will face.** Our policy recommendations notably include (1) targeting a wide perimeter for the debt restructuring and large nominal haircuts (2) appointing a national debt committee to carry out an extensive audit of Venezuela’s external debt and to oversee a task force composed of members of the Central Bank, Finance Ministry, PDVSA and financial/legal advisors in charge of the debt restructuring negotiations, (3) sanctifying the GDP recovery path to ensure there is no trade-off between imports and debt service during negotiations, (4) making oil warrants a central instrument of the debt restructuring strategy, (5) maximizing official funding support – notably from the IMF – as soon as possible and (6) enhancing coordination among domestic stakeholders during the negotiations, especially with respect to the legal route chosen for the restructuring. We also highlight that new Venezuelan government will face two orthogonal policy options with respect to China: (i) to argue that Chinese lenders should incur strong losses reflecting their risky behavior that led them to help sustain a regime that originated a social and economic collapse (“odious debt” argument) or (ii) strategically maintain strong relations with China and raise additional Chinese funding to sustain the recovery of the energy sector.

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## Introduction

**Venezuela's ongoing economic collapse likens episodes of state collapse or war.** In the five years between 2013 and 2018, GDP has almost halved, oil production has fallen by two thirds, and imports per capita have collapsed over 85%. Inflation has climbed to 1.6 million percent while the real value of the money supply has fallen over 99% since 2013. Minimum wages measured in terms of the cheapest food calorie have declined from 52,000 to under 2,700 calories per month, implying that households that earn minimum wages cannot afford basic sustenance, not to mention health, transportation or other expenditures. Survey data shows that over two thirds of Venezuelans have lost weight involuntarily for two consecutive years. Between 10% and 16% of the population has left Venezuela, many as refugees, and the flow of outward migration is increasing. Recent sanctions on the oil sector and the current standoff for the presidency between Juan Guaidó and Nicolas Maduro suggest the situation will continue to deteriorate rapidly.

**The causes of Venezuela's economic collapse are well understood.** In the two decades since 1999, presidents Chavez and Maduro advanced a wide-ranging, anti-market policy agenda. Central to these policies were nationalizations of key industries (including agriculture, steel, cement and others), rigid foreign exchange controls, price controls, profit caps and labor regulation. These policies introduced severe micro- and macro-economic distortions that gradually crippled domestic production and increased Venezuela's reliance on imports. The oil boom of the 2000s and early 2010s masked the effects of these anti-market policies, as surging oil revenues were used to spur a consumption and import boom. During the first fifteen years of *Chavismo*, the government generally over-spent, often running double-digit fiscal deficits; over-borrowed, sextupling the external debt; under-saved, accumulating far fewer foreign assets than oil exporting peers; and under-invested in the oil industry, letting public crude production fall. These policies left Venezuela starkly unprepared for the fall in commodity prices of the summer of 2014. Over the next three years, as crude prices more than halved from \$100/barrel to a low of \$40/barrel, the government depleted its savings and aggressively cut imports to stay current on the external debt. This created a critical shortage of foreign exchange for the private sector, which caused a gradual collapse in domestic production, oil production and tax revenue. As falling oil and tax revenue widened the fiscal deficit and the government's reliance on monetary financing from the Central Bank increased. Rapid money supply growth led to high and rising inflation and in November 2017, the country officially entered hyperinflation. At that point, after Venezuela's debt had reached 500% of current account receipts, the highest ratio in the world, the government defaulted

on its external debt. Venezuela's pre-default output losses, inflation and real export collapse are far more severe than that of recent large sovereign defaulters like Argentina, Greece and Ukraine.

**Venezuela's collapse extends beyond the economy. Democratic and political institutions, state capacity, territorial control and security, the rule of law and social fabric have also broken down.** Venezuela's constitution establishes separation of powers, but the executive branch of government currently controls the legislative and judiciary process as well as other state institutions. Political capture of the judiciary was completed in 2015 when the outgoing *Chavista* congress (2010-2015) packed the supreme court with regime loyalists. Political capture of the legislature was completed shortly after, when the new supreme court annulled the new opposition congress' (2016-2021) law-making function. Separation of powers was eliminated *de jure* in 2017, when a body with supra-constitutional powers was convened to re-write the Constitution in elections that were broadly considered a sham by the international community (see Appendix 9 for an institutional mapping of the current situation). In addition to the country's democratic and political backslide, state capacity (broadly defined) has declined materially. Official information is scarce, but it is widely believed in academic and political circles that thousands of high-skilled bureaucrats across ministries, agencies and state-owned enterprises have resigned amid hyperinflation, leaving the state under-skilled and under-staffed. Politically appointed individuals and military officials have filled many of these vacancies, leaving a bloated and broadly inoperative public sector incapable of delivering basic services such as uninterrupted electricity. Unsurprisingly, Venezuela is now ranked 168 out of 180 on Transparency International's Corruption Perception's Index, 113 out of 113 on the World Justice Project's Rule of Law Index and 188 out of 190 on the World Bank's Doing Business Indicators. In addition to these developments, Venezuela has become extremely unsafe and lost control of much of its territory to armed non-state actors<sup>1</sup> including prison gangs, Colombian guerrillas from the ELN, splinter groups of disbanded FARC, and ideological paramilitary groups. The country's murder rate has approximately sextupled in twenty years to 81 per 100,000 according to the Venezuelan Observatory for Violence and is now the second highest rate in the world. Understandably, Venezuela's social fabric has deteriorated due to the severe economic and political distress of the last few years and the emigration of three to five million Venezuelans.

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<sup>1</sup> See "With US military action, Venezuela could become the Libya of the Caribbean". Washington Post. February 25<sup>th</sup>, 2019.

**Given recent political developments, Maduro's presidency could end in the short run, making way for an opposition government. We seek to advise that hypothetical future government.** Our SYPA elaborates and analyzes economic policy proposals, specifically on debt restructuring, for Venezuela's next democratic government. Our hypothetical client is the finance committee of the opposition-controlled national assembly, whose members will take up key posts in the next government's economic policy team. We will also share this policy document with the wider political opposition and media, with hopes of sparking discussion rooted in rigorous technical analysis. The timing and composition of the hypothetical future government is unknown, but as the domestic economic situation deteriorates and international pressure on the government increases, the likelihood of regime change will remain high. For the purposes of this analysis, we assume that an opposition-led coalition government takes office, enjoying broad popular support and control of congress, but low state capability and policy bandwidth.

**Venezuela's next government will require both international financial assistance and external debt restructuring as part of a broad macroeconomic stabilization and reconstruction program.** Venezuela's next government will seek to rapidly increase real government expenditures to address the humanitarian crisis and severe gaps in public good provision, especially in social services, health and education. However, real government revenues have collapsed amid hyperinflation and the country is shut out of capital markets. Therefore, Venezuela's next government will need large-scale, hard-currency, non-inflationary financing from the IMF and other official sources to fund initial expenditures. In addition, Venezuela will also need hard currency to rebuild international reserves and bolster the credibility of a new anchoring monetary regime. External debt restructuring will be necessary to make the stock of old debt and new debt from official sources sustainable, resilient to shocks, and for the country to have a credible balance of payments framework. Without reducing the stock and composition of its outstanding external liabilities, Venezuela will remain over-indebted, crippling confidence in the economy and monetary regime and precluding the possibility of macroeconomic stability and sustained, long-term growth. Appendix 1 explains our understanding of Venezuela's economic crisis and the contours of the proposed recovery plan in a modified Salter Swann framework.

**Venezuela's next government will inherit a politically volatile country with severe governability issues, weak state capability, and politicized institutions.** The outgoing administration could sabotage the new government across various government and state

institutions, like outgoing President Kirchner did to incoming president Macri<sup>2</sup> in Argentina. For instance, *Chavista* bureaucrats at the Finance Ministry or Central Bank could destroy financial information documenting US\$ denominated liabilities, bank account information, or otherwise obstruct the new administration from taking control of public finances. In any case, the new government will inherit a broadly inoperative public sector with extremely weak state capability. This is especially concerning because the political opposition hasn't held power for decades, limiting the pool of candidates with public sector work experience for the thousands of key posts across the government. In addition, it is unclear how fast the country's institutions, especially the judiciary, can be depoliticized.

**Venezuela's debt restructuring exercise will likely be one of the most complex in recent history.** As L. Buchheit recently argued, "not since Mexico in the 1980s has an emerging market country with this level of commercial contacts attempted to restructure its New York law-governed sovereign debt". On one hand, the restructuring of external debt vis-a-vis private creditors will have to cope with an uncertain scope of debt instruments, a large heterogeneity of private creditors (bondholders, financial lenders, suppliers), the lack of consistent legal restructuring provisions in most of bonds' documentation and large risks from asset seizures through the United States legal systems (notably CITGO and oil shipments to the US). On the other hand, the presence of a large non-Paris Club official creditor, China, will (i) challenge the historical Paris Club principles shared between bilateral and multilateral lenders for official debt restructuring (ii) interfere with the IMF's lending into arrears policy. Finally, some specific debts incurred by Maduro's regime may be considered illegitimate or odious by the new government, adding a layer of complexity to the restructuring negotiations.

**Our SYPA outlines an economic framework for Venezuela's debt restructuring.** The combination of our balance of payments and debt modelling work and our analysis of historical precedents allows us to test different scenarios for Venezuela's external debt restructuring and potential external financial assistance. We draw six important lessons from this exercise, and explore them throughout our SYPA:

- **#1.** Limiting the scope of the restructuring to market debt is unlikely to restore debt sustainability. The scope of the debt restructuring must be as wide as possible;

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<sup>2</sup> See "Cristina Kirchner creating as many problems as possible for the new government". The Telegraph. December 7<sup>th</sup>, 2015

- **#2.** Venezuela's debt sustainability framework needs to be based on conservative debt burden targets given the destruction of Venezuela's market institutions, state capability and the high volatility associated to the macroeconomic drivers of external sector dynamics;
- **#3.** Under current relatively high oil prices (65-70\$/bbl for Brent), a restructuring that focuses on maturity extensions and interest rate reductions (flow relief) will not restore debt sustainability and almost certainly lead to multiple defaults and debt restructurings, jeopardizing the country's economic recovery. The combination of important face value haircuts and a large financial assistance package gives Venezuela the best chance to restore confidence, attract foreign investment and regain market access in the medium term;
- **#4.** The terms of the restructuring should "immunize" Venezuela's external debt dynamics from oil price volatility as much as possible. We propose a design for oil warrants that contributes to achieving this goal;
- **#5.** Invoking odious debt arguments for specific debts (notably Chinese loans) may be politically expedient but could conflict with the objective of obtaining rapid financial assistance from the IMF as illustrated by the recent example of Congo. The government could instead leverage China as a strategic partner to accelerate the oil sector's recovery;
- **#6.** The restructuring should be anchored not only in a credible economic framework but also in sound legal framework that restructures all public entities' debts and achieves significant debt relief while protecting the country from asset seizures.

**The reminder of our SYPA is structured as follows.** Part I provides an overview of the current literature on debt restructuring and puts Venezuela's case in perspective. Part II attempts to define external debt burden thresholds for Venezuela and assesses the potential for official assistance. Part III adopts a four-step approach to build a BoP and debt restructuring modeling in order to assess the impact of various restructuring scenarios on Venezuela's external debt metrics. It also runs a sensitivity analysis to inform policy trade-offs. Part IV outlines our case for the introduction of oil warrants in the restructuring to manage uncertainty around the path of oil prices and production during restructuring negotiations. Finally, part V lays out our policy recommendations to achieve a successful restructuring of Venezuela's debt given the political, legal and administrative constraints the new government will face.

## Part I. Venezuela's Debt Restructuring in Perspective: Literature Review

**Debt restructurings come in many shapes and sizes, but Venezuela's case is complex due to its size and need for new financing and multilateral support.** Cruces and Trebesch's (2013) and Das et al. (2012) database of 187 sovereign debt restructuring events since 1978 allows us to analyze debt restructurings with a historical perspective. Regarding the face value of restructured debt, the 90<sup>th</sup> percentile of the distribution is US\$ 29bn and the 99<sup>th</sup> percentile US\$ 62bn, implying Venezuela's restructuring will be one of the largest in history after Greece in 2012. Meanwhile, in about half of all restructurings, the debt was already due or in default at the time of the deal, as the case for Venezuela. In addition, just 13% of restructurings include new financing or fresh money as part of the deal and just 13% of restructurings are supported by multilateral or bilateral creditors. A little more than a third of sovereign debt restructurings are for commodity exporting countries.

**There is significant variance in the duration of debt restructurings, with some taking as long as 10 years. Interestingly, the number of creditors and involvement of the IMF does not appear to affect the length of negotiations.** Using a database of 90 restructurings, C. Trebesch (2008) finds that the average restructuring since 1980 takes 29 months to resolve, with a high standard deviation of 32 months. He finds that "after one year, more than a third of the 90 restructurings covered had been completed. After two years already two thirds of the deals were resolved [...]. From then on [... restructurings are completed ...] over an extended period of approximately 13 years." He finds that contrary to conventional wisdom, the number of creditors and size of the creditor committee are not significant predictors of negotiation duration. Paradoxically, he also finds that the amount of IMF support does not significantly predict negotiation duration. Less surprisingly, he finds that high trade surpluses and capital inflows tend to decrease the length of restructurings, and that pronounced liquidity problems at the outbreak of the crisis tend to lengthen negotiations. Lastly, he also finds that higher prevailing global interest rates are associated with longer restructurings.

**While large "market value"<sup>3</sup> haircuts are very common, large face value haircuts are not, highlighting that the exceptional treatment Venezuela requires.** According to Cruces and

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<sup>3</sup> Market value haircut is the measure often used by market participants and the financial press. It takes the old debt at face value and compares this to the present value of the new debt.

Trebesch's database, two thirds of debt restructurings have no face value reduction at all, and the average face value haircut is just 18%, implying that large face value reductions are relatively rare. In contrast, market haircuts, defined as the face value of the old debt minus the market value of the new debt, are common. Although average market haircuts are smaller for commodity exporters, the right tail features larger haircuts. Specifically, the 75<sup>th</sup> percentile market haircut for commodity exporters is 62% but only 54% for other countries. Notable cases on the right tail of the commodity exporters distribution include Yemen (2001, 97% haircut), Bolivia (1988, 93% haircut), Congo (1990, 91% haircut), and Iraq (2006, 89% haircut). These distributions look generally similar when restricted to only large and very large transactions (*see Appendix 2*). In a recent 2019 paper, J. Meyer, C. Reinhart and C. Trebesch expand the database of sovereign debt restructuring cases to 300 going back to 1815. They find that the median NPV haircut<sup>4</sup> in history (pre-1970s period) is much higher at 50%, as opposed to approximately 35% in the Cruces and Trebesch database.

**Nominal haircuts are key to long-run economic improvement, but large haircuts are associated with long periods of capital market exclusion, posing a dilemma for Venezuela.**

International views whether nominal haircuts on public debt are appropriate have evolved over the past decades. In a 2016 paper, C. Reinhart and C. Trebesch investigate sovereign debt relief from a long-term perspective. They argue that “the economic landscape of debtor countries improves significantly after debt relief operations, but only if these involve debt write-offs”. This research provides a strong economic and moral case for a nominal reduction of Venezuela's debt as a pre-condition for a successful recovery. At the same time, Venezuela's economic recovery will critically depend on the country's ability to restore commercial contacts with international investors and regain market access to develop the country's oil potential. C. Trebesch and J. Cruces (2013) have shown that restructurings with higher haircuts are associated with significantly higher subsequent bond yield spreads and longer periods of capital market exclusion, casting doubt on the widespread belief that credit markets “forgive and forget”. A restructuring of Venezuela's debt will therefore have to balance the need for significant upfront relief to avoid the costs associated with serial default and restructuring and the imperative of restoring commercial contacts with investors as rapidly as possible.

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<sup>4</sup> NPV haircut refers here to the measure used by C. Trebesch "Sovereign Defaults: The Price of Haircuts" (with Juan Cruces), *American Economic Journal: Macroeconomics*, 2013 and compares the present value of the old debt to the present value of the new debt (using the same exit yield).



**Recent legal restructuring proposals for Venezuela's debt focus on PDVSA and reflect the tension between the need to achieve significant debt relief and the costs associated with an aggressive approach towards creditors.** Indeed, Venezuela's debt restructuring exercise will be one of the most complex in recent history. As L. Buchheit argues, "not since Mexico in the 1980s has an emerging market country with this level of commercial contacts attempted to restructure its New York law-governed sovereign debt". Holdout creditors will present a "potentially debilitating" legal risk that could deprive the country from market access for a prolonged period as was the case in Argentina in the aftermath of the 2002 default. Restructuring Venezuela's state-owned oil company PDVSA poses high legal risks for three main reasons. First, the universe of PDVSA's creditors and debt instruments is extremely complex, involving both banking institutions and international holders of PDVSA's New York law-governed bonds. PDVSA has also issued US-law-governed promissory notes to discharge its obligations to its unpaid suppliers of up to US\$ 20bn. Secondly, PDVSA's debt instruments do not include legal provisions (such as collective action clauses) that allow a supermajority of creditors to amend the terms of the debt and bind holdouts. Finally, PDVSA's operations (e.g. oil exports) and assets (CITGO) are intimately linked to the US financial and legal system, creating risks of seizure from creditors that could prevent a smooth restructuring process.

**The public discussion surrounding legal strategies for Venezuela's debt restructuring, while recent, is rich with important contributions and ideas.** Lee Buchheit & Mitu Gulati (2017) first proposed a mechanism to "address the difficulty of identifying or creating a mechanism that would allow a supermajority of Venezuela's large and diverse group of creditors to agree a consensual restructuring that would bind holdout creditors." Notably, they propose to use exit consent clauses in the debt exchange of PDVSA's (and potentially Venezuela's) NY-law governed bonds, for which the majority voting threshold is only 50%, to make the remaining bonds less appealing and therefore reduce the expected gains associated with a hold-out strategy.

**Buchheit & Gulati later proposed a novel strategy to protect the country from asset seizures during the debt restructuring negotiations.** In a provocative piece, Buchheit and Gulati (2018) outlined a *nuclear option* to facilitate the restructuring of Venezuela's external debt based on consensual agreement between Venezuela and a supermajority of its broad creditor universe. Referring to the precedent set by the United Nations Security Council's decision to protect Iraq's assets from seizure by its creditors to ensure an orderly restructuring of Iraq's debts, they propose that the U.N. Security Council or President of the United States protect Venezuela's assets from



attempted seizures by international PDVSA's creditors through a resolution or executive order. The rationale for their proposal follows from the fact that (i) a large share of Venezuela's foreign exchange receipts originate from oil sales to the United States, (ii) PDVSA's assets and export revenues generated from the United States are vulnerable to seizure so that group of aggressive creditors could hold the entire economy hostage of its export revenues, (iii) current restructuring techniques are inadequate to the case of Venezuela and (iv) the United States is committed to promote the restructuring of sovereign debt in the context of a process in which all creditors are bound by the vote of a supermajority.

**Mark Walker has pushed back against Buchheit and Gulati's ambitious proposal, arguing that it could impede Venezuela's ability to attract new private investment.** Walker (2018) opposes Buchheit and Gulati's position, arguing that "(i) a new Venezuelan government (which all agree is a prerequisite to a restructuring) will have substantial means to shield the country's oil revenues from seizure by creditors, (ii) a new government will also be able to expand its foreign exchange earnings to include sale of oil outside the United States, (iii) the proposals do not create a mechanism to allow all of Venezuela's creditors to have a voice in the terms of a restructuring - by supermajority or otherwise - and would treat U.S. and non U.S. creditors differently and (iv) the unintended consequences of the proposals advanced by Buchheit and Gulati would negatively affect the ability of emerging market sovereigns, and Venezuela in particular, to fund themselves in the debt markets and would be disruptive of the sovereign debt market generally." Walker notably argues that the aggressive approach could impede Venezuela's ability to attract new private investment and official sector support, to fund its economic recovery plan. He points that "the international capital markets, foreign direct investment capital and funds held offshore by wealthy Venezuelan nationals will not be eager to find a home in Venezuela if the restructuring process is conducted in a manner where creditors' voices are neither heard nor taken into account, even assuming such investment will be forthcoming following the years of litigation that Buchheit and Gulati's proposals will surely bring."

**In contrast, Mark Walker and other notable authors have put forth a more "moderate" legal strategy for restructuring Venezuela's debt that addresses some of the concerns of the Buchheit and Gulati's approach.** Richard Cooper and Mark Walker (2017) and Richard J. Cooper, Luke A. Barefoot & Thomas S. Kessler (2016) have laid out a restructuring framework for PDVSA based on "market-based mechanisms to achieve the goal of a consensual restructuring arrived at by a supermajority vote of creditors, in particular a restructuring of PDVSA's debts

under a newly enacted Public Sector Revitalization Law that would be implemented with the support of a Chapter 15 proceeding under the United States Bankruptcy Code”. This legal strategy would mirror the two-tiered consensual and in-court restructuring approach of PROMESA, the U.S. law specially enacted to facilitate the restructuring Puerto Rico’s debt (*see Appendix 7*).

**While Walker’s approach would provide a platform for negotiations with creditors, the recent example of Puerto Rico raises concerns about consensual approaches.** Pablo Gluzmann, Martin Guzman, and Joseph E. Stiglitz (2018) argue that “a voluntary process of restructuring would be very unlikely to deliver the amount of relief that Puerto Rico needs. Recent experiences of public debt restructurings demonstrate that voluntary negotiations often lead to delays, insufficient relief for the country, and unequitable treatment for certain classes of creditors”. These remarks echo Cruces and Trebesch (2008)’s findings for countries such as Poland, Mexico, Nigeria and Brazil that went through repeated restructurings in the 1980s (between 6 and 8 related restructurings) and were coined “serial defaulters” by Rogoff and Reinhart (2009). This suggests that the legal framework for Venezuela’s debt restructuring should primarily provide protection against potential asset seizures. It also suggests that the framework should contain enough provisions to give creditors a say in the negotiations but ensure that Venezuela obtains enough debt relief to regain solvency.

