

# Puerto Rico's Debt Dilemma

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## PUERTO RICO'S DEBT DILEMMA

This study was commissioned by Espacios Abiertos (EA) and directed by Martin Guzman with collaboration from Pablo Gluzmann\*. EA is a non-profit, independent, non-partisan organization that promotes an open society in Puerto Rico. We believe that a more transparent, accountable and participatory government will be more fair and equitable for everyone on the island. We are grateful to the Center for a New Economy for their ongoing technical assistance and collaboration in this project, and to Open Society Foundations for their generous support.

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## EXECUTIVE SUMMARY

When Hurricane Maria hit Puerto Rico in September of 2017, the country was already in a deep debt crisis. The island's population was in decline and suffering a lack of opportunities. Though Maria was a tragedy that added more suffering to an economy already in a downward economic spiral, it also created an opportunity to rewrite a flawed fiscal plan that had been certified by the Oversight Board in March of 2017 and to come up with a sensible debt restructuring plan. The consensus among economists was that the new plan had to be fundamentally different from the previous one if Puerto Rico was to have a chance of recovery. The island now has a new fiscal plan and an approved restructuring deal with the COFINA bondholders.

This study analyzes the fiscal plan and the COFINA deal from a macroeconomic perspective. It updates the analysis by Pablo Gluzmann, Martin Guzman, and Joseph E. Stiglitz published by Espacios Abiertos in 2018 on the debt relief necessary for restoring Puerto Rico's public debt sustainability, and it draws conclusions on the implications of the COFINA deal for the future of Puerto Rico's economy. It also reviews other related recent literature that analyzes what needs to be done in Puerto Rico. The study reaches the following main conclusions:

- There is a strong consensus among economists on some of what needs to be done in Puerto Rico in order to escape the current debt trap. The debt policies that have been implemented recently by the FOMB are not aligned with the conclusions reached by that consensus. Instead, those debt policies are leaving a legacy of debt and risk that may undermine the future of Puerto Rico's economy.
- The COFINA deal poses a serious risk of a failed debt restructuring; if similar terms are agreed to with creditors who hold General Obligation bonds, Puerto Rico will be forced to default again or else suffer even more fiscal austerity that will lead the economy once again into a destabilizing spiral of recession and outmigration by the time the federal disaster relief funds start to cease, rather than allowing the economy to prolong its recovery.
- The COFINA deal makes sense only if the other groups of Puerto Rico's creditors get a large haircut. The arithmetic is simple. The ability to pay revealed by our calculations, as well as by calculations by others who arrived at similar results with different methodologies,

implies that generosity with the COFINA bondholders can only be sustained if the reduction on the rest of the public debt lies between roughly 85% and 95%—a conclusion that rests on the assumption that the entire public debt restructuring is designed with the goal of restoring debt sustainability.

- The terms of the COFINA deal also imply that COFINA bondholders will be getting far more than they could have expected a year ago. Overall, the outcome of the political game among the FOMB, the Puerto Rican government, the U.S. Congress, and the bondholders over disaster relief funds has been playing out contrary to the interests of Puerto Rican citizens.
- The FOMB and the government of Puerto Rico have overstated the savings that the COFINA deal will deliver for Puerto Rican taxpayers and have understated the distributional consequences as well as the risks that the outcomes of those debt negotiations entail.
- The sustainability of Puerto Rico's debt restructuring needs to be assessed and addressed comprehensively. This is not happening. Overall, the FOMB is still supporting too much debt service and is addressing one piece of the debt restructuring at a time in a way that will likely prove inconsistent.
- A sensible approach would be to calculate a range of how much debt could have been paid in total before the hurricane and use that range as the basis of how much debt can be sustained after the hurricane. Otherwise, part of the expansionary effects that the federal relief will have on Puerto Rico's economy will constitute an implicit bailout to the bondholders. Recent events suggest that COFINA bondholders will be among the main beneficiaries of the effects that the federal relief will have on Puerto Rico's economy.