**China, a major bilateral lender to Venezuela outside the Paris club, could complicate debt restructuring negotiations or play a constructive role.** China will be a critical stakeholder during negotiations not just because of its large exposure to Venezuela (*approx.* US\$ 20bn) but because the restructuring will set a precedent for how it handles an official sovereign debt restructuring without being a member of the Paris Club. Stephen B. Kaplan and Michael Penfold (2019) offer interesting insights on China-Venezuela relations. They argue that “China was entangled in a creditor trap more than Venezuela was captured in a debt trap” and that “[...] China’s policy banks eventually had to lend defensively to help overcome the errors of Chávez’s and Maduro’s governance deficit.” China later significantly reduced its exposure to Venezuela from a peak of US\$45bn to US\$20bn and recently provided debt relief instead of extending new credit lines in hopes of eventual debt repayment. According to Kaplan and Penfold, “moving forward, China is likely to sustain its current approach to Venezuelan risk, deepening state-to-state relations, while increasingly targeting its financial assistance toward boosting oil production, recovering oil collateral, and growing its long-term commercial presence in the Venezuelan energy sector.” This will offer the new Venezuelan government with two orthogonal policy options: (i)

argue that Chinese lenders should incur strong losses reflecting their risky loans that sustained a regime that caused a social and economic collapse (i.e. an “odious debt” argument) or (ii) strategically maintain strong relations with China and raise additional Chinese funding to sustain the recovery of the energy sector.

**Several countries have invoked odious debt arguments to obtain attractive debt cancellations in recent history.**

The concept of odious debt was introduced by Alexander Nahum Sack, a Russian jurist and former minister of Nicholas II, in 1927: “*if a despotic power incurs a debt not for the needs or in the interest of the State, but to strengthen its despotic regime, to repress the population that fights against it, etc., this debt is odious for the population of all the State*”<sup>5</sup>. As D. Millet<sup>6</sup> narrates, in 2003, after the military invasion of Iraq by the United States and their allies and the collapse of Saddam Hussein’s regime, the United States called for the cancellation of Iraq’s debt. However, the United States soon realized the danger of creating a dangerous precedent and abandoned the odious debt argument. Instead, they had the Paris Club agree to an 80% cancellation of Iraq’s debts without any reference to their odious nature. Cecile Lamarque<sup>7</sup> discusses the case of Nigeria. In early 2005, when high oil prices provided Nigeria with a hold on its creditors, the Nigerian Parliament asked the government to repudiate a debt that had been largely inherited from various military dictatorships, notably under Sani Abacha (1993-1998). In that case too, President Olusegun Obasanjo abandoned the odious debt argument and negotiated with the Paris Club. He was granted a 60% reduction to Nigeria’s debt in exchange for advanced payment of the remaining 40%. In December 2008, Ecuador brought odious debt arguments to the international spotlight when it suspended payments on two of its Global bonds despite having no liquidity issues and sound debt metrics. In 2006, President Correa campaigned under the promise to prioritize social spending over debt service. After taking office, he created a Public Debt Audit Commission. The Commission found that the government had ceded to oppressive terms, that some of the borrowed funds had been used to benefit powerful interest groups, and that the debt was therefore legally illegitimate. Based on the Commission’s findings, the government suspended payments on its global bonds and offered to purchase the defaulted bonds back for 35% of their face value.

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<sup>5</sup> Quoted by Patricia Adams in Chapter 17 of her book *Odious Debts: Loose Lending, Corruption, and the Third World’s Environmental Legacy*.

<sup>6</sup> D. Millet, « La dette de l’Irak n’a jamais existé » (The Iraqi Debt Never Existed), *Le Monde*, 23 November 2004.

<sup>7</sup> Ecuador at the cross-roads, for an integral audit of public indebtedness. Cecile Lamarque (August 2007).

Reluctantly, more than 90% of bondholders exchanged their bonds<sup>8</sup>. In a recent article with direct reference to Venezuela, “Maduro Bonds”, M. Gulati and U. Panizza (2018) propose a “new [preventive] possibility towards establishing a tool that can limit access to credit by despotic regimes that goes beyond arguing for a doctrine of odious debts”. They argue in favor a systematic public ranking of bonds listing possible ethical and legal problems and ultimately increasing the cost of borrowing for despotic regimes due to the stigma market investors would associate to the “unethical or illegal” bonds.

**Full repudiation of Venezuela’s debt is essentially impossible, but under certain legal strategies, targeted recourse to odious debt arguments could be appropriate.** J. Meyer et al. (2019) investigate 200 years of debt restructurings and find that while full debt repudiation is extremely rare, some cases of selected repudiation exist. There may be a rationale to characterize some of the debt contracted by Maduro’s regime as odious, especially some of Chinese and Russian loans that have not contributed to productive investments in the oil sector or otherwise and for which the use of proceeds remains a secret. In part V, we discuss the implications of such an approach on the overall negotiation dynamics for debt restructuring and financial assistance.

**Our SYPA attempts to explore all relevant dimensions to design a debt restructuring strategy** that makes Venezuela’s external debt sustainable while limiting holdout and disruption risks and taking into consideration the political and administrative constraints under which debt negotiations will take place. In other words, we aim at proposing a restructuring framework that is technically correct, politically sustainable and administratively feasible.

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## Part II. Venezuela’s External Debt Sustainability Metrics

**Venezuela’s economic collapse is more pronounced than that of recent, large sovereign defaulters.** Venezuela’s economic collapse before default in August 2017 (and after) is deeper than for Greece in 2012, Argentina in 2001 and 2014 and Ukraine in 2015. Venezuela’s real GDP collapse, which exceeded 35% by December 2017 and exceeds 45% today, dwarfs Greece’s 30%. Venezuela’s real exports collapse exceeds 50% while Ukraine’s real export collapse following a war with Russia was “limited” to 35%. In addition, Venezuela is the only country to have

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<sup>8</sup> Ecuador’s Sovereign Default: A Pyrrhic Victory for Odious Debt? Adam Feibelman (2010).

experienced a complete loss of monetary policy resulting in hyperinflation (*see Box 1 in the Appendix section*).

**For all relevant stock and flow debt metrics, Venezuela's is far on the right tail of the distribution for developing countries.** To benchmark Venezuela against emerging market peers, we used Moody's Statistical Handbook for Country Credit, which features national accounts and debt data for 101 developing countries. We replaced Moody's estimates for Venezuela with our own, which do not differ significantly except on foreign exchange reserves statistics. Venezuela looks extremely over-indebted in every relevant ratio. For instance, Venezuela has an external debt to current account receipts ratio of 516%, the highest in the dataset, and significantly higher than that of Argentina (405%, 2<sup>nd</sup> worst) and Mongolia (338%, 3<sup>rd</sup> worst). Similarly, Venezuela has an external debt-to-GDP ratio of 168%, the second highest in the dataset, more than three times the developing country average of 46%. Venezuela also has the fourth highest external debt to foreign exchange reserves, after Tajikistan, Ecuador and Bahrain. Lastly, Venezuela has the worst measure of debt service to current account receipts, with a ratio of 111%, if arrears on defaulted debt count as current debt service. Even before defaulting, external debt service stood at a remarkable 54% of current account receipts, which is on the 96<sup>th</sup> percentile for developing countries (*see Box 4 in the Appendix section*).

**Venezuela breaches the metrics that the literature considers appropriate for external debt sustainability,** starting with the debt vulnerability thresholds found in the IMF's DSA framework (DSF) for market-access emerging-market economies. For these countries, the IMF sets its targets at a public debt to GDP ratio of 60-80%, external financing requirements to GDP of 30%, and a share of public debt in foreign currency of 68%. Venezuela significantly exceeds all of these. Reinhart and Rogoff (2004) find these thresholds too high and argue "that the pervasive phenomenon of serial default and the costs such defaults entail suggest that emerging-market countries may need to aim for far lower levels of external debt-to-GDP than what has been conventionally considered prudent". These authors consider that prudent external-debt thresholds may be closer to 15-30% of GDP for "debt intolerant" countries such as Venezuela.

**The destruction of institutional, social and administrative capacity under *Chavismo* motivates the need to target even lower debt burden thresholds for Venezuela.** Although the IMF will likely apply its market access country DSF to Venezuela, the IMF and WB's DSF for low income countries (LICs) holds important lessons for Venezuela's case. It highlights that

“countries with different policy and institutional strengths, macroeconomic performance, and buffers to absorb shocks, have different abilities to handle debt” and breaks countries down into three debt-carrying capacity categories (strong, medium, and weak). As noted earlier, the past 20 years have seen a near-total breakdown of democratic and political institutions, the rule of law and the country’s social fabric. Thus, there is a strong rationale to apply conservative debt thresholds to Venezuela consistent with its low institutional development. For reference, external debt burden thresholds for low income countries under the weak institutional capacity category are (in Present Value terms) 30% of GDP and 140% of exports, while external debt service to exports thresholds are 10% of GDP and 14% of government revenues.

**The magnitude of potential IMF and official financial assistance to Venezuela remains uncertain – although early signals from the institution suggest the potential for large-scale lending is high.** Under the IMF’s normal access lending facility, IMF financial assistance to Venezuela would amount to *approx.* US\$23bn, most likely falling short of the country’s needs to fund a sustainable economic recovery at current oil prices. Based on the precedent of the recent IMF program in Argentina, Venezuela’s IMF financial assistance could amount to *approx.* 57bn or 11x of its IMF quota. Greece’s exceptional access in 2010 reached a record of 17x its IMF quota, which would represent *approx.* US\$90bn in the case of Venezuela (Table 1). David Lipton, the First Deputy Managing Director of the IMF, recently issued a statement saying that “addressing the economic and humanitarian crisis devastating Venezuela will require broad support from the international community. We are seeing an unprecedented perfect storm of food and nutrition crisis, protracted hyperinflation, a loss of physical and human capital, and complex debt problems in Venezuela. We have seen versions of each, but rarely a combination as severe as this. Will need lessons from history, innovative thinking, flexible policymaking, and *generous external support*”.

**Venezuela could also obtain significant financial assistance from other multilateral and bilateral partners, raising as much as \$5-10bn from the World Bank, \$1-5bn from the IDB and \$1-2bn from CAF.** The World Bank does not currently have a portfolio of active loans in Venezuela, suggesting there is room to expand its portfolio into the country. For context, loans due to the World Bank in the LAC region total *approx.* US\$ 58bn (based on WB loan-level micro-data). Of this total, Brazil owes *approx.* US\$ 16bn (27.7%), Mexico roughly \$15bn (25.6%), Colombia about \$10bn due (17.5%), Argentina US\$ 6.9bn (11.8%). Thus, based on Venezuela’s size, it is reasonable to suppose that the World Bank would be willing to lend between \$5-10bn to the country over a four-year period. The IADB’s loans in the LAC region total approximately

\$53.4 bn (based on approved loans by country), but its loan book is more diversified. Brazil holds \$12.8bn (24%) of the loans, Argentina holds \$9.5bn (18%), and Mexico \$3.3bn (6%). Venezuela currently owes the IADB \$1.35bn and is in arrears. Therefore, the IADB may only be able to lend an additional \$1-5bn over four years. Venezuela is already CAF's largest debtor, owing around \$3bn or 13.7% of the institution's \$24bn portfolio of loans and investments. Therefore, we estimate that Venezuela may only be able to raise an additional \$1-2bn from CAF over four years.

**Table 1: Determining IMF's possible lending program amount to Venezuela**

	unit	Amount
Venezuela IMF quota	SDRm	3,723
Exchange rate	USD / SDR	1.4
<b>Venezuela IMF quota</b>	<b>USDm</b>	<b>5,212</b>
<b>Normal access</b>		
Quota multiple under typical program		435%
<b>Resulting Venezuela's programme amount</b>	<b>USDm</b>	<b>22,671</b>
<b>Exceptional access</b>		
Argentina's multiple (2018)		x11
<b>Resulting Venezuela's programme amount</b>	<b>USDm</b>	<b>57,330</b>
Greece's multiple (2010)		x17
<b>Resulting Venezuela's programme amount</b>	<b>USDm</b>	<b>88,600</b>

**Finally, we follow recent literature and think of debt sustainability probabilistically building on O. Blanchard and M. Das (2017).** Consistent with the IMF's lending practice where debt must be considered sustainable *with high probability*, the authors argue that debt sustainability is probabilistic. To capture the uncertainty, we run, in Appendix 3, Monte Carlo simulations that captures the probabilistic nature of Venezuela's external debt trajectory based on historical parameters. We conclude that even if the debt stock was reduced to 30% of GDP today, the debt trajectory would remain highly volatile over the next ten years, falling to 10% of GDP (in the 10<sup>th</sup> percentile case) or rising to as much as 140% (90<sup>th</sup> percentile). These simulations are not useful for policy analysis *per se*, but they do highlight the extreme uncertainty associated with Venezuela's external debt dynamics. In the next section, we design a baseline Balance of Payments (BoP) and debt framework to inform the contours of the debt restructuring exercise.

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## Part III. An External BoP & Debt Model to Assess the Impact of Restructuring Scenarios on Venezuela's External Debt Metrics

In this section, we present a flexible policy tool to assess the impact of different debt restructuring scenarios. We examine key external sustainability metrics and the country's gross funding needs over 2019-2023 under various restructuring scenarios.

**Our modelling work follows a four-step approach.** In the first step, we project Venezuela's external funding needs (before debt service) through 2032 building upon a careful analysis of the economy, the oil sector and historical post-crisis recoveries. In the second step, we map the existing structure of Venezuela's external debt and build a flexible debt model to test restructuring scenarios. In a third step, we integrate our BoP projections and our debt model to perform an External Debt Sustainability Analysis under four restructuring scenarios, labelled "soft," "strong," "aggressive" and "aggressive with odious". Finally, in the fourth step, we run a sensitivity analyses to test the robustness of our results to three key parameters: the real exchange rate, future oil prices, and market refinancing rates. The overall exercise highlights some of the tradeoffs between policy options in the debt restructuring negotiations.

### Step 1: A Balance of Payments Framework

**Our BoP framework flows from the "politically and socially sustainable economic recovery path" assumption, which sets non-oil GDP growth exogenously for the forecast period.** Official GDP data has been unavailable since 3Q2015, so we assume that Venezuela has a nominal GDP of \$80 billion in our base year (2018), in line with Moody's \$73.2 billion estimate and the IMF's \$96.3 billion estimate. We estimate that oil GDP is \$30bn by multiplying overall production by prices, leaving \$50 billion for non-oil GDP. We then assume that real non-oil GDP approximately doubles in ten years, growing at 11% in the first year, 10% in the second, and slowing linearly to 3% in the 9<sup>th</sup> year. That is, growth rates are initially high and then slow as the recovery proceeds.

**The growth trajectory set by the "politically and socially sustainable economic recovery path" is largely a *normative* and *political* assumption. It is also consistent with our theoretical understanding of the economy and historical post-crisis recoveries.** We believe that any politically and socially sustainable growth plan *must* target and achieve a recovery in output to pre-crisis levels in a decade, because not doing so may threaten the political viability of the



government. Similarly, we believe that any politically and socially sustainable growth plan *should* target a recovery in output to pre-crisis levels in a decade, given the severe economic hardship Venezuelans have been through. These normative and political arguments are widely held by members of the political opposition, and therefore our starting point for BoP projections. In terms of theory, high growth rates at the beginning of the program are consistent with our diagnostic that the binding constraint to the economy is the external sector. As the external constraint is relaxed thanks to international financial assistance and debt restructuring in 2019, growth should pick up significantly, as the economy is able to import key capital and intermediate goods. Importantly, the growth path we propose (which doubles non-oil output over a decade) is also consistent with the experiences of countries with extremely large output declines that Douglas Barrios and Miguel Santos (2018) showcase (*see Box 2 in Appendix section*). In other words, our assumption is *normative* and *political*, but also consistent with theory and historical experience.

**The non-oil real GDP recovery path then sets the path for imports.** Non-oil goods imports generate 2.8x their value in real non-oil GDP in 2019 and later generate 4.75x their value in real non-oil GDP by 2030 as the economy recovers and uses imports more productively. These “import efficiency” multipliers are a critically important assumption, since they pin down imports and therefore largely determine the external funding gap before debt service. We therefore guide these assumptions with historical data and theoretical arguments. The initial 2.8x multiple is the same efficiency level Venezuela’s economy had around 2007-2008 and in 2011. In these years, the economy was highly distorted and inefficient, like it would be in the aftermath of a transition, but had access to foreign exchange, as it would with an IMF program and international financial assistance. In this initial year, two opposing effects would bear on the efficiency of imports. On one hand, a fraction of imports would be dedicated to replenishing the capital stock, which has been depleted in recent years, reducing the non-oil GDP generated that year. On the other hand, most imports would be done by the private sector responding to price signals, not the public sector, as was increasingly the case during Chavismo, so these imports would be more efficient and generate more non-oil GDP. Considering these two opposing effects, we believe the 2.8x multiple is reasonable for the first year. The high multiple of 4.75x for 2030 is aspirational. It is slightly higher than the 20-year high import efficiency of 1999 of 4.6x, a year when the economy was considerably more efficient, before the anti-market policies of the Chavez-Maduro era. After real non-oil goods imports are calculated with real non-oil GDP and the corresponding “import efficiency” multiplier, they are inflated to nominal non-oil goods imports using world CPI inflation

(taken from the IMF's World Economic Outlook). To ensure that our import assumptions are reasonable, we cross-checked the resulting imports with the results from Santos, Bustos and Baquero (2016). By looking at micro-data from Venezuela's trading partners, these authors estimated that Venezuela needed \$34.6bn in overall imports to recover from the crisis in mid-2016 (\$8.5bn for food, \$3.7 for medicine, \$4.6 for raw materials, etc). This figure is slightly smaller than our \$36.0bn imports estimate for 2019, showing that our estimate for 2019 imports may, if anything, be on the low side, since more resources are required to import the capital that has been depleted since mid-2016.

**The remaining import-related line items are projected separately.** Freight and insurance for goods imports are calculated as a percentage of the total value of goods imports, extracted from the historical average from 1997-2014, which has a very low standard deviation. There is much uncertainty surrounding non-oil service imports (what they are and their size), so we project that private non-oil service imports return from estimated current levels to the 1997-2005 average of 2.9% of non-oil GDP in five years. Furthermore, we project that public non-oil service imports are slashed to 0.7% of non-oil GDP (the 1997-2005 average) and remain there. We then model the remaining line items in the Balance of Payments, starting with exports.

**We assume that Venezuela opens the oil industry to private investment and that significant resources are invested to raise oil production.** A host of institutional, legal and policy changes could make Venezuela's oil sector ripe for private investment, but that is beyond the scope of this analysis. For our purposes, we assume that a large share of oil production is privatized and both PDVSA and the private sector significantly invest to increase oil production. Under our baseline assumptions, drawn mostly from CIDs internal work, the next government raises overall crude production from 1.34mbpd to 3.05mbpd within a ten-year period, with a total capital investment of *approx.* US\$115bn. Production continues to increase until 2033, when it reaches 3.5mbpd. For several reasons, this oil production trajectory is ambitious. First, because of the required investments. Second, because in a ten-year period, the most oil production has ever increased is 1.6 mbpd (1948-1957) and 1.4 mbpd (1989-1998), as can be seen in Appendix 4. Thirdly, because production rises very close to the all-time-high of 3.7 million barrels (1970) and surpasses the more recent high of 3.3 million barrels (1998). Still, our oil production trajectory assumption is reasonable. Successful development of the oil industry will be critical for the success of the next government.

**Private oil companies initially finance investments with FDI and later with retained earnings. The Return on Investment (RoI) of projected private investments is consistent with private participation.** We model that in 2019-2023, private capital expenditures significantly exceed the after-tax earnings of private oil companies. Therefore, private oil companies fully reinvest their earnings and cover the remaining capital investments with FDI, which generates BoP inflow of *approx.* \$15bn in 2019-2023. From 2024 onwards, private after-tax earnings exceed capital investment needs, so private CAPEX is financed entirely with retained earnings. The after-CAPEX private surplus is then repatriated as a dividend, generating a BoP outflow. The IRR of the net BoP flows generated by private oil companies is the same as the return on private investments in Venezuela's oil sector. In our baseline scenario, this IRR equals 17%, which is consistent with required private returns to ensure private participation. Critically, we assume that the government sets the royalty rate for oil exports at 33% and the income tax rate for oil companies at 40%, very close to the current rates of 30% and 50%, respectively.

**We project that the economics of the oil sector improves significantly as the recovery ensues and the economy grows.** Firstly, we assume that the declination rate of the average oil well – defined as the share of production that is lost for geological reasons and due to mechanical failure every year – declines from the current level of 35% per year to 21% in three years, as operating conditions normalize. This reduces the amount of capital expenditures required to maintain production levels, which otherwise decline naturally. Secondly, the imported component of capital expenditures and operating expenditures falls from an estimated 90% in the base year to 80% in a decade, as domestic service companies produce production inputs. Thirdly, the average capital expenditures required to add or maintain one barrel of oil production falls from an estimated \$60/bbl to \$40/bbl in six years, as operating conditions improve. Similarly, average operating costs per barrel decline from \$12/bbl to \$11/bbl in the same period.

**Our remaining assumptions for the oil sector are relatively straightforward.** We take the IMF's projections for Brent crude oil prices (WEO November 2018) until they end in 2023 and then assume Brent rises linearly to a steady state value of \$70/bbl for 2029 onwards. To calculate the value of Venezuela's crude export basket, we multiply Brent by 0.99 and subtract \$7.7/bbl, following the best fit line in the regression between average monthly Brent crude and the Venezuelan basket. To calculate exports, we simply multiply average production by the price of the Venezuelan crude basket and subtract out domestic consumption. Oil exports in 2018 (\$21.3bn) and 2019 (\$21.6) are similar because average production and prices for the Venezuelan basket are

similar during these two years (1.34 mbpd and \$63.4/bbl in 2018; 1.35 mbpd and \$64.2/bbl in 2019), even though the oil production trajectories are not. Monthly oil production was on the decline in 2018 and is projected to rise by 100kbpd during 2019. Following Burke and Csereklyei (2016), we assume that domestic consumption grows with GDP with an elasticity of 0.6x. We are comfortable with this assumption given the near-consensus in policy circles that gasoline prices must be brought close to international level from the current, near-zero level, which will contain the rate of domestic oil consumption growth.

**We modeled non-oil goods and service exports conservatively, leaning on historical data.** To project nominal non-oil goods exports, we first estimate real non-oil good exports, which start at 5% of real non-oil real GDP (the approximate current level) and grow to 8% over two decades, returning to the historical norm of the 00s. These real non-oil goods exports are then inflated to nominal terms with the world CPI. Non-oil goods exports in Venezuela include gold, and could significantly expand to agriculture, aluminum and iron, the formerly nationalized export sectors. To estimate nominal non-oil service exports, we use the same logic. We assume that public non-oil service exports remain at 0.3% of real non-oil GDP (the approximate current level and 1997-2007 average) and that private non-oil service exports start at 0.3% of non-oil GDP (the approximate current level) and rise to 1.2% in 10 years (the 1997-2007 average). Real non-oil service exports are then inflated by the world CPI to get nominal non-oil service exports.