## 1. INTRODUCTION

When Hurricane Maria hit Puerto Rico in September of 2017, the island's population was in decline and already suffering a lack of opportunities. The country was trapped in a deep debt crisis.<sup>1</sup> Though Maria was a tragedy that added more suffering to an economy already in a downward economic spiral, it also created an opportunity to rewrite a flawed fiscal plan that had been certified by the Oversight Board in March of 2017 and to come up with a sensible debt restructuring plan. The new plan had to be fundamentally different from the previous one if Puerto Rico was to have a chance of recovery. The island now has a new fiscal plan and an approved restructuring deal with the COFINA bondholders.

Gluzmann, Guzman, and Stiglitz (2018; henceforth GGS) had shown that the old fiscal plan was based on unsound premises and that it failed to establish an appropriate basis for calculating how much debt restructuring Puerto Rico would need. The study shed light on the debt relief necessary for restoring the sustainability of the island's public finances. This report analyzes the macroeconomic aspects of the latest fiscal plan as well as the deal with the COFINA bondholders. It includes a comparison of the figures of the COFINA deal with the findings obtained by GGS and updated by this study in order to analyze the implications of that debt exchange for the future of Puerto Rico's economy. Finally, it reviews other related recent literature that analyzes what needs to be done in Puerto Rico.

The main conclusions of the study are the following:

- The new fiscal plan has corrected some of the unsound assumptions of the previously certified plan. However, it still includes a number of unrealistic assumptions that make it an unsound basis for calculating the island's restructuring needs.
- The COFINA deal provides *too little* relief relative to what is necessary to restore the sustainability of Puerto Rico's public debt, and it therefore increases the risk that the entire restructuring will prove ineffective in lifting the island out of the current debt crisis.

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<sup>1</sup> For an analysis of the causes of the debt crisis, see Caraballo-Cueto and Lara (2018), Meléndez and Venator-Santiago (2018), and Feliciano (2018). For a summary of the pre-crisis dynamics and post-crisis events, see Guzman (2018a).

- There is a strong consensus in the field on some of what needs to be done in Puerto Rico in order to escape the current debt trap. The recent debt policies are not aligned with the conclusions reached by that consensus.

## 2. PUERTO RICO'S DEBT SUSTAINABILITY

### 2.1. ASSESSING SUSTAINABLE DEBT

Situations of debt distress, like the one Puerto Rico has been experiencing for more than a decade, are destabilizing. In an unresolved debt crisis, it becomes unclear to market participants what the relevant budget constraints of the public sector are. This environment of uncertainty depresses spending, which in turn worsens the economic situation. Similarly, attempting to resolve situations of unsustainable debt through contractionary fiscal policies does not work; the evidence shows that fiscal austerity in times of recession or depression simply leads to deeper recessions and depressions.<sup>2</sup> In those situations, a restructuring of the liabilities becomes necessary in order to reduce uncertainty and provide the fiscal space necessary for implementing economic-recovery policies.

A critical question when a macroeconomic unit goes through a debt restructuring process is how much debt reduction is needed in order to restore the sustainability of the debt position. To address that question, there are three elements that must be taken into account.

First, the constraints that determine the debt payment capacity of the debtor must be identified. While ultimately the debt payment capacity depends on the primary surpluses that the debtor can achieve, the identification of a *feasible* primary fiscal surplus—the difference between tax revenues and primary government expenses, i.e. expenses before debt interest payments—is always a difficult task, plagued with uncertainties. This is because, first, the identification of what a feasible primary fiscal surplus requires a definition of issues that go beyond economic considerations, as for instance a definition of what constitute the essential expenditures for a society (and this has been part of the policy debate in Puerto Rico); and second, forecasts about future tax revenues must be made, an exercise that involves dealing with multiple layers of uncertainty. As the debt

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<sup>2</sup> See the review by Gluzmann, Guzman, and Stiglitz (2018), as well as Jayadev and Konczal (2010).

payment capacity depends on future growth, assessments of the sustainability of the debt position are always probabilistic. The future is of course unknown; all we can do is to form expectations about it. For sufficiently optimistic expectations, debt will be deemed to be sustainable, while for sufficiently pessimistic expectations the converse will hold true.

Second, and related to the forecasting of future tax revenues, the analysis requires a model that takes into account the effects of economic policies (including fiscal and debt policies) on tax revenues. Changes in public spending affect economic activity, which in turn affects fiscal revenues. A proper analysis of the necessary debt relief for a distressed country requires information on the fiscal multipliers that describe the relationship between and among fiscal policies, economic activity, and fiscal outcomes. While assessing the size of fiscal multipliers for a particular debt-distressed economy may not be doable with sufficient precision at the time of a restructuring, the empirical literature on fiscal multipliers provides useful information that may serve as a guide for analysis. In addition, assessment of the necessary debt relief must account for a two-way, or reciprocal, causality between debt policies and economic growth: the depth of the necessary restructuring depends on the debtor's economic growth prospects, but at the same time, economic growth depends on the debt burden.

Third, the analysis must define the distributions of shocks that may hit the economy and affect the debt payment capacity. This reading implies the necessity of sensitivity analysis of the parameters assumed in the baseline case.<sup>3</sup>

The fiscal plan certified in March of 2017 had not properly taken into account the three elements described above that must be part of a public debt sustainability analysis. First, in spite of an earlier definition, in a 2015 fiscal plan, of principles that the resolution of Puerto Rico's debt crisis should respect—namely, minimizing the impact of austerity on growth, protecting vulnerable stakeholders such as pensioners and low-income credit union depositors, protecting investments in education, health, and public safety, and creating a sustainable debt level that will allow for growth—there was no reference in the 2017 plan to those or other restructuring principles or to the actual constraints that the restructuring principles would imply. Nor was there any clear

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<sup>3</sup> For a more extended discussion of the elements of public debt sustainability analysis, see Wyplosz (2011), Guzman (2018b), and Guzman and Heymann (2015).



definition of essential spending. Second, the values of the multipliers used for modeling the relationship between fiscal policies and economic performance were, in view of the findings in the literature for macroeconomic units in distress, optimistic. Third, there was no sensitivity analysis of those parameters. As a consequence of these premises and other assumptions (discussed in GSS and Guzman and Stiglitz, 2017), the plan's economic projections were overoptimistic.

## 2.2. ESTIMATES OF THE NECESSARY DEBT RELIEF FOR PUERTO RICO

GSS computed the debt relief that was necessary for restoring the sustainability of the debt position for a number of scenarios. Their findings showed the need for substantial relief. Assuming that the primary fiscal surplus projected by the FOMB from 2026 onward could be sustained, for a range of assumptions about the fiscal multipliers and the effects of the structural reforms on GNP growth the estimated value of sustainable debt was between \$14.5 billion and \$19.9 billion.

Those figures required an update that included the negative impact of hurricanes Irma and Maria as well as the positive impact of federal relief moneys. This section provides new analysis of the necessary debt relief after those impacts. Rather than providing a comprehensive robustness analysis of the parameters that feed the FOMB model for economic projections, we pursue a different strategy in order to cope with the limited information on the multipliers associated with each of the spending components of the federal relief. We perform a consistency exercise that shows what the debt levels are that Puerto Rico could sustain given the projections made by the October 2018 fiscal plan for the primary fiscal surplus and the evolution of economic activity. The study also includes a sensitivity analysis of the critical assumptions that determine the debt payment capacity.