**The only current transfer we consider are remittances.** To project these, we multiply the estimated number of Venezuelans living abroad by the fraction of them sends remittances and the average monthly remittance. We estimate that the five million Venezuelans live abroad in 2019 falls to three million in ten years, that 30% of Venezuelans abroad send remittances and that the average remittance rises from \$75/month in 2019 to \$150/month in 2022, as Venezuelans find economic stability abroad.

**The remaining items in the capital account are modeled straightforwardly.** Importantly, we model a significant increase in international reserves in the initial years of the recovery, such that Venezuela can reach and maintain six months of imports in reserves, as an IMF program would require. The funds required to increase international reserves generate BoP funding needs of *approx.* \$15bn in the first four years of the program. We assume that non-oil FDI begins at 1% of GDP (\$880m in 2019), a conservative level, and rises to the Latin America and Caribbean average of 2.6% over 15 years. We also assume that Venezuela must repay a total of \$6bn in four equal

instalments over 2020-2023 for ICSID arbitration awards. Applying the principal of conservatism, we model that private other capital inflows are zero. In practice, Venezuelans abroad or with accounts abroad could repatriate their savings attracted by higher domestic real interest rates or for consumption, leading to some other capital inflows. However, we believe these inflows may be small and partly offset by capital flight, and therefore set them at zero.

**Our baseline scenario, which reflects current oil prices, has an external funding gap excluding debt service of \$55bn in the first four years and \$59bn in the first five years.** The BoP model then projects negative gross financing needs (i.e. funds available for debt service) in subsequent years as oil exports pick up. In the first five years of the recovery, the IMF and other official creditors disburse fund the BoP to jumpstart the economy and oil production and in the following years, the external surplus is utilized to repay the official creditors and the restructured debt of previous creditors (Table 2). We believe these BoP projections are internally consistent and broadly illustrative. Still, we acknowledge that the projections have very high uncertainty stemming from policy uncertainty, modeling choices, data availability and other assumptions.

**Table 2: Baseline BoP Projections (excl. debt service) - Summary**

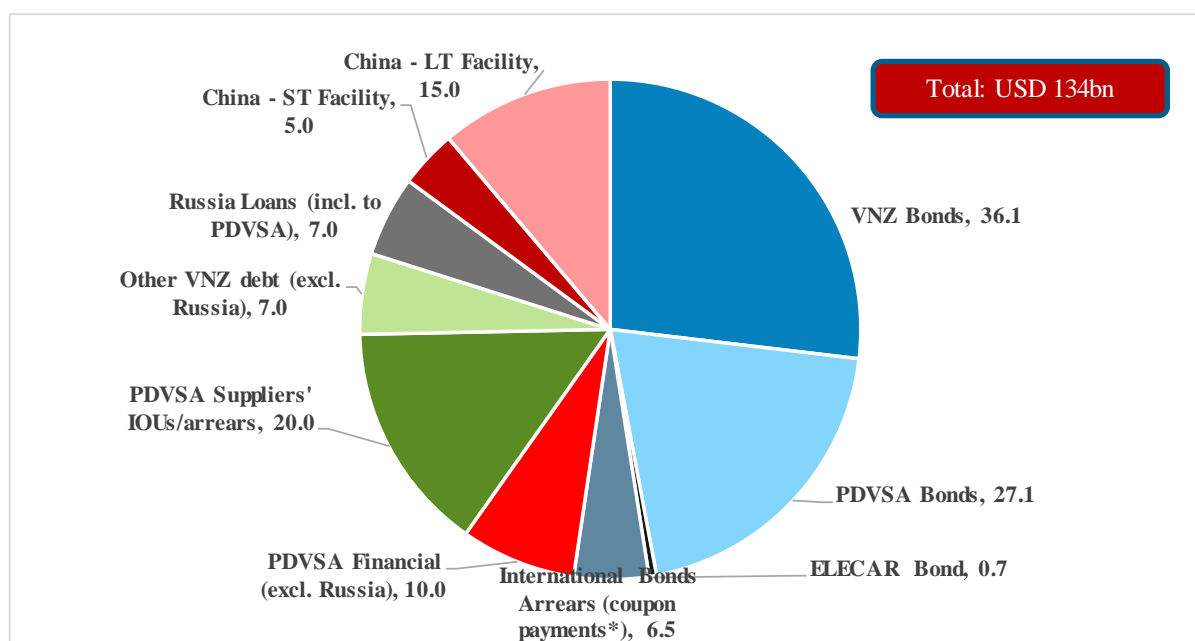
US\$ mm	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Current Account (excl. interest payments)</b>	2,586	(17,560)	(15,673)	(12,100)	(8,521)	(5,385)	(1,373)	730	3,232	5,084	6,992	9,034	10,115
<b>Total Exports (G+S)</b>	<b>24,885</b>	<b>24,586</b>	<b>26,417</b>	<b>29,305</b>	<b>32,931</b>	<b>36,836</b>	<b>41,439</b>	<b>45,700</b>	<b>50,120</b>	<b>54,685</b>	<b>59,392</b>	<b>64,239</b>	<b>68,199</b>
Goods Exports (FOB)	23,911	23,927	25,636	28,377	31,838	35,561	39,966	44,022	48,231	52,584	57,067	61,677	65,509
Oil	21,376	21,626	22,882	25,125	28,043	31,182	34,987	38,432	42,036	45,809	49,680	53,649	56,793
Non-Oil	2,535	2,302	2,754	3,252	3,795	4,379	4,980	5,590	6,194	6,775	7,387	8,028	8,716
Service Exports	974	658	782	928	1,093	1,275	1,472	1,678	1,890	2,101	2,325	2,561	2,690
<b>Total Imports (G+S)</b>	<b>(19,700)</b>	<b>(43,270)</b>	<b>(43,818)</b>	<b>(43,475)</b>	<b>(43,827)</b>	<b>(44,489)</b>	<b>(44,608)</b>	<b>(46,049)</b>	<b>(47,291)</b>	<b>(49,600)</b>	<b>(51,911)</b>	<b>(54,218)</b>	<b>(56,842)</b>
Goods Imports (CIF)	(11,700)	(36,093)	(36,895)	(36,579)	(36,989)	(37,764)	(37,598)	(38,674)	(39,586)	(41,525)	(43,462)	(45,393)	(47,607)
Oil	(3,206)	(16,300)	(17,465)	(16,241)	(15,801)	(15,799)	(15,028)	(15,665)	(16,327)	(16,993)	(17,638)	(18,261)	(19,103)
Non-Oil	(8,494)	(19,792)	(19,430)	(20,338)	(21,188)	(21,965)	(22,571)	(23,009)	(23,260)	(24,533)	(25,824)	(27,131)	(28,504)
Freight & Insurance	(1,087)	(2,761)	(2,814)	(2,775)	(2,792)	(2,849)	(2,833)	(2,915)	(2,985)	(3,131)	(3,276)	(3,421)	(3,587)
Service Imports	(6,913)	(4,417)	(4,109)	(4,121)	(4,047)	(3,876)	(4,176)	(4,460)	(4,719)	(4,945)	(5,173)	(5,405)	(5,648)
<b>Income Balance (excl. interest)</b>	<b>(3,724)</b>	-	-	-	-	-	<b>(364)</b>	<b>(973)</b>	<b>(1,542)</b>	<b>(1,837)</b>	<b>(2,216)</b>	<b>(2,607)</b>	<b>(2,754)</b>
Foreign Direct Investment	(3,724)	-	-	-	-	-	(364)	(973)	(1,542)	(1,837)	(2,216)	(2,607)	(2,754)
Other Investment	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Current Transfers</b>	<b>1,125</b>	<b>1,125</b>	<b>1,728</b>	<b>2,070</b>	<b>2,376</b>	<b>2,268</b>	<b>2,160</b>	<b>2,052</b>	<b>1,944</b>	<b>1,836</b>	<b>1,728</b>	<b>1,620</b>	<b>1,512</b>
Remittances	1,125	1,125	1,728	2,070	2,376	2,268	2,160	2,052	1,944	1,836	1,728	1,620	1,512
<b>Financing inflows (excl. debt repayment)</b>	<b>(2,586)</b>	<b>1,418</b>	<b>275</b>	<b>(1,408)</b>	<b>(1,057)</b>	<b>1,024</b>	<b>1,920</b>	<b>1,529</b>	<b>1,907</b>	<b>1,656</b>	<b>1,956</b>	<b>2,277</b>	<b>2,433</b>
<b>Foreign Direct Investment</b>	<b>2,500</b>	<b>5,418</b>	<b>5,775</b>	<b>4,092</b>	<b>3,357</b>	<b>2,855</b>	<b>1,980</b>	<b>2,250</b>	<b>2,528</b>	<b>2,810</b>	<b>3,111</b>	<b>3,431</b>	<b>3,745</b>
Oil Related	-	4,536	4,717	2,831	1,875	1,134	-	-	-	-	-	-	-
Other	-	882	1,058	1,261	1,482	1,721	1,980	2,250	2,528	2,810	3,111	3,431	3,745
Portfolio Flows	389	-	-	-	-	-	-	-	-	-	-	-	-
<b>Other Flows</b>	<b>(4,475)</b>	-	<b>(1,500)</b>	<b>(1,500)</b>	<b>(1,500)</b>	<b>(1,500)</b>	-	-	-	-	-	-	-
<b>Change in Reserves (negative is increase)</b>	<b>1,000</b>	<b>(4,000)</b>	<b>(4,000)</b>	<b>(4,000)</b>	<b>(2,914)</b>	<b>(331)</b>	<b>(60)</b>	<b>(721)</b>	<b>(621)</b>	<b>(1,155)</b>	<b>(1,155)</b>	<b>(1,153)</b>	<b>(1,312)</b>
<b>Gross Financing Needs (excl. debt service)</b>	<b>0</b>	<b>16,142</b>	<b>15,398</b>	<b>13,508</b>	<b>9,578</b>	<b>4,360</b>	<b>(548)</b>	<b>(2,259)</b>	<b>(5,140)</b>	<b>(6,739)</b>	<b>(8,948)</b>	<b>(11,312)</b>	<b>(12,548)</b>
<b>Memorandum Items</b>													
Nominal GDP (USDbn)	80	88	96	104	112	121	129	137	145	152	159	166	172
Brent Oil Prices (USD/bbl)	71.9	72.3	69.4	66.8	65.0	63.9	64.9	66.0	67.0	68.0	69.0	70.0	70.0
Average Oil Production (mbpd)	1.34	1.35	1.48	1.65	1.85	2.05	2.23	2.38	2.53	2.68	2.83	2.98	3.13
International Reserves (USDbn)	7.0	11.0	15.0	19.0	21.9	22.2	22.3	23.0	23.6	24.8	26.0	27.1	28.4
Months of Imports in Reserves (multiple)	4.3x	3.1x	4.1x	5.2x	6.0x	6.0x	6.0x	6.0x	6.0x	6.0x	6.0x	6.0x	6.0x

## Step 2: A Fully Flexible External Debt Model

In this second step, we mapped Venezuela's external public debt. A detailed breakdown of the stock by creditor and instrument is found in Appendix 5. We then integrated this information into a fully flexible debt model, which allows to simulate restructuring scenarios on an instrument by instrument basis. We linked our debt model to our BoP framework in Step 3.

**We estimate that Venezuela's external debt stock currently stands at around US\$134bn, excluding ICSID claims (Figure 1).** Bonded debt represents approximately US\$ 70bn. PDVSA financial and suppliers' debt accounts for US\$ 30bn. Bilateral and multilateral debt outside China and Russia represents approximately US\$ 7bn. Finally, the outstanding stock of Chinese and Russian Funds is around US\$27bn. While we do not include ICSID claims in the stock given that they are contingent liabilities for which the terms are not set, we do include a (debt creating) outflow of US\$6bn for ICSID payments in the projections. We have also not accounted for international companies' claims on Venezuela's exchange rate central system (backlog of dividends to be repatriated). Our debt estimate is consistent with several estimates available in the financial press of a debt stock of around US\$130-140bn. Private external debt is low and not included in our debt stock.

**Figure 1: Venezuela's external public debt stock – US\$ bn (estimation)**



Note: \*Bonds principal in default are included in the stock

**Up to US\$30bn or 22% of the external public debt stock could be examined and qualified as “odious” debt.** This notably includes US\$20bn in Chinese loans, approximately US\$7bn in Russian loans and US\$3bn in “hunger bonds” (*see our recommendation regarding the creation of a national debt committee in part V*).

### Step 3: Simulating Restructuring Scenarios under the Baseline BoP Framework

In this section, we construct four restructuring scenarios. For simplicity, we assume 100% participation in each of the four scenarios even though holdouts risks are high. As a reference point, we also assume that the restructuring takes place in 2019. Clearly, that may not be feasible. Still, the logic of our exercise applies even if the restructuring take place later. The detailed assumptions made for each restructuring scenario can be found in Appendix 6.

**We assume that exit yields on newly exchanged market debt instruments range from 9% to 13%.** The table below compares the exit yields in Ukraine (2015) and Greece (2012), the two largest recent debt restructurings. We assume a 10-11% exit yield as our baseline scenario for Venezuela in line with that of Ukraine. Exit yields are used to calculate market and NPV haircuts.

**Table 3: Exit yields in recent large sovereign debt restructuring**

	Greece (2012)	Ukraine (2015)	Venezuela (assumption)
Exit yield	14-17.5%	9-11%	9-13%
Spread over 10y benchmark (bps)	1350-1600	700-900	600-1000

*Note: Greece exit yields correspond to the range of bonds yields one day after the restructuring. In the case of Ukraine, investors used a 11% exit yield during the negotiations, bonds prospectus refer to a 10% exit yield and exchanged bonds traded with a yield of close to 9% a day after the restructuring.*

### **Description of the Three Scenarios**

#### **Scenario 1: The “Soft Scenario”**

**Rationale:** This scenario focuses on providing Venezuela with flow relief in the form of maturity extensions and lower interest payments in the short to medium-run with limited face value reduction of market debt (25%). Non-market debt coming due in the medium term is rescheduled (or equivalently rolled-over) at similar terms. This scenario embodies a conciliatory approach with creditors and would likely achieve high participation rates. It is consistent with the view that Venezuela suffers from a liquidity crisis, not a solvency crisis.



Market haircut on bonded debt: In this soft scenario, market haircuts vary from 52% to 74% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, the market haircut is around 62%, implying a 38% recovery for bondholders, significantly above current market prices (hence the characterization of conciliatory approach).

### **Scenario 2: The “Strong Scenario”**

Rationale: This second scenario embodies a tougher stance towards market and quasi-market creditors (mostly PDVSA suppliers' debt) with significant nominal haircuts (50%) and NPV haircuts. Other non-market creditors provide additional flow relief in the form of long maturity extensions, interest rate reductions but no principal reductions. This scenario represents an aggressive approach towards market creditors while leveraging on official creditors – and notably China – to obtain long-term cheap refinancing conditions and new money for the economic and oil sector recovery. This scenario would likely achieve lower participation rates even though semi-coercive legal steps could be taken (as described by Lee Buchheit).

Market haircut on bonded debt: In the strong scenario, market haircuts vary from 69 to 83% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, market haircut will be around 75%, implying a 25% recovery for bondholders, broadly in line with bond prices before the international recognition of Juan Guaidó as interim president.

### **Scenario 3: The “Aggressive Scenario”**

Rationale: This scenario embodies an aggressive stance towards both market and non-market creditors with limited negotiation and recourse to coercive legal procedures. This scenario notably includes a 70% nominal haircut on market and quasi-market debt and 50% on PDVSA's non-market debt. This scenario also represents a more aggressive stance towards Russia and China with strong nominal haircuts of 70% as part of proactive negotiations.

Market Haircut on bonded debt: In the aggressive scenario, market haircuts vary from 81 and 90% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, market haircut will be approximately 85%, implying a 15% recovery for bondholders, in line with all-time-low bond prices.

### **Scenario 4: The “Aggressive and Odious Chinese and Russian Debt Scenario”**

Rationale: This scenario describes a variation of the aggressive scenario (scenario 3) and adds the odious debt dimension. This scenario is equivalent to scenario 3 but assumes that the debt owed to



China and Russia (and Rosneft) is deemed illegitimate and fully cancelled. This is an extreme case used for the purpose of the simulations.

### **Outcome on external debt metrics:**

We present below the key debt metrics for the three restructuring scenarios. Our simulations rely on the two following additional assumptions. First, external funding needs until 2022 are financed at concessional terms by the IMF and other official sources. We assume that these loans are repaid over a period of 5-10 years, in line with exceptional access financial assistance programs. Secondly, external funding needs are mostly financed on international capital markets starting in 2023. We assume market refinancing rates of around 9% as Venezuela's credit risk improves.

#### *Official Gross funding needs*

**Venezuela's gross funding needs over the next four years range from US\$62bn to US\$93bn depending on the restructuring scenario.** While Venezuela is closed off from capital markets until 2023, gross funding needs would have to be covered by official sources, especially the IMF. In the soft restructuring scenario, gross funding needs exceed US\$93bn – more than Venezuela could obtain from the IMF if it borrowed as much as Greece in 2010 under exceptional access. Under the aggressive scenarios, official funding needs for the next four years would amount to about US\$60bn, in line with the recent IMF program in Argentina.

**Table 4: Official funding needs by scenario – Baseline BoP projections**

	2019	2020	2021	2022	Total
Soft	21	26	24	22	<b>93</b>
Strong	18	19	18	16	<b>70</b>
Aggressive	17	17	16	13	<b>63</b>
Aggressive w/ odious debt	17	17	16	12	<b>62</b>

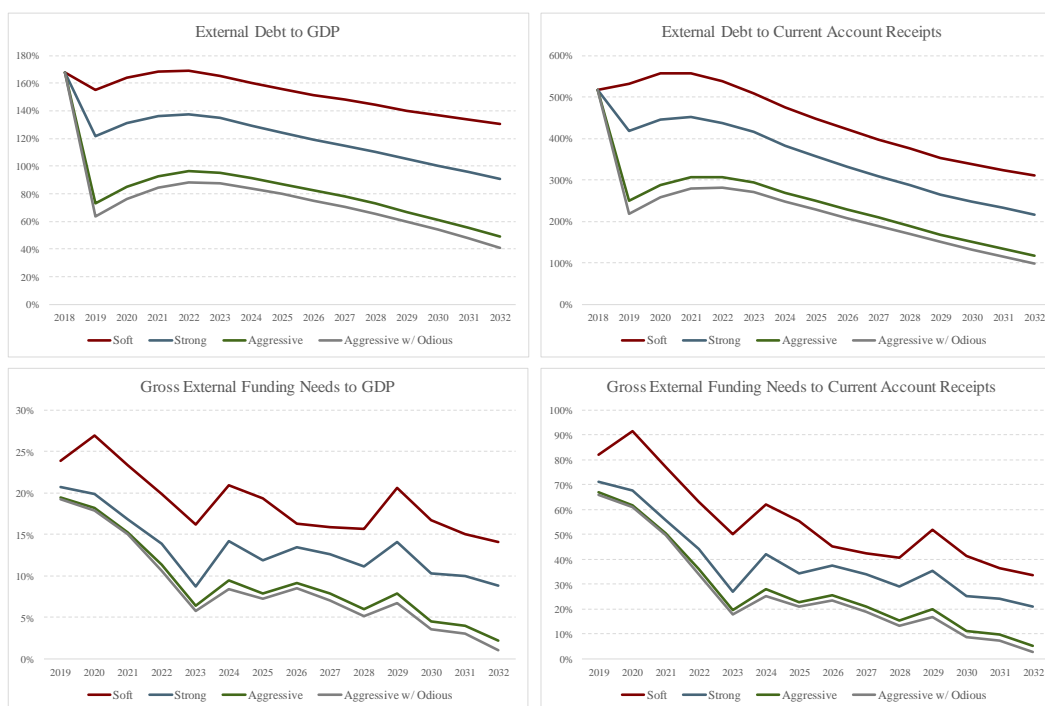
#### *External debt sustainability metrics*

**Venezuela's external debt metrics are unsustainable under the soft restructuring scenario.** Under the soft scenario, external debt to GDP remains in excess of 130% by 2032 while the external debt to current account receipts ratio exceeds 300% by 2032. These metrics are much higher than any of the thresholds commonly used by the IMF to assess debt sustainability. Besides, gross external funding needs (GFN) would still average 19% of GDP over 2019-2032 despite large maturity extensions as part of the restructuring.

**The strong restructuring scenario brings external debt metrics closer to sustainable levels in the medium-run but risks remain elevated.** Under the strong scenario, external debt to GDP remains at a relatively high level of approximately of 125% in 2025 and 90% in 2032 while external debt to current account receipts are 360% in 2025, decreasing to c. 215% by 2032. Gross funding needs would be reduced, averaging 13% of GDP over 2019-2032. These ratios bring Venezuela's debt metrics closer to the IMF's debt sustainability framework for market access countries in the long run but leave Venezuela vulnerable to terms of trade shocks, especially in case of a significant fall in oil prices (*see next section on sensitivity analysis*).

**The aggressive restructurings scenario brings Venezuela's debt metrics to safer levels.** External debt to GDP falls to about 87% by 2025 and 50% of GDP by 2032. External debt to current account receipts reaches 250% by 2025 and c. 115% by 2032. Venezuela's gross external funding needs are significantly reduced to an average of 9% of GDP over 2019-2032, allowing the country to rebuild a significant reserves buffer over the medium run. These debt ratios are compatible with the IMF's debt sustainability framework for market access countries and broadly in line with non-market access countries with low institutional capacity for debt to exports and debt service metrics.

**Figure 2: Comparison of external debt metrics by scenario – Baseline BoP projections**



### External public debt to government revenues

**We also projected the path of external public debt to fiscal revenues. The strong scenario brings this ratio to about 275% by 2032, a level higher than the current median of BBB rated countries (200%).** First, we assume that in the medium-term, external debt would be entirely public or publicly guaranteed. Second, we projected government revenues as the sum of (1) non-oil revenues, (2) the operating surplus PDVSA (and the public portion of Joint Venture oil companies), and (3) taxes from private oil producers (royalties and income tax). Non-oil revenues are projected to rise from 2.5% of non-oil GDP (the approximate current level) to 16% (the 1998-2008 average) in ten years. The target level of 16% is similar to the current 14.8% average level of non-oil revenue to non-oil GDP in oil-exporting GCC countries. This ratio is lower than the LAC region average tax revenue to GDP ratio of 22.7% in 2016 (OECD)<sup>9</sup>, which though not entirely comparative, is still illustrative. The operating surplus of PDVSA and the public share of Joint Venture oil companies is calculated as the value of public oil extraction (public production multiplied by prices) net of operating expenditures and depreciation of capital investments. This implicitly assumes that gasoline sold in Venezuela is sold at international prices, which is reasonable in the medium run and consistent with the elimination of indirect subsidies. Royalties are projected as 30% of private oil exports and income tax is 40% of private oil earnings before income tax. Based on our projected path for government revenues, public debt would remain higher than 275% of fiscal revenues in the strong restructuring scenario by 2032, a level much higher than the current median ratio for BBB rated countries (200%) and to the current median ratio for B rated countries (250%). In the aggressive scenario, public debt would converge to 150% of fiscal revenues by 2032 and cross the 200% mark within the next 10 years.

### Conclusion

**Our BoP and debt simulations illustrate the need for significant debt relief in Venezuela.** A restructuring that focuses on maturity extension and interest rate reductions (flow relief) will not restore debt sustainability and most certainly lead to multiple defaults and debt restructurings, jeopardizing the country's economic recovery. **The combination of large face value haircuts, a wide scope of restructured debt instruments and a large financial assistance package gives**

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<sup>9</sup> Revenue Statistics in Latin America and the Caribbean. OECD *et al.*

## **Venezuela the best chance to restore confidence, attract investment and regain market access in the medium term.**

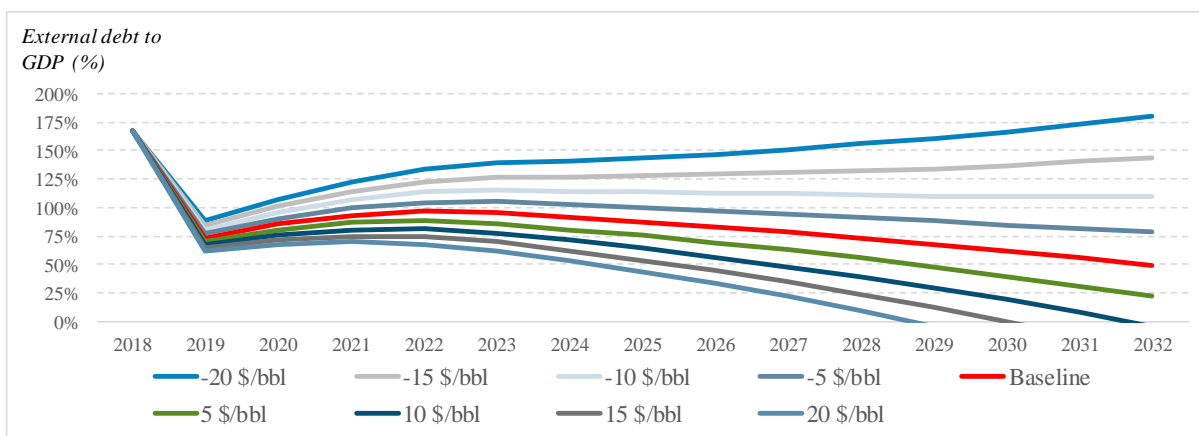
### **Step 4: Sensitivity Analysis**

In this section, we attempt to test the sensitivity of our results to the three main parameters driving the country's external sector dynamics: (i) oil prices, (ii) market refinancing rates and (iii) the real exchange rate.

#### **Oil prices**

**Oil price volatility has increased in recent years, casting further uncertainty on restructuring prospects. A negative terms of trade shock severely affect Venezuela's debt metrics in the medium term.** Below, we test how Venezuela's external debt dynamics evolve under different oil price scenarios (where oil prices differ by a constant premium compared to our baseline scenario). Our simulations indicate that external debt metrics go on an explosive path regardless of restructuring scenario with significantly lower oil prices, highlighting Venezuela's vulnerability to oil price declines. This suggests that the restructuring should be designed with built-in flexibility that would make Venezuela's external debt position less sensitive to oil price fluctuations. Oil warrants could contribute to achieving this goal. We lay out in the next section the foundations for introducing oil warrants as part of the debt restructuring.

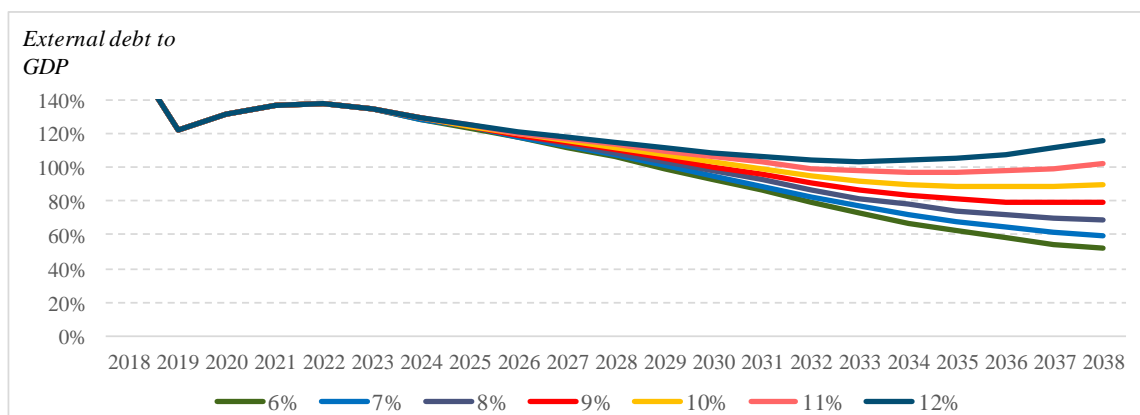
**Figure 3: External debt to GDP – Aggressive restructuring scenario – Sensitivity to oil prices**



### Market refinancing rates

**Regaining market access in the medium run at affordable interest rates will remain critical to ensure the sustainability of external debt in the long run.** We project below Venezuela's external debt dynamics under different assumptions for the country's average market refinancing rate after 2022 under the strong restructuring scenario. Our simulations illustrate how maintaining market access at affordable rates is critical for long-term solvency. This confirms the need for large upfront debt relief and financial assistance to have a credible BoP framework that catalyzes market confidence and creates the conditions for a smooth return to international capital markets.

**Figure 4: External debt to GDP – Strong restructuring scenario – Sensitivity to market refinancing rates**



### Real Exchange Rate (RER)

**In the first years of the economic recovery program, real appreciation could increase external financing needs.** Designing the optimal exchange rate system for Venezuela's economic transition is beyond the scope of our analysis. However, we note that the country's broad money (valued at the black-market exchange rate) has collapsed from US\$56.2bn in July 2012 to *approx.* US\$600m today as a result of hyperinflation. The reconstruction plan will therefore have to re-monetize the economy and re-anchor inflation expectations with a strong nominal anchor like a pegged exchange rate or a stringent monetary base target. This may expose the economy to a temporary real appreciation of the currency if inflation expectations are only gradually re-anchored. We thus relax our prior implicit assumption that Venezuela's real exchange rate does not appreciate after initial monetary reforms. We use Bussière et al. (2017)'s work on trade elasticities to test the sensitivity of the country's official funding needs over 2019-2022 to RER

appreciation. Bussière et al. (2017) use a very rich database of bilateral trade flows covering 5,000 products and 51 countries, allowing to “address important biases that arise in the context of usual trade elasticities regression, particularly relating to unobserved marginal costs and competitor prices in the import market”. Bussière et al.’s database does not cover Venezuela, so we make the following assumptions: (i) the exchange rate pass-through to export prices is zero, reflecting the fact that virtually all of Venezuela’s exports are priced in dollars, (ii) the exchange rate pass-through to import prices is approximately 0.9 (close to full pass-through) as is approximately the case for oil exporting countries such as Saudi Arabia (0.89) and Russia (0.834) or for Argentina (0.99), (iii) the elasticity of import quantity to RER variations is 0.8 in line with that of Russia (0.795) or Argentina (0.84). Based on these parameters and the trade elasticities’ equations, we assess the additional funding needs compared to our baseline scenario that would arise in case of a given annual real appreciation for each of the years 2019-2022.

**Table 5: Additional funding needs due to real appreciation**

US\$ bn	Real appreciation per annum for each year between 2019-2022					
	2.5%	5%	7.5%	10%	12.5%	15%
<b>Cumulative Additional funding needs versus baseline over 2019-2022</b>	4.0	8.3	12.7	17.4	22.4	27.7
<i>Memo: Accumulated real appreciation over four years</i>	9.6%	18.5%	26.8%	34.4%	41.4%	47.8%

\*

## Part IV. Designing and Valuing an Oil Warrant for Venezuela’s Debt Restructuring

**Value recovery instruments (VRIs) can play a key role in addressing macroeconomic uncertainty during the restructuring negotiations.** As Zettlemeier *et al.* (2013) illustrate in their account of the 2012 Greek restructuring, a successful debt restructuring requires a combination of financial and legal innovations and a carefully designed debt negotiation strategy that leverages on the political context (“official creditors pressures in the case of Greece”). Value Recovery Instruments (VRIs), which apply sovereign equity principles, are a financial innovation that has become increasingly common in debt restructurings. While governments cannot issue equity like firms, they can issue VRIs linked to GDP (like Argentina or Ukraine) or to future commodity-related revenues (most recently Mozambique), sharing upside with creditors during “good times” in exchange for higher upfront debt relief.

**Venezuela and its creditors could benefit from the issuance of VRIs linked to oil prices, i.e. oil warrants.** The country's BoP is highly sensitive to oil prices, so agreeing on future oil prices may prove difficult during restructuring negotiations. The government will likely favor conservative oil price projections to achieve greater debt relief and creditors will likely favor optimistic projections to argue for a less aggressive restructuring. VRIs can help address this tension by making the terms of the restructuring less sensitive to oil price fluctuations. We propose below a structure and a pricing formula to design and value a potential oil warrant for Venezuela's debt restructuring. Our structure builds upon the lessons of recent experiences to avoid potential shortcomings (*see Box 3 in the Appendix section for an in-depth discussion*).

**What might an oil warrant for Venezuela look like?** The warrants could be structured to provide upside to creditors if oil prices exceed the baseline projections on which the restructuring is anchored. However, the design should avoid the pitfalls of previous VRIs (e.g. Argentina and Ukraine) by placing a ceiling on payments to creditors. Following these principles, we propose the following illustrative structure. Each warrant has a face value of US\$ 100 and pays:

- Zero during the 2019-2022 period, as Venezuela's recovery takes hold;
- The difference between the observed oil price in year  $t$  and the projected baseline oil price for year  $t$  multiplied by a payment factor  $[P_i]$  for the years 2023 to 2032;
- Annual payments under the warrant are capped at  $[CAP]$  dollars.

This warrant structure is thus analogous to a set of variable coupon payments (linked to oil prices and the warrant's notional value) with no associated principal payment. There is limited consensus on how these instruments (which would be contingent public flows of payments with no principal repayment) should be accounted for in the debt stock, if at all. Note that baseline oil price projections follow in our proposed structure the IMF's Brent oil prices from the October 2018 World Economic Outlook.

**How many oil warrants should be issued?** We argue that the warrants should be issued to compensate market creditors for nominal haircuts. Following the precedent of Ukraine's recent restructuring, it is convenient to issue warrants in direct proportion to the face value haircuts accepted by market creditors. In the case of the aggressive restructuring scenario (70% nominal haircut), the notional amount of warrants issued to compensate the Republic and PDVSA's bondholders would be approximately US\$51bn.

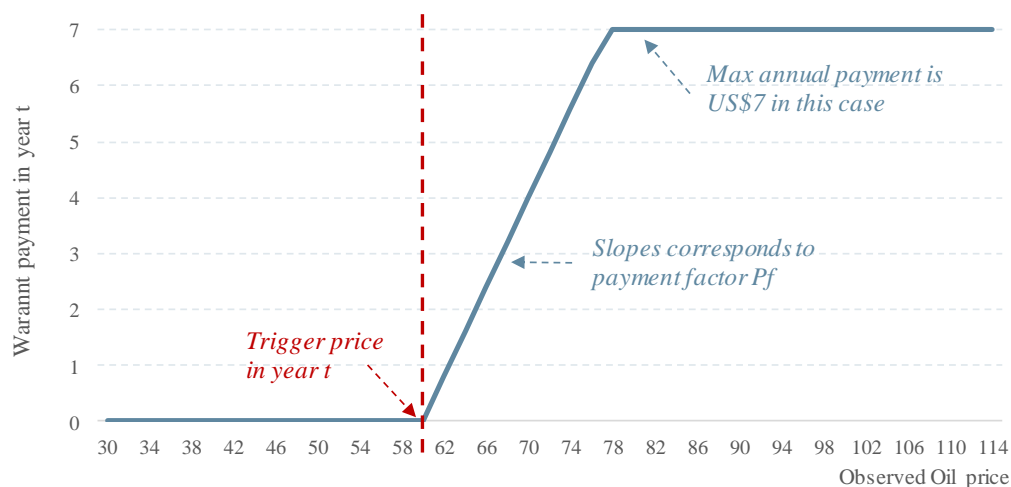
**The oil warrants should be structured such that there are strong incentives for continued payment, even with rising oil prices.** We thus propose limiting creditor upside so that rising oil prices always strongly improve the government's financial position. To do this, we first note that in our baseline scenario, a 1\$ increase in Venezuela' oil basket corresponds to a \$0.72bn increase in fiscal revenues on average during the 2023-2030 period (\$0.34bn from public production and \$0.38bn from private production). Secondly, we calculate the additional payouts to oil warrants from a 1\$ increase in oil prices above the baseline scenario (i.e. the trigger price) for different payment factors and the US\$51bn notional corresponding to the nominal haircuts in our aggressive restructuring scenario. We argue that the government must retain at least 50% of the additional government revenues from rising oil prices for the warrants to be politically sustainable, so the payment factor must be less than or equal to 0.70x (*see Table 6 below*).

**Table 6: Additional payment on oil warrants and share of government revenues**

<i>Notional: \$51bn</i>		<b>Marginal additional payment on oil warrants from 1\$ oil price increase (US\$ m)</b>	<b>% of marginal additional government revenues</b>
Payment factor	0.20x	101.4	14%
	0.40x	202.8	28%
	0.60x	304.2	42%
	0.80x	405.6	57%
	1.00x	506.9	71%
	1.20x	608.3	85%

**How might markets value Venezuela's oil warrants?** We argue that the proposed oil warrants can be valued with standard option theory. The payment schedule for a warrant with face value \$100 for a given year between 2023 and 2032 is illustrated in Figure 5. The payments for a given year are analogous to payments under a bull-spread call option with Brent crude as the underlying asset multiplied by the payment factor (Hull, 2014). A bull spread call option can be valued using the Black-Sholes formula as the difference between two European options with strike prices equal to the baseline oil price and the oil price where the maximum annual payment under the warrant is reached (60\$/bbl and 77.5/bbl respectively) as illustrated in Figure 5. Thus, the oil warrant's value is simply the value of a series of ten bull spread options (for each of the years between 2023-2032) with trigger prices corresponding to baseline oil projections and maximum prices fixed by the payment factor and maximum annual payment.



**Figure 5: Illustrative payment structure under our proposed oil warrant design**

**Under our proposed structure, the oil warrants could generate a market value of up to 10% of their notional amount at a valuation yield of 10%.** Below, we present our estimates of the value of the oil warrants for different payment factors and maximum annual payments. We use volatility data from Bloomberg and an exit yield of 10%. An oil warrant structure with a cap factor of 7\$ per 100\$ and a payment factor of 0.4x would ensure political sustainability while generating significant value for creditors. With these parameters, the payment cap is reached when oil prices exceed the trigger price by 17.5\$/bbl. Maximum annual payments under the proposed oil warrants correspond to 7% of the notional amount, or US\$3.5bn per year (based on a notional amount of US\$51bn or 70% of the face value of old bonds and arrears).

**Table 7: Valuation of oil warrants – Sensitivity analysis (for \$100 of notional)**

		Maximal annual payment (cap payment per US\$100 of notional)					
		1.5	3.0	4.5	6.0	7.5	
Exit yield: 10%							
	Payment factor	0.20x	2.0	3.5	4.5	5.2	5.7
		0.40x	2.2	4.0	5.6	6.9	8.0
		0.60x	2.2	4.2	6.0	7.6	9.1
		0.80x	2.3	4.3	6.2	8.0	9.6
		1.00x	2.2	4.4	6.3	8.3	10.0
1.20x		2.2	4.3	6.5	8.4	10.2	

**Our oil warrant structure could be improved following Levy's work.** Levy (2017) argues that the optimal structure for a VRI takes an *S-shaped* form. The payment structure should be convex at the bottom, implying in our case that the payment factor should increase as the gap between the oil price and baseline trigger price grows. Increasing the payment factor with oil prices is consistent with the fact that oil production is somewhat endogenous to oil prices. As oil prices rise, extracting heavy oil from the Orinoco Belt's is more profitable, incentivizing increased oil production and making oil warrant payments less costly for the government. There is also a strong rationale for making the oil warrant payments for high oil prices concave. Risk adverse investors enjoy limited benefit from additional upside after a certain threshold and capping investors upside makes the warrants politically sustainable. This nuanced *S-shaped* design could further immunize the country's BoP from oil price and production volatility. However, the benefits are partly undermined by less transparent market pricing and potential illiquidity concerns for investors.

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## Part V. Debt Restructuring Strategy and Policy Recommendations

Our work suggests that Venezuela needs large-scale international financial assistance and an external debt restructuring with significant debt relief. This will pose unique challenges in Venezuela's policy context.

**Venezuela will control several policy levers during debt negotiations, making the policy space complex and highly dimensional.** We have identified three main areas of the restructuring strategy that the new government will have direct control over. First, the government will set the perimeter of the debt restructuring as well as the economic framework to anchor negotiations. Second, the government will have an ability to sequence the debt restructuring and prioritize negotiations with different classes of creditors (e.g. official vs. non-official). Finally, the government will have a broad array of negotiation strategies including (i) the legal route chosen for the restructuring, (ii) the framing of the restructuring (odious debt argument), (iii) the degree of engagement with creditors and (iv) the use of diplomatic channels to pressure various classes of creditors.

**In the context of a complex political transition, the new government will face a trade-off between reaching a swift debt restructuring agreement with high creditor participation and significant debt relief.** Venezuela's next government will likely face pressure to conclude debt

negotiations and move on to other domestic priorities, even if on relatively bad terms (i.e. with a “kicking the can down the road” strategy). However, closing a deal without significant debt relief may leave Venezuela with a crippling debt overhang, setting the stage for repeated defaults and restructurings. Mozambique’s recent sovereign debt restructuring illustrates this tension. In September 2018, Mozambique sought to restructure its 2023 Notes with a 50% nominal haircut, which creditors did not accept. Needing to close a deal, Mozambique ceded a month later, announcing a deal with the creditors’ committee involving no nominal haircut and potentially no NPV haircut depending on the valuation of the Value Recovery Instruments, which packaged 5% of future government revenues associated with the development of gas fields<sup>10</sup>. Mozambique’s example highlights how the temptation for quick debt resolutions often comes at the price of a sub-optimal restructuring for both debtors and creditors.

Below we present our policy recommendations in relation to the three policy levers and, where relevant, compare our proposals to existing proposals in the literature.

## **Policy Recommendations: Strategy**

### **Scope of the restructuring**

**Recent restructuring proposals for Venezuela’s external debt focus on the legal aspects of the restructuring with a strong emphasis on bonded debt.** Buchheit and Gulati’s proposals (2017 and 2018) focus on bonded debt and on PDVSA’s IOUs but do not provide recommendations for non-market debt instruments. Richard J. Cooper et al. (2017) and Mark Walker et al. (2017) mostly focus on PDVSA. We suspect that the strong emphasis on PDVSA and market debt in ongoing restructuring discussions stems from the fact that in contrast to other debts (like the Chinese or Russian loans, for example), these debts are highly visible. Carmen Reinhart noted in a recent column that “the most remarkable feature of the new wave of Chinese sovereign credit is not its size but its dangerous lack of transparency”<sup>11</sup>.

**We therefore suggest that the Authorities immediately order an audit all government debts and publish the terms of each debt instrument.** Non-bonded debt represents more than half of

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<sup>10</sup> <https://clubofmozambique.com/news/communique-from-the-ministry-of-economy-and-finance-of-mozambique-announcing-agreement-in-principle-with-bondholders/>

<sup>11</sup> <https://www.project-syndicate.org/commentary/china-opaque-foreign-development-loans-by-carmen-reinhart-2018-10?barrier=accesspaylog>

the current external debt stock, and our simulations indicate that limiting the restructuring to bonded debt is insufficient to make Venezuela's external debt sustainable. Publishing the terms of China, Russia and PDVSA's IOUs will broaden the scope of restructuring discussions and help bring more non-bond debt into the negotiations. In addition, the heterogeneity of Venezuelan's debtors (the Republic, PDVSA, BNDES for Chinese funds) may create coordination failures as each debtor may have conflicting objectives. Thus, we believe that appointing a national debt committee to oversee a national audit of the debt and to orchestrate the restructuring negotiations addresses potential coordination failures.

**Recommendation:** Order an audit the national debt and appoint a national debt committee to define the scope of the restructuring. The scope of the restructuring should be made as wide as possible.

**The trade-off between imports and debt service will lie at the core of restructuring negotiations.** Maduro's administration went to great lengths to prioritize debt service over imports, leading to an unprecedented import contraction and economic collapse. Given this history, creditors may challenge the new government's imports projections, arguing that the economy does not need such high imports to sustain growth. The new government's strategy should be two-fold. Firstly, to defend the import path with technical arguments based on historical import/GDP ratios. More importantly, the government should sanctify the growth and import path on moral grounds. It should argue that Venezuela needs foreign currency for imports to reconstruct the country and that debt service is secondary to that objective.

**Recommendation:** Sanctify the economic reconstruction path to ensure that there is no trade-off between imports and debt service during the debt negotiations. Leverage the IMF to ensure that a minimal share of the financial assistance package is directed towards debt repayments and that precautionary debt burden thresholds are used to run the country's Debt Sustainability Analysis in line with the country's poor institutional strength.