Let  $D(t)$  denote the nominal public debt,  $d(t)$  the public debt-to-GNP ratio,  $S(t)$  the nominal primary fiscal surplus,  $s(t)$  the primary fiscal surplus-to-GNP ratio, all in year  $t$ . Let  $R$  denote the nominal interest rate, which we will assume to be constant over time. The nominal budget constraint of the government in year  $t$ , then, is

$$D(t) = (1 + R)D(t - 1) - S(t)$$

We first project  $D(t)$  and  $d(t)$  for  $R = \{0.05, 0.055, 0.06\}$  until  $t = 2023$ , the year the fiscal plan ends. We assume two scenarios for the evolution of nominal GNP. The first scenario corresponds to the evolution assumed by the fiscal plan, while the second assumes that structural reforms will have no effect on GNP. We assume that the relevant stock of public debt is \$72.2 billion.

For the distribution of  $d(2023)$ , we next compute the constant value of the debt-stabilizing primary fiscal surplus over nominal GNP,  $s$ —i.e. the constant ratio of the primary fiscal surplus-to-output that would be consistent with the government’s transversality condition, for all combinations of  $R = \{0.05, 0.055, 0.06\}$  and for a growth rate of nominal GNP,  $g$ , that takes values  $g = \{0.03, 0.08, 0.013, 0.018, 0.022\}$ . Our choice of assumptions for  $g$  corresponds to the range of the fiscal plan’s long-term projections, which include  $g(2023)=0.03$  and  $g(t) = 0.022$  for  $t \geq 2045$ . Implicitly, that range contemplates the possibility that structural reforms will have smaller effects than those predicted by the fiscal plan—we attempt to provide a range of the values of debt that could be sustained under differing degrees of optimism about the effects of those reforms on Puerto Rico’s economic activity.

Finally, we assume different percentages for the debt reduction that Puerto Rico will achieve, from 10% to 90%, and compute  $s$  for each of those scenarios as well, for each of all the described combinations of assumptions for  $R$ ,  $g$ , and the effects of the structural reforms on GNP over the five years in which the fiscal plan will be implemented.

Table 1 shows the ranges of the debt-stabilizing primary fiscal surplus as a ratio of GNP that would be required for ensuring the sustainability of the public debt, for  $R = 0.06$ , respecting the assumptions of the fiscal plan as to the effects that the structural reforms will have on nominal GNP. Table 2 shows the same ranges, but assuming that the structural reforms will not affect the GNP until fiscal year 2023. The appendix includes tables for the alternative assumptions for  $R$ .

**Table 1: Projected Debt Stabilizing Primary Fiscal Surplus**  
( $R=0.06$ , fiscal plan’s assumption on effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	3.6%	5.6%
10 % reduction	3.3%	5.0%
20 % reduction	2.9%	4.4%
30 % reduction	2.5%	3.9%
40 % reduction	2.2%	3.3%
50 % reduction	1.8%	2.8%
60 % reduction	1.5%	2.2%
70 % reduction	1.1%	1.7%
80 % reduction	0.7%	1.1%
90 % reduction	0.4%	0.6%

**Table 2: Projected Debt Stabilizing Primary Fiscal Surplus**

(R=0.06, assuming zero effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	3.8%	5.7%
10 % reduction	3.4%	5.2%
20 % reduction	3.0%	4.6%
30 % reduction	2.6%	4.0%
40 % reduction	2.3%	3.4%
50 % reduction	1.9%	2.9%
60 % reduction	1.5%	2.3%
70 % reduction	1.1%	1.7%
80 % reduction	0.8%	1.1%
90 % reduction	0.4%	0.6%

The lower-bound or minimum *s* (upper-bound or maximum *s*) corresponds to the most optimistic (pessimistic) scenario for the evolution of nominal GNP growth. The critical question that Tables 1 and 2 pose for the assessment of the necessary debt reduction is what level of primary fiscal surplus could be sustained consistently with an associated trajectory of economic growth.