### **Sequencing of the debt restructuring**

**The new government will likely face pressure to enter discussions with bondholders early on.** Bond prices have strongly rebounded since recognition of Juan Guaidó as interim president by the international community, suggesting market optimism towards potential negotiations. However, negotiating with other creditors such as China before bondholders could set a precedent that could then impose large haircuts on other creditors (by indirectly referring to the comparability of

treatment principle of the Paris Club) while inducing a sense of fair burden sharing by sending the message that market creditors are not the only ones “contributing”.

**Recommendation:** Resist pressures to enter restructuring talks with market creditors before the government can initiate restructuring talks with Russia and China.

**Public opinion can be an important determinant of restructuring dynamics and outcomes, so it will be important for the government to carefully manage public opinion and have a strong, consistent narrative.** The perceived fairness of large face value reductions in debt may be importantly influenced by public opinion on (1) the legitimacy of the debts, (2) the stated and actual use of funds raised by past issuances, (3) perceived burden sharing between Venezuela and its creditors, (4) the size of Venezuela’s debt burden, (5) its capacity to pay, (6) the trade-off between creditor payoffs and the welfare of Venezuela’s citizens. Therefore, it is critical that Venezuela’s government and its allies in the restructuring (the IMF) publish all relevant data and facts along with a coherent narrative surrounding the need and importance of debt relief.

**Recommendation:** Manage public opinion regarding the restructuring. Assign a team to write talking points and speeches for politicians, Op-Eds, factsheets, organize mobilizations and protests, etc., to stay on top of the public narrative.

### **Negotiation strategy.**

**Recourse to odious or illegitimate debt arguments may not be strategic for private market debt.** Except for Ecuador’s case, illegitimate debt arguments have had unintended consequences and have been abandoned. Interestingly, Ecuador illustrates how illegitimate debt arguments may achieve debt relief if the debtor has strong bargaining power *vis-a-vis* its private creditors (i.e. no immediate liquidity or solvency crisis). These conditions do not apply in Venezuela, however, where a large reduction in market debt is necessary to restore the country’s external solvency. Arguing market debt is illegitimate may antagonize bondholders, stall debt negotiations and complicate a successful return to capital markets.

**Invoking odious debt arguments for Chinese and Russian loans could result in significant debt relief but could also interfere with IMF assistance and close the door to new Chinese and Russian lending.** The IMF’s lending into arrears policy, which protects IMF shareholders by ensuring loans can be recovered and has been recently modified, prohibits lending to countries (i) that are in arrears *vis-a-vis* official creditors and (ii) for which the debt is not sustainable with a

high probability. As Congo's recent case illustrates, IMF assistance is conditional on the country's ability to "restructure its debt to restore debt sustainability and ensure full program financing." But Congo's external debt is mostly owned by Chinese entities, so European IMF shareholders have opposed IMF support to Congo before necessary steps are taken to restructure the debt owed to Chinese lenders. Venezuela's restructuring will likely echo Congo's case and exacerbate tensions between the US, China and Russia. In this context, an aggressive strategy towards China and Russia involving recourse to illegitimate debt arguments could yield large debt cancellations but also jeopardize rapid disbursement of IMF funds. In addition, the government may prefer to leverage China's willingness to extend its long-term presence Venezuela's energy sector to obtain additional fresh money to be used to accelerate the recovery of oil production.

**Recommendation:** Russian and/or Chinese debt should only be designated illegitimate/odious if Venezuela can ensure that such actions do not jeopardize an agreement with the IMF. On the contrary, a rapid arrangement with the IMF may critically depend on an expedited agreement with China and Russia to restructure their loans and obtain financing commitments. Additionally, the new government may choose an alternative route preserving China as a strategic partner and obtain additional financing to accelerate the recovery of the Venezuelan oil industry.

**The government should seek out proactive negotiations with market creditors, but not at the cost of a timely restructuring that delivers significant debt relief.** The new government's first priority should be to create a legal framework that protects Venezuela from asset seizures, which if left unchecked, could derail restructuring negotiations and compromise Venezuela's recovery. We are not legal experts to decide whether Walker and Cooper's "Public Sector Revitalization Law" and use of chapter 15 of the US bankruptcy code would provide Venezuela with enough protection or if a more ambitious approach in line with Buchheit and Gulati's (2018) proposal is preferable. In any case, protecting the country from asset seizures is crucial. The government's second priority should be to define the level of creditors' engagement in the negotiations. We recognize the merits of Walker's argument that "depriving creditors of the bargaining power available to them at law can only neuter their ability to negotiate freely a consensual resolution of their claims" and that such an approach may hamper Venezuela's ability to attract large private capital inflows. Still, historical examples show that the best route to a successful return to capital markets involves a restructuring that truly restores the country's solvency. As such, we would argue that the legal restructuring framework should be strong enough to ensure that significant

debt relief can be achieved and provides flexibility to have recourse to legal innovation such as the use of exit consent clauses as proposed by Buchheit and Gulati (2017).

**Recommendation:** Venezuela's legal restructuring framework should prioritize protection from asset seizures. The framework should aim to obtain an agreement on a consensual basis with creditors but remain flexible enough to ensure that significant debt relief is achieved in a timely and efficient manner (by remaining open to the use of coercive legal tools to bind holdouts).

**Oil projections will raise tensions between Venezuela and its creditors.** Venezuela's projected balance of payments is highly sensitive to oil prices and oil production, creating uncertainties on the country's external financing needs in the medium-term. The government should absolutely avoid a scenario in which high oil prices during debt restructuring negotiations lead to limited debt relief. If oil prices then decline, Venezuela could face accentuated BoP pressures and could be forced into a new restructuring after a few months/years, jeopardizing the recovery. To manage this uncertainty, we argue that oil warrants should be a critical component of the negotiation to compensate for high nominal and market haircuts if oil prices rise. Our proposed oil warrant structure would ensure that the government would share the upside of higher oil prices and production with creditors while limiting creditors' upside to a reasonable level.

**Recommendation:** Make Value Recovery Instruments (oil warrants) a central instrument to the debt restructuring strategy to manage oil price uncertainty and avoid repeated balance of payment pressures in case of lower oil prices.

### **Policy Recommendations: Timeline**

**The timeline for Venezuela's debt restructuring remains highly uncertain at this stage. We attempt to present an illustrative timeframe** in page 41 that takes into consideration our proposed policy recommendations and sequence them in a strategic way. In particular, we argue that reaching an agreement with official creditors, obtaining large financial assistance from the IMF and other official lenders and ringfencing Venezuela assets should be an absolute priority.

### **Policy Recommendations: Administrative Organization**

**Thankfully, debt restructuring demands little state capability, as traditionally conceived, and limited policy bandwidth.** Building on the work of Andrews et al. (2017) to classify government interventions, we identify that debt restructuring is (i) not transaction intensive, (ii) largely based on a known, (iii) not an implementation intensive service delivery and (v) includes



virtually no local discretion. A small number of highly skilled individuals is required to carry out the debt negotiations. The typology of government intervention suggests that the administrative feasibility dimension of our problem is unlikely to be binding constraint on our policy space. However, there may still be some coordination problems.

**Given the complexity of the restructuring, coordination between the various external and internal government teams is key. The national debt committee should align interests among domestic stakeholders.** This committee would appoint and oversee a task force composed of representatives from PDVSA, the Finance Ministry, BANDES, and the Central Bank, as well as the financial advisor(s), legal advisor(s), and PR advisor(s). The task force would ensure centralize messaging, carry-out the negotiations with creditors and liaise with the IMF. The debt restructuring plan will have to be endorsed and validated by the national debt committee.

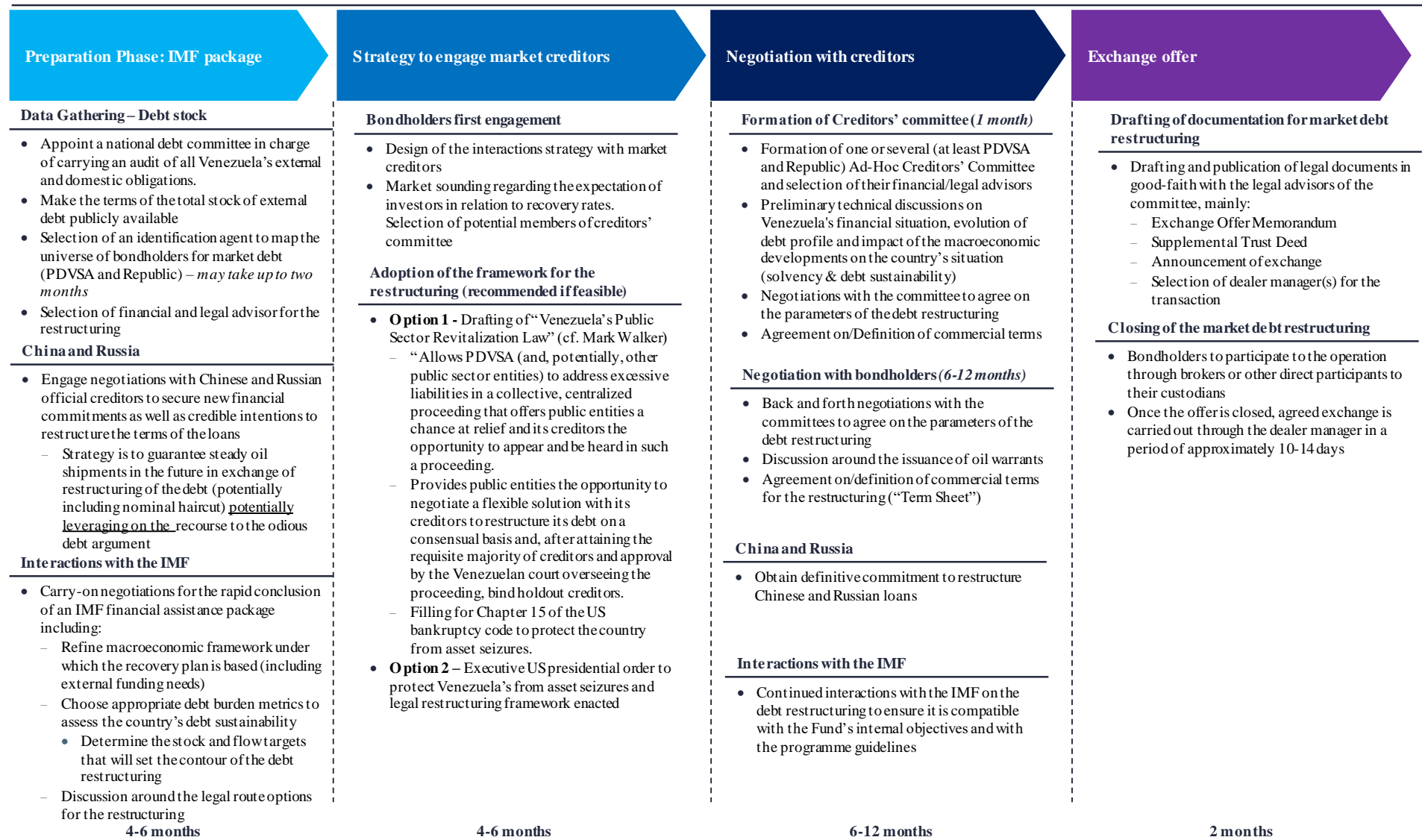
**Recommendation:** The national debt committee should appoint and oversee a task force with key representatives (MoF, PDVSA, CB, BANDES, financial, legal, and PR advisors) in charge of the debt restructuring negotiations.

## Conclusion

Venezuela's debt restructuring will play a central part in the country's economic recovery and reconstruction. It will also constitute one of the most complex sovereign restructurings in history given the unusual complexity of private creditors and debt instruments, the risks of asset seizure through the US legal system and the presence of a large official creditor, China, which is not a member of the Paris Club. In this SYPA, we have laid out the foundations of an economic framework for Venezuela's debt restructuring. Our extensive modeling work and our analysis of the existing literature on sovereign debt restructuring have led us to conclude that Venezuela needs sizeable international financial assistance and significant debt relief involving large face value haircuts. We have also presented a consistent set of policy recommendations (*see page 42*) that takes into consideration the political, legal and administrative challenges that the new government of Venezuela will be facing in the upcoming future.

\*

## VENEZUELA'S DEBT RESTUCTURING: ILLUSTRATIVE TIMELINE



## SUMMARY OF POLICY RECOMMENDATIONS

Recommended policy option	Alternative policy option (if any)	Who would support and who would oppose recommended policy? What are the main risks?
<ul style="list-style-type: none"> <li><b>R1.</b> Order a national debt audit and appoint a national debt committee in charge of defining the scope of the restructuring.</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>	<ul style="list-style-type: none"> <li>Support: IMF, domestic stakeholders, western countries</li> <li>Oppose: China and Russia               <ul style="list-style-type: none"> <li>Confidentiality of lending terms is a key strategic policy for those lenders</li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li><b>R2.</b> Sanctify the economic reconstruction path to ensure that there is no trade-off between imports and debt service during the debt negotiations. Leverage the IMF to ensure that a minimal share of the financial assistance package is directed towards debt repayments and that precautionary debt burden thresholds are used to run the country's Debt Sustainability Analysis in line with the country's poor institutional strength.</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>	<ul style="list-style-type: none"> <li>Risk: Reference to the LIC's DSA framework should not conflict with Venezuela's request to obtain exceptional access for its IMF financial assistance program.</li> <li>Oppose: Creditors may argue that the path of economic recovery is arbitrary</li> </ul>
<ul style="list-style-type: none"> <li><b>R3.</b> Resist pressures to enter restructuring talks with market creditors before the government can initiate restructuring talks with Russia and China.</li> </ul>	<ul style="list-style-type: none"> <li>Initiate talks with market creditors as early as possible</li> </ul>	<ul style="list-style-type: none"> <li>Oppose: Members of new coalition governments may have an interest in engaging negotiations with bondholders early on</li> </ul>
<ul style="list-style-type: none"> <li><b>R4.</b> Manage public opinion regarding the restructuring. Assign a team to write talking points for politicians, speeches, Op-Eds, factsheets, organize mobilizations and protests, etc., to stay on top of the public narrative.</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>
<ul style="list-style-type: none"> <li><b>R5.</b> The recourse to the illegitimate/odious may be used in the case of Venezuela only if Venezuela can ensure that it does not jeopardize its ability to reach an agreement with the IMF as soon as possible. Reaching a rapid agreement with China and Russia to restructure their loans and obtain financing commitments may prove to be a critical step to ensure the rapid conclusion of a financial arrangement with the IMF. Additionally, the new government may choose an alternative route preserving China as a strategic partner and obtain additional financing to accelerate the recovery of the Venezuelan oil industry.</li> </ul>	<ul style="list-style-type: none"> <li>Adopt an aggressive stance towards Russia and China by coining specific loans as odious or illegitimate</li> </ul>	<ul style="list-style-type: none"> <li>Oppose: Domestic political dynamics could result in an aggressive stance towards China and Russia.</li> <li>Risk: Negotiation with China and Russia may not result in significant and sufficient debt relief and renewed cooperation with China could do more harm than good to the oil industry.</li> </ul>
<ul style="list-style-type: none"> <li><b>R6.</b> The creation of a legal restructuring framework should in priority protect Venezuela's from asset seizures. The framework should aim at obtaining an agreement on a consensual basis with creditors but remain flexible enough to ensure that significant debt relief can be achieved in a timely and efficient manner (potential use of coercive legal tools).</li> </ul>	<ul style="list-style-type: none"> <li>Adopt a voluntary based approach to carry negotiations with market creditors</li> </ul>	<ul style="list-style-type: none"> <li>Risk: Market creditors' discontent in case of recourse to coercive tools in the restructuring could result in legal actions (from holdouts) that could deprive the country from market access for years (cf. Argentina).</li> <li>Risk: The legal framework should be made "bullet-proof" to ensure full protection against asset seizures</li> </ul>
<ul style="list-style-type: none"> <li><b>R7.</b> Make Value Recovery Instruments (oil warrants) a central instrument to the debt restructuring strategy to manage oil price uncertainty and avoid repeated balance of payment pressures in case of lower oil prices.</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>	<ul style="list-style-type: none"> <li>Risk: Oil warrants could be mispriced by the market given their unconventional nature.</li> <li>Risk: Political economy risk of issuing warrants in a context of high oil prices during the negotiations.</li> </ul>
<ul style="list-style-type: none"> <li><b>R8.</b> The national debt committee should appoint and oversee a task force with key representatives (MoF, PDVSA, CB, BANDES, financial, legal, and PR advisors) in charge of the debt restructuring negotiations.</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>	<ul style="list-style-type: none"> <li>N/R</li> </ul>

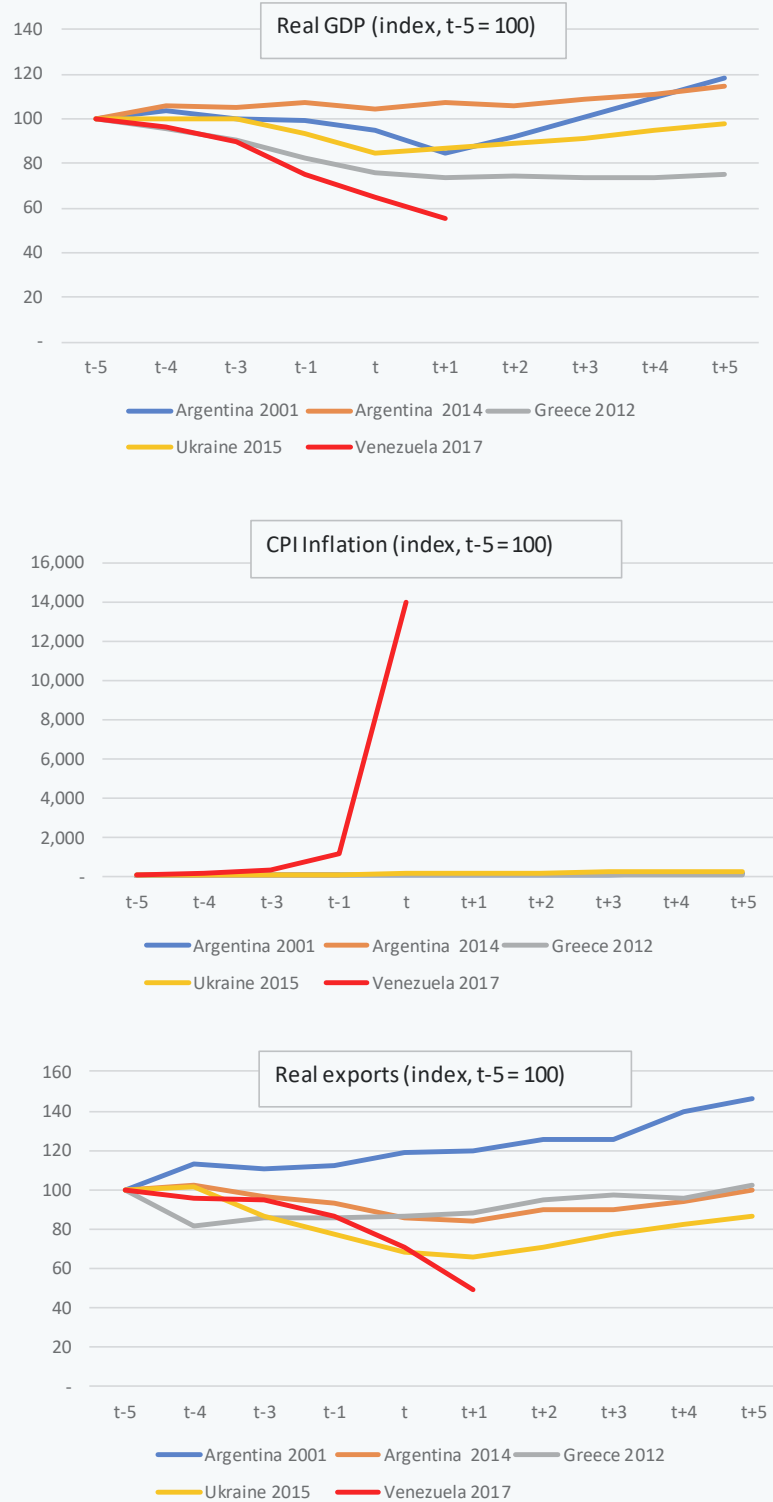
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### Box 1: Economic Conditions Prior to Default for Selected Large Recent Defaulters

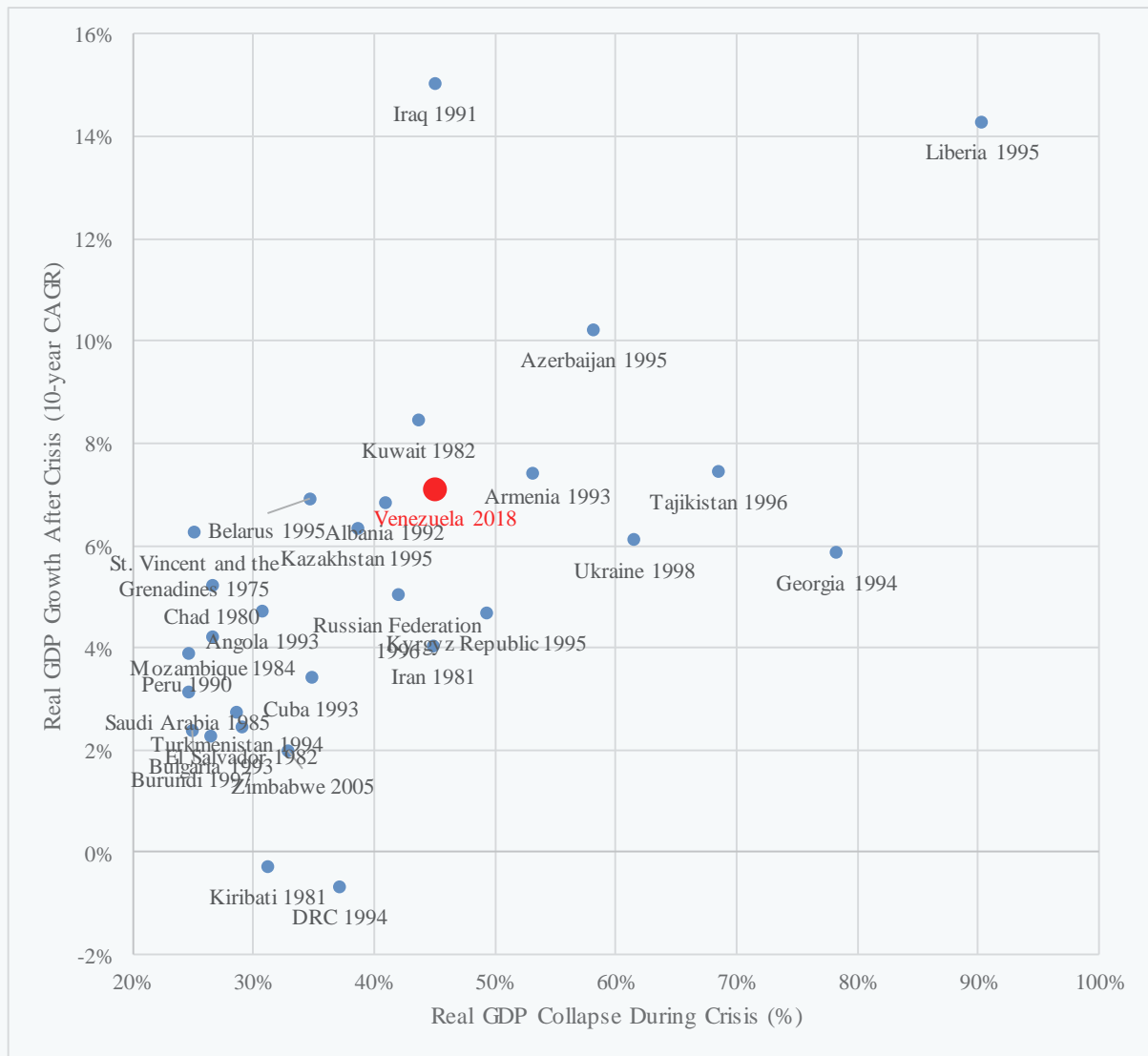
*Default happens in year t*



Source: IMF World Economic Outlook

## Box 2. Economic Recoveries after Large Economic Collapses – Historical Evidence

### Economic recovery post large economic collapse – historical evidence



Source: Authors based on World Development Indicators (World Bank), Miguel Santos and Douglas Barrios (2017).  
 Note: The red dot labeled “Venezuela 2018” indicates what our implied assumption for 10-year compound annual growth is. At an average annual growth rate of 7%, Venezuela’s real GDP doubles in 10 years. The scatterplot only includes data for GDP collapses over 25%.



### Box 3: Key Lessons from Recent Experiences in Issuing VRIs

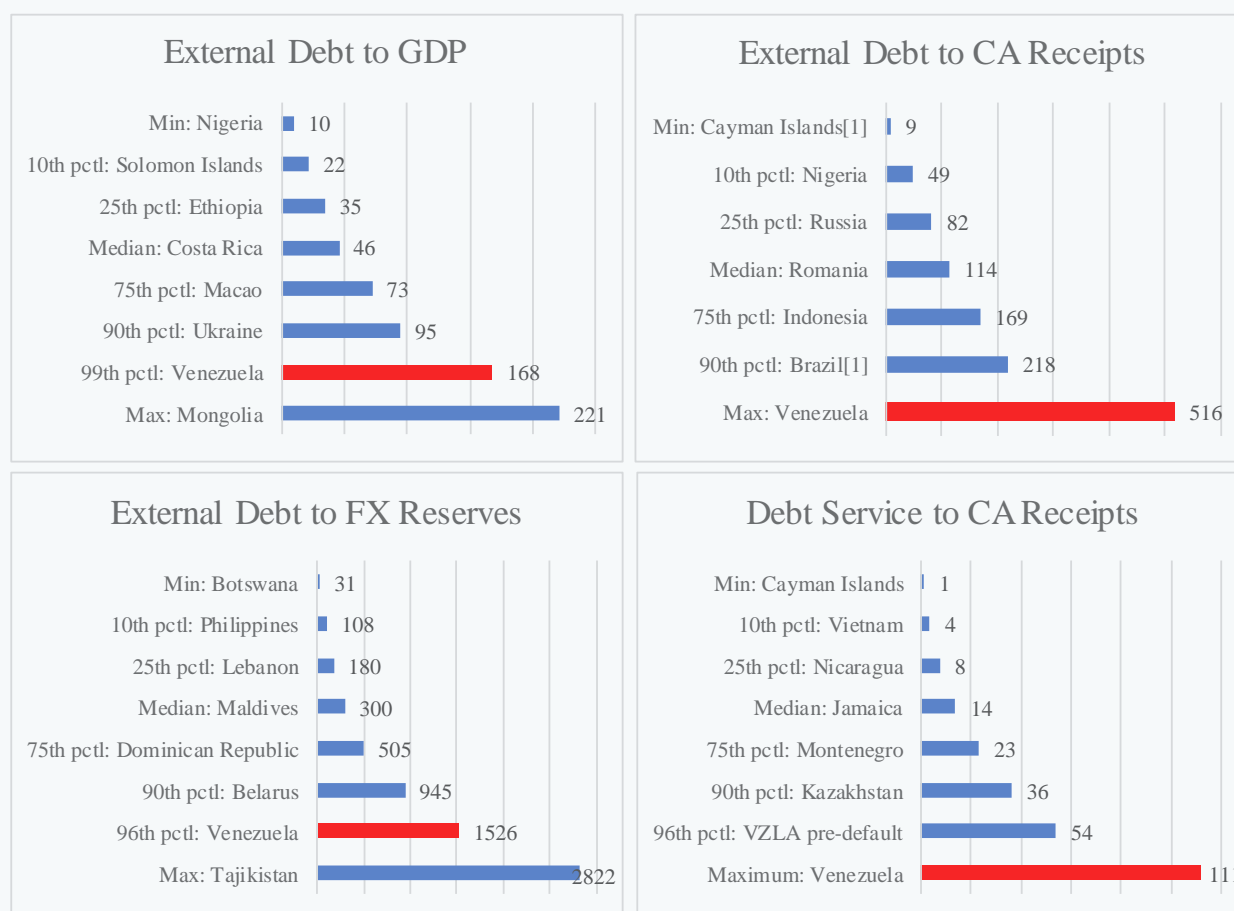
The IMF highlights key considerations from recent experience in issuing state-contingent instruments or VRIs (*IMF. State-contingent debt instruments for sovereigns. March 2017*):

- The state variable chosen should be closely tied to the repayment capacity of the sovereign, while also being readily available and well-understood by investors. For example, Grenada was able to introduce its 'hurricane clause' because of the clear effect of hurricane damage on fiscal capacity and because there was a credible quantitative metric to determine when the clause should be triggered.
  - ⇒ ***Proposed design:*** oil prices are clearly directly tied to Venezuela's repayment capacity.
- Indexation lags, and links to highly persistent state variables are problematic. Upside payments are likely to be more politically unpopular when they occur well after the event that triggered their payout, while indexation lags can erode the countercyclical properties of a VRI. For example, with Argentina's GDP warrants the link to the level of GDP necessitated ongoing payments for growth in the early years after issuance, which proved politically very difficult, and the indexation lag led to high payments even in years when the economy was in recession.
  - ⇒ ***Proposed design:*** oil prices are observable on a daily basis with no lag limiting risks of desynchronized lagged payments in the oil warrants structure. We note that despite our capped annual payment, our design does not directly address the persistent nature of the state variable (i.e. oil). Indexing the oil warrants to Venezuela's oil production could make more economic sense but would come at the expense of greater observability and limited risk of data manipulation/lags;
- Complexity has brought costs in terms of volatile pricing, low liquidity, and high premia. Some instruments have experienced volatile pricing, in part because of their non-linear payment structures. Market participants do not seem to have converged on a single method for valuation and have tended to rely on very simple pricing mechanisms, perhaps because of the relative rarity and tailored nature of such instruments. Low liquidity has also deterred investors from developing pricing models, particularly when they have been "out of the money."
  - ⇒ ***Proposed design:*** our proposed structure is equivalent to a bull spread option on oil prices for which a liquid market already exists.
- Governments undergoing a restructuring can place a high discount factor on future payments. Faced with a debt crisis, a government's most immediate concern tends to be concluding an orderly restructuring quickly, securing the requisite debt relief. As such, sovereigns may be more focused on the current payment schedule than investors, who may put more weight on future payments promised in an upside instrument, or the uncertainty around these. In some cases, this has resulted in instruments offering relatively generous payments in the event of an upside scenario.
  - ⇒ ***Proposed design:*** our parameters are calibrated to ensure political supportability (payment factor ensuring a fair share of the upside) while the cap payment ensures that the warrants are not too generous in an upside scenario. Besides, our design does not provide any payments in the first years of the recovery to ensure political sustainability

## Box 4: Venezuela's Current External Debt Metrics

For all relevant stock and flow debt metrics, Venezuela's is far on the right tail of the distribution for developing countries. To benchmark Venezuela against emerging market peers, we used Moody's Statistical Handbook for Country Credit, which features national accounts and debt data for 101 developing countries. We replaced Moody's estimates for Venezuela with our own, which do not differ significantly except on foreign exchange reserves statistics. Venezuela looks extremely over-indebted in every relevant ratio. For instance, Venezuela has an external debt to current account receipts ratio of 516%, the highest in the dataset, and significantly higher than that of Argentina (405%, 2<sup>nd</sup> worst) and Mongolia (338%, 3<sup>rd</sup> worst). Similarly, Venezuela has an external debt-to-GDP ratio of 168%, the second highest in the dataset, more than three times the developing country average of 46%. Venezuela also has the fourth highest external debt to foreign exchange reserves, after Tajikistan, Ecuador and Bahrain. Lastly, Venezuela has the worst measure of debt service to current account receipts, with a ratio of 111%, since arrears on defaulted debt count as current debt service. Even before defaulting, external debt service stood at a remarkable 54% of current account receipts, which is on the 96<sup>th</sup> percentile for developing countries.

### Overview of Venezuela's external debt metrics (%)



Source: Authors based on Moody's statistical handbook (2018)

## Appendix 1: Venezuela's Recovery Plan and Debt Restructuring: A Salter Swann Approach

**Our theoretical understanding of Venezuela's macroeconomic crisis and the contours of our recovery plan are grounded in a modified Salter Swann framework.** The classic version of this framework captures a country's distance to internal and external balance in a 2-dimensional space with the real exchange rate on the y-axis (up is a depreciation) and aggregate demand on the x-axis. Typically, a schedule of points of internal balance denoted NN captures the negative relationship between aggregate demand and the real exchange rate. The NN schedule indicates that to restore internal balance and prevent overheating after an increase in aggregate demand, a real appreciation of the exchange rate is required. Analogously, a schedule of points of external balance denoted BB captures the positive association between aggregate demand and the real exchange rate. The BB schedule indicates that to prevent an external deficit after an increase in internal demand, a real depreciation to reduce exports and grow imports is required.

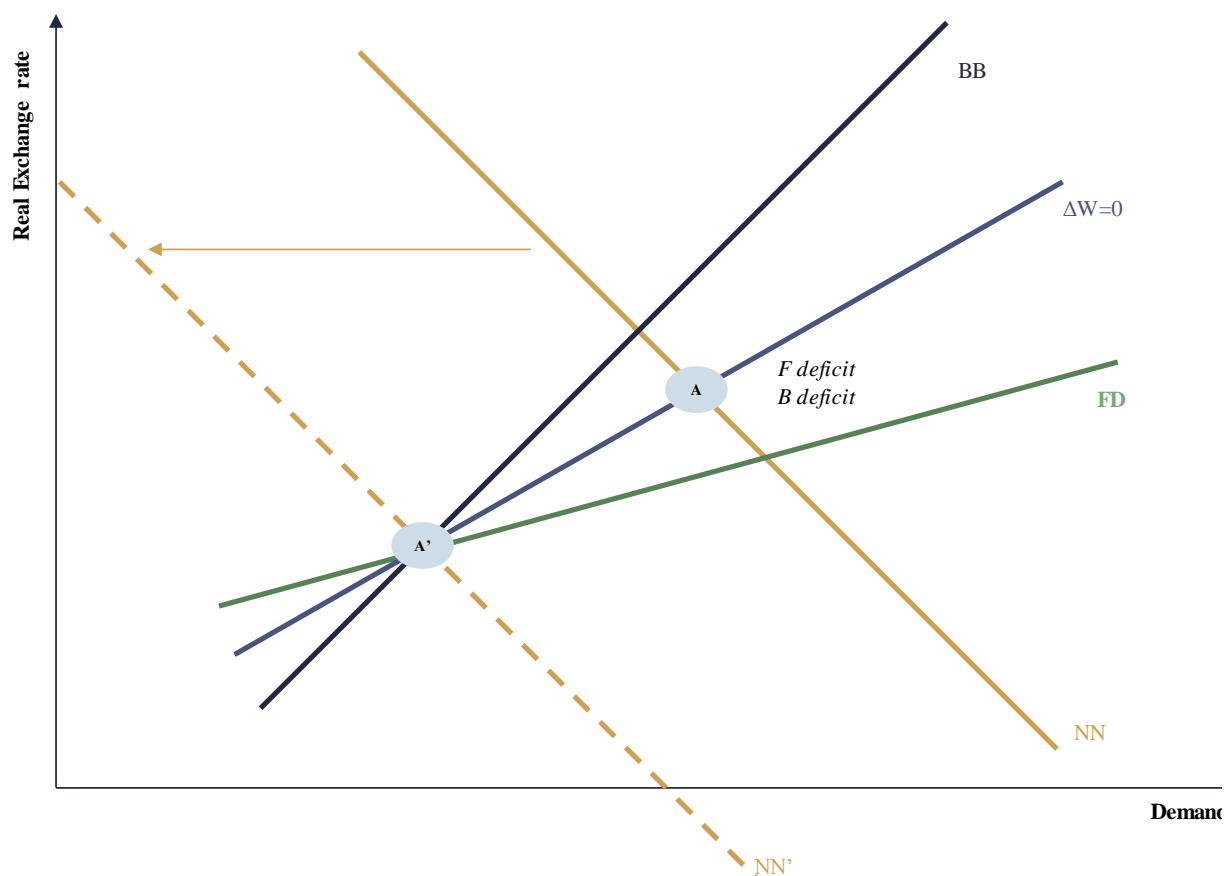
**We modify this framework adding a schedule of points of fiscal balance.** Following R. Haussmann (2018), we introduce a fiscal balance schedule denoted FD. Unlike the BB and NN schedule, the slope of the FD schedule depends on the structure revenues and expenditures associated to tradables and non-tradables in the government's fiscal accounts. For example, before the debt default of 2017, the Venezuelan government's receipts from the oil sector were lower than the sum of hard currency debt repayments and public imports. As such, the FD schedule was upward sloping, indicating that devaluations *worsened* the fiscal deficit. With upward sloping FD schedules, increased aggregate demand is associated with greater non-tradable tax revenues and an improvement in the fiscal balance. To offset such an improvement in the fiscal balance, a real depreciation of the currency would be required.

**We make some additional assumptions in our modified Salter Swann framework.** Crucially, we assume that the Ricardian equivalence is not satisfied in Venezuela. That is, we assume that increased taxation does not crowd out private spending on expectations of higher future taxation. This assumption is plausible given that Venezuela's political system hasn't internalized the budget constraint or the trade-off between current and future consumption. Further, we believe that the political norm in Venezuela, whereby oil belongs to "the people" and government provides for the public need, strongly supports this assumption. In the modified Salter Swann framework, a violation of Ricardian equivalence means that private wealth, denoted W, increases when the fiscal deficit widens or when the current account is in surplus (net acquisition of claims vis-a-vis the rest of the world). More specifically, an increase in the fiscal deficit is not compensated by a reduction in private spending, hence resulting in higher aggregate demand. As a result, the economy will tend to converge to the intersection between the internal balance and a point where  $\Delta W=0$  (as opposed to external balance).

**Venezuela's economy is currently in an unsustainable position, as illustrated in Figure A1.1 below.** The economy is currently at point A with both a fiscal and external deficit. But Venezuela can no longer sustain a twin deficit without capital market access, so the economy is gradually converging to point A' through a large economic contraction and real exchange rate appreciation.

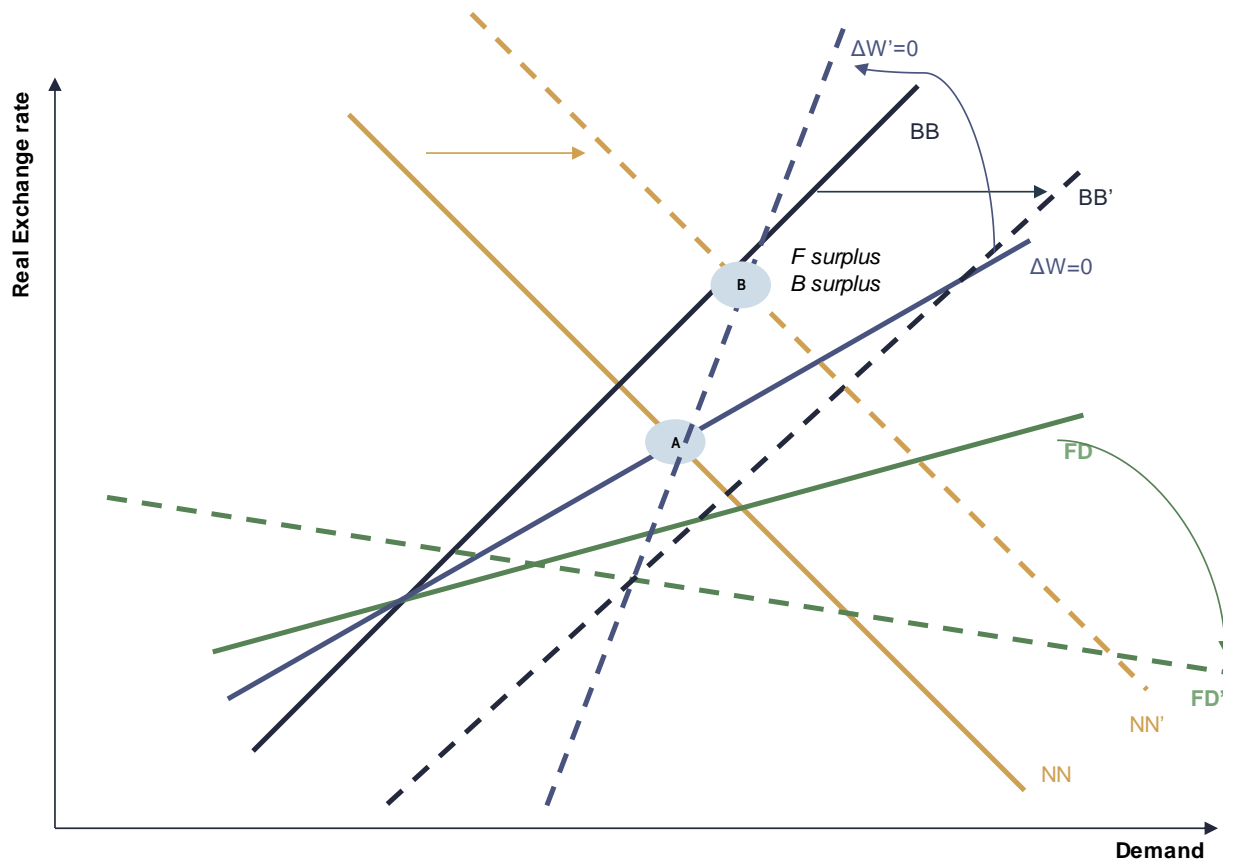
Meanwhile, the fiscal deficit is being monetized to the point that hyperinflation has made the fiscal deficit irrelevant in real terms.

**Figure A1.1: Salter-Swann: The current situation of Venezuela and the economic collapse**



**Debt restructuring is a crucial component of the external sector recovery plan, as illustrated in Figure A1.2 below.** An economic recovery plan will entail (i) a recovery in output through the reconstruction of production structures in the country (right shift in the NN curve), (ii) a recovery in oil output shifting the BB curve out and pivoting of the FD curve by increasing foreign currency government receipts, (iii) the end of deficit monetization and hyperinflation. Specifically, a debt restructuring would allow the FD schedule to further pivot and the BB schedule to shift out by reducing foreign currency government payments and potentially allowing for new capital inflows. As the result of the movement of the FD and BB schedule, the  $\Delta W=0$  curve would pivot left. The recovery plan would aim at bringing the economy back to point B, a situation of fiscal and external surpluses, allowing for FX reserves accumulation. However, the transitory regime will require financial assistance to cover for fiscal and external financing needs that will result from economic reconstruction. Our model illustrates how the debt restructuring and upfront financial assistance will be two critical aspects of Venezuela's path to reconstruction.

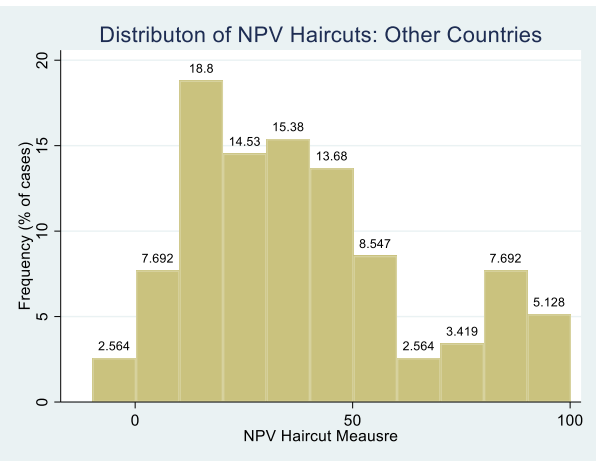
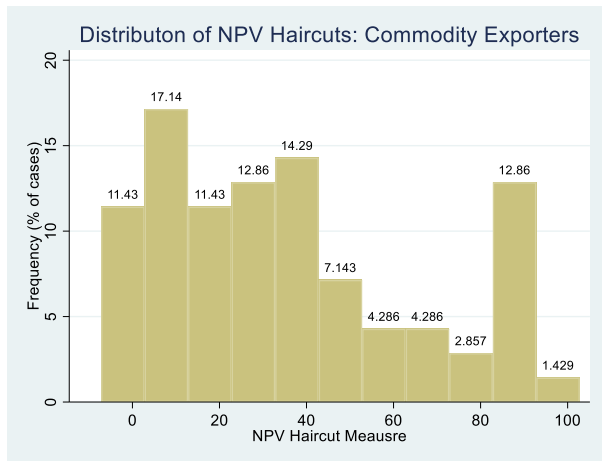
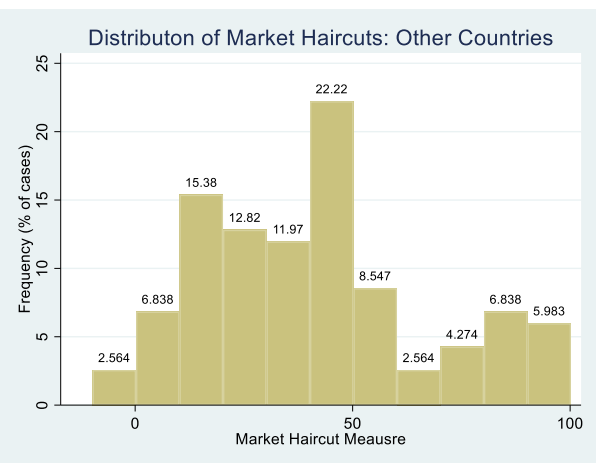
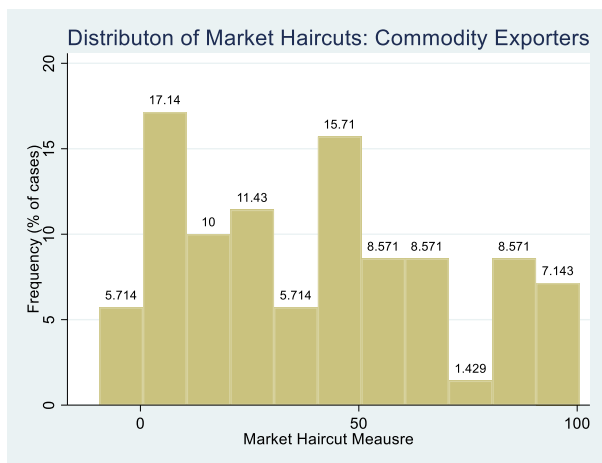
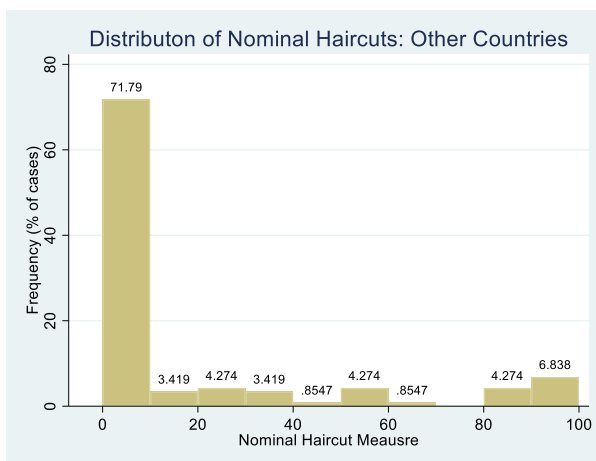
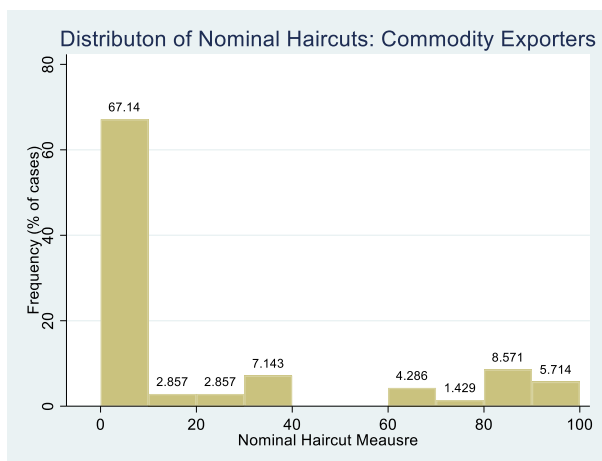
Figure A1.2: Salter-Swann: A path to economic recovery



## Appendix 2: Historical Distribution of NPV, Market and Face Value Haircuts

**Market Haircut:** *The Market haircut compares the face value of the old debt to the present value of the new debt (using the exit yield).*

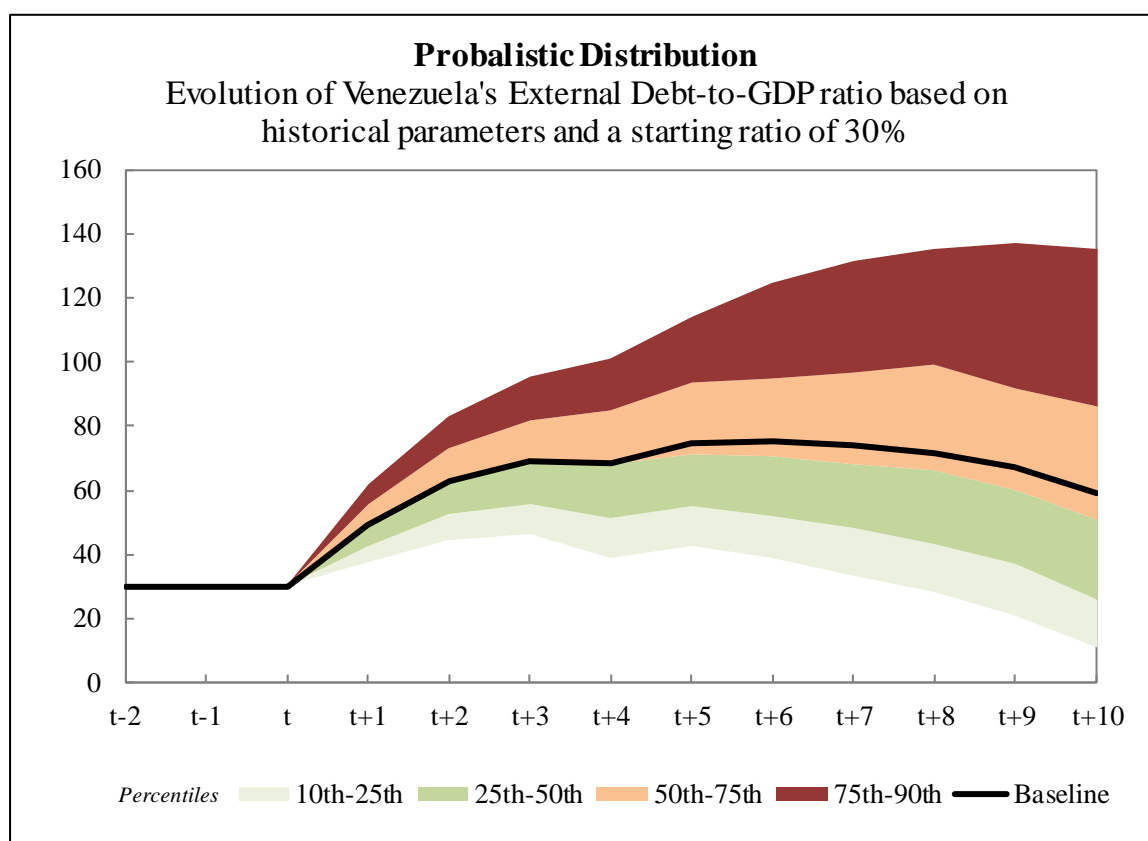
**NPV Haircut:** *The NPV haircut compares the present value of the old debt to the present value of the new debt (using the same exit yield).*



Source: Authors' computations based on Cruces and Trebesch's database (2013).

### Appendix 3: Monte Carlo Simulations for Venezuela's Debt: a Probabilistic Exercise

Venezuela's historical parameters suggest the country's external debt trajectory will remain highly volatile. External debt dynamics are driven by four key parameters: the basic balance (current account – FDI), the average real interest rate on external debt (nominal interest rate minus the US\$-based domestic GDP deflator), real economic growth and the real effective exchange rate through the share of external debt denominated in local currency. Based on historical parameters, we estimate the mean and the covariance 4\*4 matrix of these four variables. Using a Choleski decomposition, we simulate 6,000 draws (1,000 draws per year) to build a joint normal distribution centered on the mean of each of the four driving macroeconomic parameters (Monte Carlo technique) and compute the probabilistic external debt to GDP trajectory going forward based on baseline assumptions (see part III for baseline assumptions). Finally, we build Venezuela's probabilistic external debt trajectory for different initial external debt to GDP ratios to inform how Venezuela's external debt to GDP could evolve after the debt has been restructured. These simulations suggest that the variance of Venezuela's external debt trajectory remains extremely high even in the case where its initial debt to GDP ratio is reduced from over 160% today to a safe level of 30%. In particular, even with this starting point, the probability that Venezuela's external debt to GDP exceeds 100% of GDP over the next 10 years exceeds 25% and the probability that debt to GDP exceeds 140% is 10%.

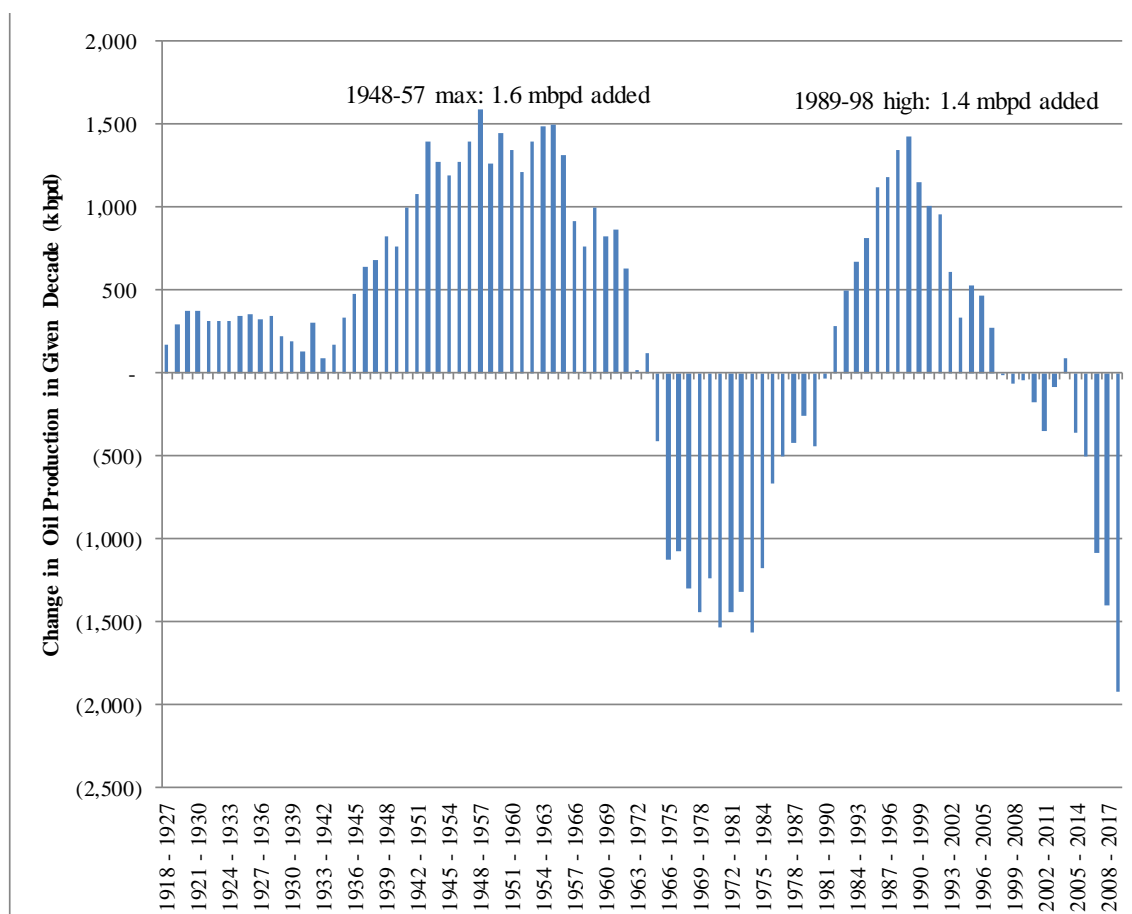


*Source: Authors' computations. Monte Carlo estimations (10,000 draws)*



## Appendix 4: Historical change in Venezuela's Oil Production by Decade

Figure A4.1 Historical change in oil production by decade

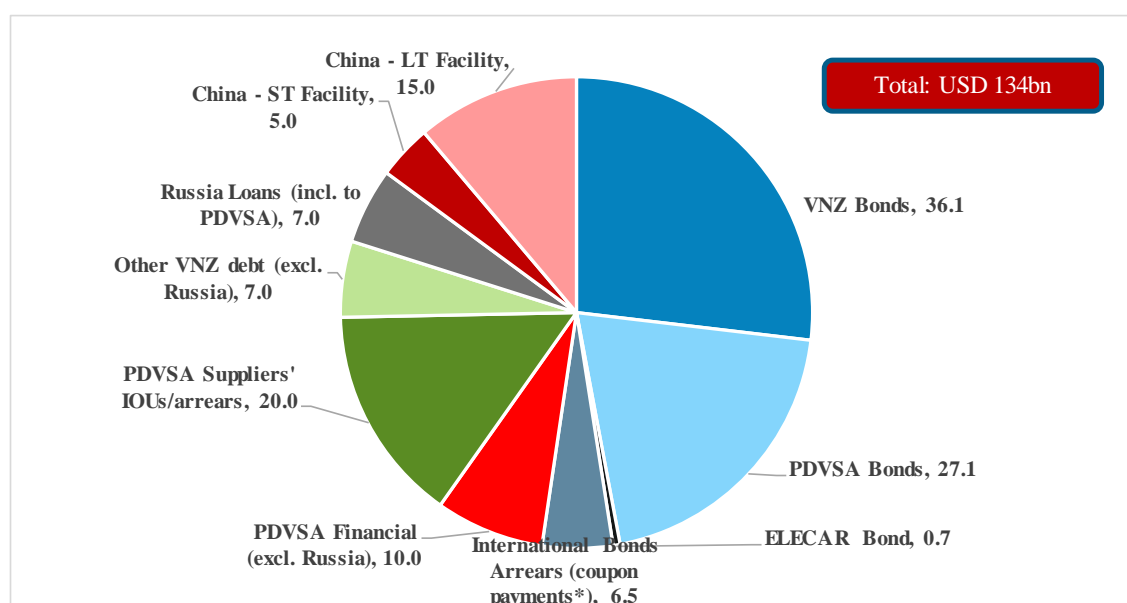


Source: Oil and Mining Ministry, PDVSA, Miguel Santos and Douglas Barrios (2017). Authors' update

## Appendix 5: Venezuela's detailed external debt structure

We estimate that Venezuela's external debt stock currently stands at around US\$134bn, excluding ICSID claims (Figure A5.1). Bonded debt represents approximately US\$ 70bn. PDVSA financial and suppliers' debt accounts for US\$ 30bn. Bilateral and multilateral debt outside China and Russia represents approximately US\$ 7bn. Finally, the outstanding stock of Chinese and Russian Funds is around US\$27bn. We do not include ICSID claims, given that they are contingent liabilities for which the terms are not set but we include ICSID payments of US\$6bn in our BoP projections. We have also not accounted for international companies' claims on Venezuela's exchange rate central system (backlog of dividends to be repatriated). Our debt estimate is consistent with several estimates available in the financial press of a debt stock of around US\$130-140bn<sup>12</sup>. Private external debt is low and not included in our debt stock.

**Figure A5.1: Venezuela's external public debt stock – US\$ bn (estimation)**



Source: Authors' computations. \*Bonds principal in default are included in the stock

**Up to US\$30bn or 22% of the external public debt stock could be scrutinized and qualified as “odious” debt.** This notably includes US\$20bn in Chinese loans, approximately US\$7bn in Russian loans and US\$3bn in “hunger bonds” (*see our recommendation regarding the instauration of a national debt committee in part V*).

**The Venezuelan government and PDVSA face a high bonded debt burden in coming years.** Based on Bloomberg data, we constructed the redemption profile for the Republic's and PDVSA's

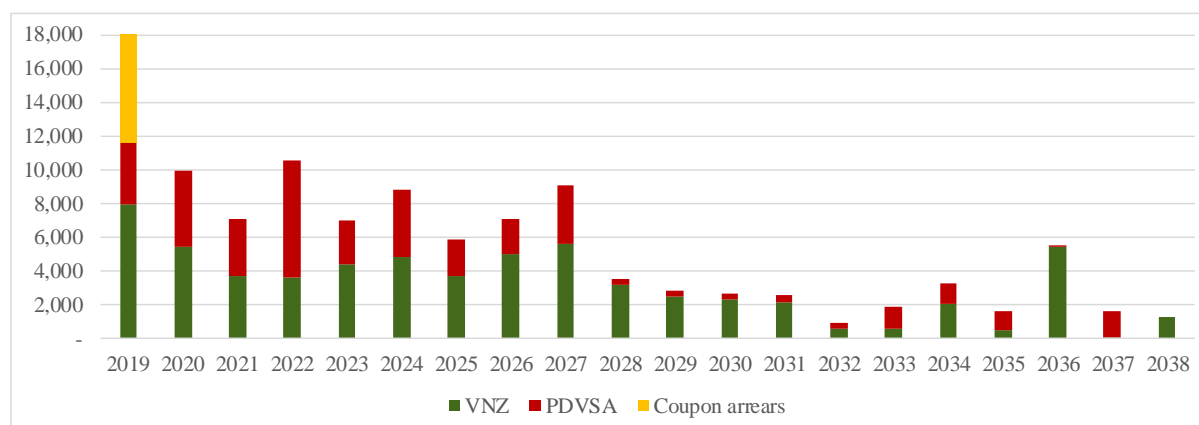
<sup>12</sup> The IIF notably estimates that Venezuela's external public debt is US\$144bn. Compared to our estimate, they include US\$3bn more of Chinese loans, US\$2bn more of PDVSA bonds and US\$5bn in ICSID claims. Economic Views: How Much does Venezuela Owe? IIF. March 2019.

outstanding bonded debt (Figure A5.2). The principal amount of defaulted debt is included in the stock of debt that matures in 2019. Arrears corresponding to missed coupon payments are accounted for separately.

**Arrears on international bonds stand at US\$9.2bn at end-2018 of which US\$6.5bn of coupon arrears.** Venezuela defaulted on its bonded debt in the fall of 2017. Since then, some debt payments have been made but most coupon payments have been missed. Using information from Bloomberg, we listed the bonds Venezuela is currently behind on, including the Electricity company, ELECAR's, 2018 bond. PDVSA remained current on its 2020 bond paying \$949m on principal and interests in October 2018, saving the company from potential bondholder claims on its US refining subsidiary CITGO as the bond is secured by 50.1% of the shares of CITGO's indirect parent company PDV Holding.

**Bond prices recently jumped following the international recognition of Juan Guaidó as interim president.** Bond prices for PDVSA and the Republic have jumped approximately 10 percentage points from low 20s to low 30s after the international recognition of Juan Guaidó as interim president (Figure A5.3).

**Figure A5.2: Venezuela and PDVSA bonded debt service profile (P+I) – US\$ m**



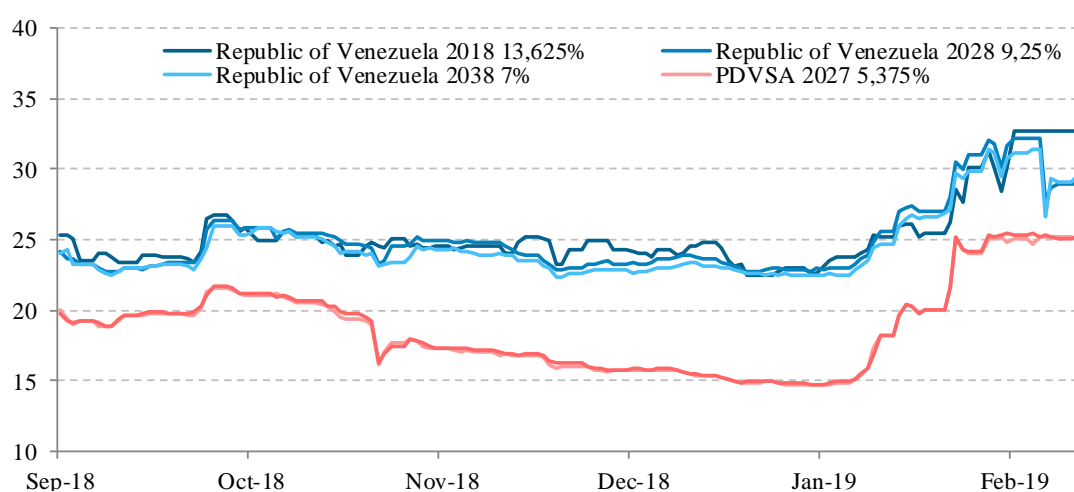
Source: Authors' computation based on Bloomberg data

**The magnitude of PDVSA's non-bonded debt is hard to estimate.** PDVSA's 2016 financial statements list financial debt of approximately US\$10bn and suppliers' debt of US\$20bn. Based on PDVSA's financial statements' information, we assume the average cost of financial debt is about 6.5% with an average maturity of 4 years. The amount of suppliers' debt is consistent with Lee's Buchheit's estimate of suppliers' debt that has been turned into New York Law governed promissory notes for as much as US\$14bn. We assume such notes do not pay interest and are repayable over the 2020-2023 period. Finally, we account separately Rosneft's estimated US\$4bn claim on PDVSA and include it within the stock of Russia loans.

**We estimate that bilateral and multilateral debt account for US\$7bn excluding Russia and China.** According to the Public Credit's Office at the Ministry of Finance, the government's bilateral and multilateral debt has been contracted at extremely concessional terms. On top of that estimate, Russia has lent approximately US\$3bn to the central government in recent years and the debt has already been restructured. The terms of the restructuring loan remain secret, so we assume that it is payable in 2021-2023 and carries an interest rate of 7%.

**Recent estimates indicate that Chinese funds currently amount to approximately US\$20bn.** The terms of the Chinese funds have never been publicly disclosed, but we understand that the Chinese funds have been significantly amortized in recent years to reach US\$20bn as of March 2019. The Chinese funds are structured in two main facilities, a 3-year revolving facility (FCCV) and a 10-year long term facility (FGVLP). Under those contracts, Venezuela is reported to send up to 0.4m barrel of oil a day to China. We also understand that the barrels of oil are value at market prices and that China pays Venezuela back the dollar amounts of oil shipments minus the required debt service payment under the contract. These funds also include large upfront and drawdown fees as well as requirements for a 1.3x debt service coverage ratio to be kept in a collection account located in China. We assume that the interest rates on these loans is approximately 4% above Libor. Finally, the contract provides restriction on the use of funds to specific "eligible projects".

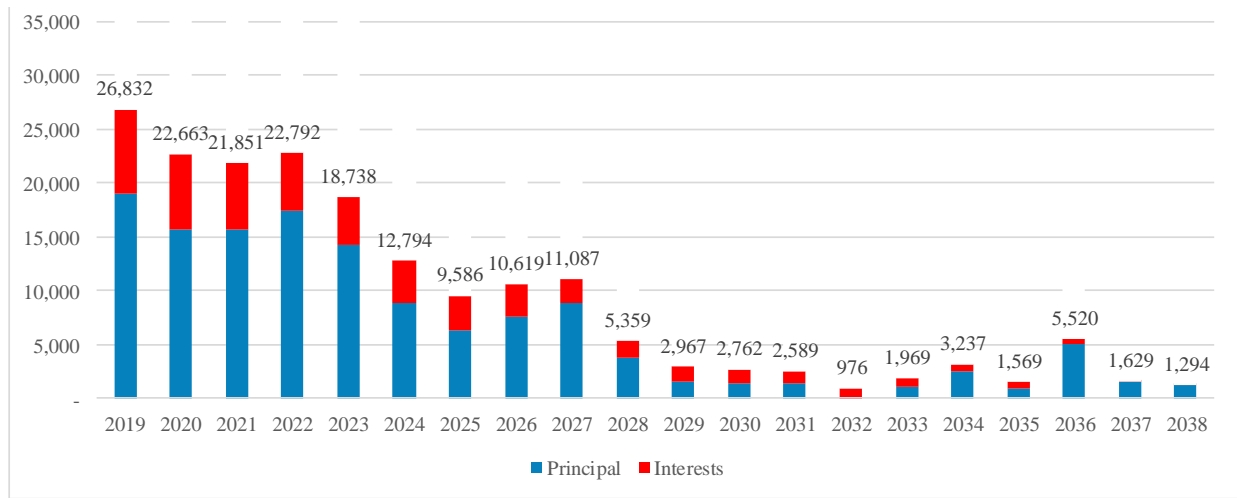
**Figure A5.3: Venezuela & PDVSA benchmark bond prices in the last months (%)**



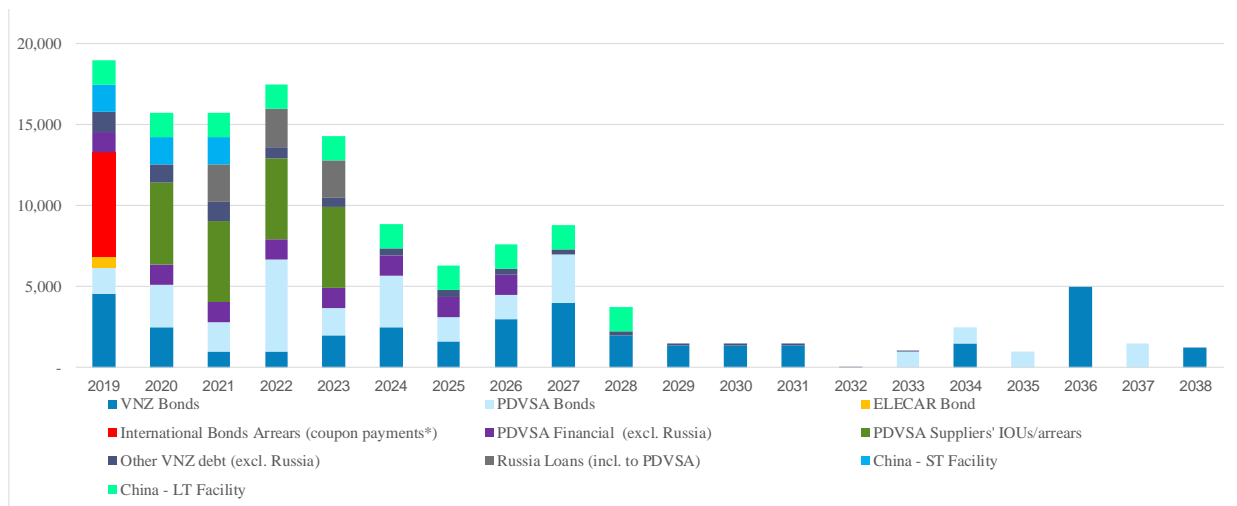
Source: Bloomberg as of February 12<sup>th</sup>, 2019

**Absent a comprehensive restructuring, Venezuela's annual debt service payments would amount to 20-25US\$bn per year over the next 5 years (Figure A5.4 and A5.5)**

**Figure A5.4: External debt – Total debt service redemption profile (US\$m)**



**Figure A5.5: External debt – Total principal redemption profile by creditors (US\$m)**



Source: Authors' computations (estimation)

## Appendix 6: Detailed Overview of Restructuring Scenarios

### Description of the three scenarios

#### Scenario 1: The “Soft Scenario”

Rationale: This scenario focuses on providing Venezuela with flow relief in the form of maturity extensions and lower interest payments in the short to medium-run with limited face value reduction of market debt (25%). Non-market debt coming due in the medium term is expected to be rescheduled (or equivalently rolled-over) at similar terms. This scenario embodies a conciliatory approach with creditors and would likely achieve high participation rates. It is consistent with the view that Venezuela suffers from a liquidity crisis, not a solvency crisis. The market haircut on bonded debt is just above 60% at an exit yield of 11%.

#### Detailed assumptions

- **VNZ bonds:** Assumes existing VNZ bonds are exchanged for a series of 15 bonds maturing between 2024 and 2038 with an exchange ratio of 1:0.75 (nominal haircut of 25%). The new bonds carry a step-up coupon structure of 2% in the first 5 years, 5% in the subsequent 4 years and 8% until maturity.
- **PDVSA bonds:** Assumes existing PDVSA bonds are exchanged for a series of 10 bonds maturing between 2024 and 2033 with an exchange ratio of 1:0.75 (nominal haircut of 25%). The new bonds carry a step-up coupon structure of 2% in the first 5 years, 5% in the subsequent 4 years and 8% until maturity.
- **Bonds coupon arrears:** Assumes existing PDVSA and VNZ coupon arrears are repaid over a period of 5 years in 5 installments and at an interest rate of 2% with a 25% face value haircut.
- **Bilateral and multilateral debt excluding China:** Assumes principal redemption for bilateral and multilateral debts are extended (rolled-over) to avoid any principal payment before 2024. Assumes Russian Loans are also rescheduled to avoid any maturity coming due before 2023 (interest rate not reduced).
- **PDVSA financial debt:** Assumes PDVSA's financial debt is extended by 2 years with no interest rate or principal reduction.
- **PDVSA suppliers' debt:** Assumes PDVSA's suppliers' debt is repaid over the next 7 years in equal installments. Coupon structure follows that of PDVSA's new bonds.
- **China's debt:** Assumes full roll-over of China's FCCV and FGLVP with no principal or interest rate reduction.

- **ELECAR:** Assumes the bond is exchanged for an amortizing bond maturing in 2023 with 3 equal installments and with an exchange ratio of 1:0.75 (nominal haircut of 25%) and a coupon structure analogous to that of PDVSA's new bonds.

Market haircut on bonded debt: In this soft scenario, market haircuts vary from 52 to 74% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, market haircut will be around 62%, implying a 38% recovery for bondholders, significantly above current market prices (hence the characterization of conciliatory approach).

Scenario Soft							
MARKET HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
52%	56%	60%	63%	66%	69%	71%	74%
NPV HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
55%	57%	59%	61%	62%	64%	65%	66%
MARKET HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
50%	54%	57%	60%	63%	66%	69%	71%
NPV HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
48%	50%	52%	54%	56%	57%	59%	60%

*Note: NPV haircut compares the present value of the old debt to the present value of the new debt (using the same exit yield).*

## Scenario 2: The “Strong Scenario”

Rationale: This second scenario embodies a tougher stance with market and quasi market creditors (mostly PDVSA suppliers' debt) with significant nominal (50%) and NPV haircuts. Other non-market creditors provide additional flow relief in the form of long maturity extensions, interest rate reductions but no principal reductions. This scenario represents an aggressive approach towards market bondholders while leveraging on official creditors – and notably China – to obtain long-term cheap refinancing conditions and new money for the economic and oil sector recovery. This scenario would likely achieve lower participation rates even though semi-coercive legal steps could be taken (as described by Lee Buchheit). The market haircut on bonded debt is approximately 75% at an 11% exit yield.

### Specifics

- **VNZ bonds:** Assumes existing VNZ bonds are exchanged for a series of 15 bonds maturing between 2024 and 2038 with an exchange ratio of 1:0.5 (nominal haircut of 50%).



The new bonds carry a step-up coupon structure of 2% in the first 5 years, 3.5% in the subsequent 4 years and 5% until maturity.

- **PDVSA bonds:** Assumes existing PDVSA bonds are exchanged for a series of 10 bonds maturing between 2024 and 2033 with an exchange ratio of 1:0.5 (nominal haircut of 50%). The new bonds carry a step-up coupon structure of 2% in the first 5 years, 3.5% in the subsequent 4 years and 5% until maturity.
- **Bonds coupon arrears:** Assumes existing PDVSA and VNZ coupon arrears are repaid over a period of 15 years in 10 installments with an interest rate structure similar to that of PDVSA bonds and a face value haircut of 50%
- **Bilateral and multilateral debt excluding China:** Assumes principal payments for bilateral and multilateral debt are extended (rolled-over) to avoid any principal payment before 2024. Assumes Russian loans are also rescheduled to avoid any maturity coming due before 2024 and coupon rate is reduced to 3.5% with no principal reduction.
- **PDVSA financial debt:** Assumes PDVSA's financial debt is extended by 4 years with an interest rate reduction of 250bps with no principal reduction.
- **PDVSA suppliers' debt:** Assumes PDVSA's suppliers' debt is repaid with similar terms to that of PDVSA bonds with principal reduction of 50%.
- **China's debt:** Assumes full roll-over (maturity extension) of China's FCCV and FGLVP with no principal reduction and interest rate reduction of 400bps.
- **ELECAR:** Assumes the bond is exchanged for an amortizing bond maturing in 2023 with 3 equal installments and with an exchange ratio of 1:0.5 (nominal haircut of 50%) and a coupon structure analogous to that of PDVSA's new bonds.

Market haircut on bonded debt: In the strong scenario, market haircuts vary from 69 to 83% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, market haircut will be around 75%, implying a 25% recovery for bondholders, broadly in line with bond prices before the international recognition of Juan Guaidó as interim president.

Scenario Strong							
MARKET HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
69%	72%	74%	76%	78%	80%	82%	83%
NPV HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
71%	73%	74%	75%	76%	77%	78%	79%
MARKET HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
68%	70%	73%	75%	77%	78%	80%	81%
NPV HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
67%	68%	69%	70%	72%	73%	74%	75%

Note: NPV haircut compares the present value of the old debt to the present value of the new debt (using the same exit yield).

### Scenario 3: The “Aggressive Scenario”

**Rationale:** This scenario embodies an aggressive stance towards both market and non-market creditors with limited negotiation and recourse to coercive legal procedures. This scenario notably includes a 70% nominal haircut on market and quasi-market debt and 50% on PDVSA’s non-market debt. This scenario also represents a more aggressive stance towards Russia and China with strong nominal haircuts of 70% as part of proactive negotiations. The market haircut on bonded debt is approximately 85% at an 11% exit yield.

#### Specifics

- **VNZ bonds:** Assumes existing VNZ bonds are exchanged for a series of 15 bonds maturing between 2024 and 2038 with an exchange ratio of 1:0.30 (nominal haircut of 70%). The new bonds carry a step-up coupon structure of 2% in the first 5 years, 3.5% in the subsequent 4 years and 5% until maturity.
- **PDVA bonds:** Assumes existing PDVSA bonds are exchanged for a series of 10 bonds maturing between 2024 and 2033 with an exchange ratio of 1:0.30 (nominal haircut of 70%). New Bonds carry a step-up coupon structure of 2% in the first 5 years, 3.5% in the subsequent 4 years and 5% until maturity.
- **Bonds coupon arrears:** Assumes existing PDVSA and VNZ coupon arrears are repaid over a period of 15 years in 10 installments with an interest rate structure similar to that of PDVSA bonds and a face value haircut of 70%.
- **Bilateral and multilateral debt excluding China:** Assumes principal payments for bilateral and multilateral debt are extended (rolled-over) to avoid any principal payments

before 2024. Assumes Russian loans are also rescheduled to avoid any maturity coming due before 2024 with a face value haircut of 70% while the coupon is reduced to 3.5%.

- **PDVSA financial debt:** Assumes PDVSA's financial debt is extended by 4 years with an interest rate reduction of 250bps and principal reduction of 50%.
- **PDVSA suppliers' debt:** Assumes PDVSA's suppliers' debt is repaid with similar terms to that of PDVSA bonds and with a principal reduction of 70%.
- **China's debt:** Assumes full roll-over (maturity extension) of China's FCCV and FGLVP with 70% principal reduction and an interest rate reduction of 400bps.
- **ELECAR:** Assumes the bond is exchanged for an amortizing bond maturing in 2023 with 3 equal installments and with an exchange ratio of 1:0.30 (nominal haircut of 70%) and a coupon structure analogous to that of PDVSA's new bonds.

**Market Haircut on bonded debt:** In the aggressive scenario, market haircuts vary from 81 and 90% depending on the exit yield after the restructuring. At a plausible exit yield of 11%, market haircut will be approximately 85%, implying a 15% recovery for bondholders, in line with all-time-low bond prices.

Scenario Aggressive							
MARKET HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
81%	83%	85%	86%	87%	88%	89%	90%
NPV HAIRCUT ON VNZ BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
83%	84%	84%	85%	85%	86%	87%	87%
MARKET HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
81%	82%	84%	85%	86%	87%	88%	89%
NPV HAIRCUT ON PDVSA BONDS							
8%	9%	10%	11%	12%	13%	14%	15%
80%	81%	82%	82%	83%	84%	84%	85%

*Note: NPV haircut compares the present value of the old debt to the present value of the new debt (using the same exit yield).*

#### Scenario 4: The “Aggressive and Odious Chinese and Russian Debt Scenario”

**Rationale:** This scenario describes a variation of the aggressive scenario (scenario 3) and adds the odious debt dimension. This scenario is equivalent to scenario 3 but assumes that the debt owed to China and Russia (and Rosneft) is deemed illegitimate and fully cancelled. This is an extreme case for the purpose of the simulations.

## Appendix 7: Overview of Walker and Cooper's Public Sector Revitalization Law Strategy

Richard Cooper and Mark Walker (2017) and Richard J. Cooper, Luke A. Barefoot & Thomas S. Kessler (2016) have laid out a restructuring framework for PDVSA based on “market-based mechanisms to achieve the goal of a consensual restructuring arrived at by a supermajority vote of creditors, in particular a restructuring of PDVSA’s debts under a newly enacted Public Sector Revitalization Law that would be implemented with the support of a Chapter 15 proceeding under the United States Bankruptcy Code”.

They summarize the key elements on the proposed restructuring framework as follows:

- Under a new political regime, Venezuela would enact a “Public Sector Revitalization Law” that would allow public enterprises like PDVSA to reorganize. This reorganization procedures incorporated in the new law would mirror the two-tiered consensual and in-court restructuring approach of PROMESA, 19 the U.S. law specially enacted to facilitate the restructuring Puerto Rico’s debt. A reorganization plan approved by the Venezuelan court and the requisite majority of creditors, would be binding to holdout creditors. This new law would include appropriate procedural safeguards and be specifically designed to be recognized as a foreign proceeding under Chapter 15 of the U.S. Bankruptcy Code.
- To assist in implementing this law, Venezuela would appoint a special court with independent judges to adjudicate disputes and confirm or sanction actions contemplated by the new law.
- Under the new law, a reorganization plan for PDVSA would require the approval of a supermajority of PDVSA’s creditors, and pending approval of a plan, creditors would be stayed from pursuing PDVSA’s assets worldwide.
- PDVSA would seek the aid of U.S. courts under Chapter 15 to aid in the reorganization process and to impose a stay on any attempt to seize PDVSA’s asset in the U.S.
- Should it be necessary to protect assets of PDVSA outside Venezuela and the United States, PDVSA would seek to enlist the support of local courts, much as is done under other chapter 15 cases.

## Appendix 8: Balance of Payments Framework Assumptions

Type	Parameter	Functional Dependence	Comments
GDP	Nominal Oil GDP	Total oil production, oil prices	Total production x Venezuela basket price.
GDP	Nominal Non-Oil GDP	Real Non-Oil GDP, Domestic CPI, Nominal Depreciation	RER is constant in baseline. Assumption relaxed w/ sensitivity analysis.
GDP	Real Non-Oil GDP	Exogenous	The “socially and politically sustainable recovery path.” Doubles in ten years. Consistent with historical evidence.
Oil Related	Venezuela Basket Oil Price	Brent Crude Oil Price	Specific relation given by regression output ( <i>approx.</i> \$7.7 discount to brent crude)
Oil Related	Brent Crude Oil Price	Exogenous	IMF WEO November 2018. Rises linearly to \$70 by 2029 after IMF projections end. Relaxed in scenario analysis.
Oil Related	Domestic Oil Consumption (bbl/day)	Real Non-Oil GDP growth, elasticity	0.6 elasticity taken from literature (maybe low), consistent w/ significant increase in gasoline prices.
Oil Related	Change in Year-End Production (bbl/day)	Exogenous	Oil production recovers along an optimistic but feasible path.
Oil Related	Private Share of New Production (%)	Exogenous	54%. Follows current consensus on private participation in oil recovery.
Oil Related	Public Oil Production (bbl/day)	Previous public oil production + new production added	Public oil production recovers along an optimistic but feasible path. Consistent with research conducted by CID.
Oil Related	Private Oil Production (bbl/day)	Previous private oil production + new production added	Private oil production recovers along an optimistic but feasible path. Consistent with research conducted by CID.
Oil Related	Production Declination Rate (natural + mechanical, %)	Exogenous	Falls from 35% to 21% as operating conditions normalize. Consistent with research conducted by CID.
Oil Related	Cost of CAPEX (\$/bbl added)	Exogenous	Falls from \$60 to \$40 in six years. Consistent with research conducted by CID.
Oil Related	Cost of OPEX (\$/bbl)	Exogenous	Falls from \$12 to \$11 in six years. Consistent with research conducted by CID.
Oil Related	Imported Component of OPEX/CAPEX	Exogenous	Falls from 90% to 80% in ten years. Consistent with research conducted by CID.
Oil Related	Private Oil FDI / Dividend Payouts to Oil FDI	CAPEX, Private Oil Company Profits	Oil Companies first finance CAPEX through retained earnings. If retained earnings are not enough, FDI makes up the difference. If funds are leftover, they are repatriated as dividends.
Oil Related	Private Oil Company Profits	Private Oil Exports, Depreciation, OPEX, Royalty Rate, Income Tax Rate	Profits are calculated by deducting royalties, opex, depreciation from exports, and then deducting income tax.
Oil Related	Private Oil Company Depreciation	Loss in production (to natural and mechanical cause), average CAPEX per barrel lost	Depreciation is calculated as the amount of barrels lost due to mechanical and natural reasons, multiplied by the average cost of those investments.
Oil Related	Royalty Rate	Exogenous	33%, in line with current rate of 30%. Consistent with research conducted by CID.
Oil Related	Income Tax Rate (for Oil Companies)	Exogenous	40%, slightly lower than the current rate of 50%. Consistent with research conducted by CID.
Imports	Real Non-Oil Goods Imports	% of Real Non-Oil GDP	Economy first generates 2.8x real non-oil GDP from real goods imports. Gradually increases to 4.75x in real non-oil GDP from real goods imports. Consistent with analysis of micro-level data.
Imports	Nominal Non-Oil Goods Imports	Real Non-Oil Goods Imports, World CPI	Real Imports are inflated by World CPI to get nominal imports.
Imports	Nominal Oil Goods Imports (Capex & Opex)	Total production, total production added, CAPEX and OPEX per barrel, Imported Component of OPEX/CAPEX	Calculated on a per barrel basis for Opex and Capex and imported component % of Opex and Capex.

Imports	Nominal Freight and Insurance Imports	Nominal Oil and Non-Oil Imports	We calculate freight and insurance as a % of the value of imports following the average historical item per line item.
Imports	Nominal Oil Service Imports	Exogenous	Remains constant at low level.
Imports	Nominal Non-Oil Service Imports, Private	% Real Non-Oil GDP, World CPI	Begins at 5.8% of real non-oil GDP (current level) and falls to 2.9% (97-07avg) in ten years. Inflated by world CPI.
Imports	Nominal Non-Oil Service Imports, Public	% Real Non-Oil GDP, World CPI	Begins and stays at 0.7% of real non-oil GDP. Inflated by world CPI.
Exports	Nominal Oil Exports	Overall production, domestic consumption, Venezuela oil basket price	Total oil production net of domestic consumption multiplied by prices. Domestic consumption elastic to real GDP growth with 0.6x elasticity.
Exports	Real Non-Oil Exports	% of Real Non-Oil GDP	Starts at 5% (back-solved) and rises to 8% (historical norm) in twenty years.
Exports	Nominal Non-Oil Exports	Real Non-Oil Exports, World CPI	Real non-oil exports are inflated by world CPI.
Exports	Nominal Oil Service Exports	Baseline, Real GDP growth	Starts from baseline, grows with real GDP
Exports	Nominal Non-Oil Service Exports	% of Real Non-Oil GDP, World CPI	Constant at 0.3% for public sector. Rises from 5.8% (back-solved) to 1.2% (97-07 avg). Inflated by World CPI.
Other CA Items	Remittances	<i>Est. no. of Venezuelans abroad, % who send remittances, avg monthly remittance sent</i>	Limited robustness of our forecast given lack of data.
Other Financing Flows	New International Reserves	Current reserves, current nominal imports, reserve target	Simple reserves target of 6 months of imports over a few years as part of the IMF program. Alternative specification is IMF's ARA EM metric but hard to estimate given uncertainty around the recovery of broad money.
Other Financing Flows	Other FDI	Nominal GDP	We assume FDI rises linearly from 1% of nominal GDP to 2.6% (LatAm avg) in 15 years

## Appendix 9: Institutional Mapping