The numbers suggest that substantial debt relief is necessary. For instance, if the consistent relationship between the growth rate of nominal GNP and the long-term fiscal surplus were in the range in which the primary surplus-to-GNP ratio is between 1.1 and 1.7, for the scenarios included

in tables 1 and 2 the percentage of debt reduction of the \$72.2 billion of public debt would be about 70 percent.

These updated figures of necessary debt relief are close to those obtained by GGS as well as to those obtained by other authors, as described below. However, a number of caveats are in order, to which we next turn our attention.

#### THE FISCAL PLAN'S PROJECTIONS

The assessment of the necessary debt reduction requires that a stance be taken on what the most likely economic scenarios going forward are and how those scenarios depend on the policies that will be implemented. When we examine these questions, important caveats need to be raised in at least two major critical points of the fiscal plan.

The first point is that the model for projections assumes that the level of the primary fiscal balance does not affect long-term growth. Thus, in a steady state the growth rate of Puerto Rico's output will not change whether the primary fiscal surplus as a ratio of GNP is, say, 1 percent or 5 percent—only the dynamics toward the steady state would change, as only changes in the primary balance affect the growth rate of GNP. This is an unrealistic assumption. A large debt burden that requires high primary surpluses would persistently deprive Puerto Rico of financing for education, health, infrastructure, etc., and thereby negatively affect its long-term prospects.

The second point concerns the optimism of the projections. Any judgment as to whether a certain degree of optimism is excessive or insufficient is of course subjective. However, the empirical evidence on the effects of shocks such as natural disasters and of macroeconomic and debt policies would appear to call for some restraint on the optimism embedded in economic projections.

The new fiscal plan is less optimistic than the previous plan with regard to the effects of structural reforms on GNP growth (see the differences in Figure 1). The figures on the evolution of population also employ a less optimistic basis for the calculation of how much debt Puerto Rico will be able to sustain (see the comparison with respect to the fiscal plan of March 2017 in Figure 2). On the other hand, the projections of the evolution of GNP create more skepticism. Figures 3 and 4 show the evolution of nominal and real GNP, respectively, for the October 2018 and the March 2017

fiscal plans, for both the baseline scenarios and the post-fiscal measures and structural reforms scenarios.

Figure 1

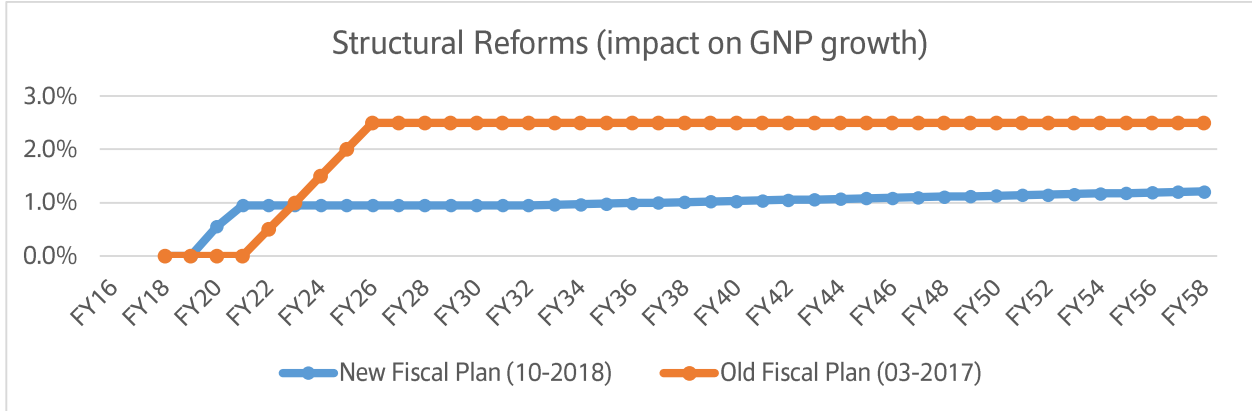


Figure 2

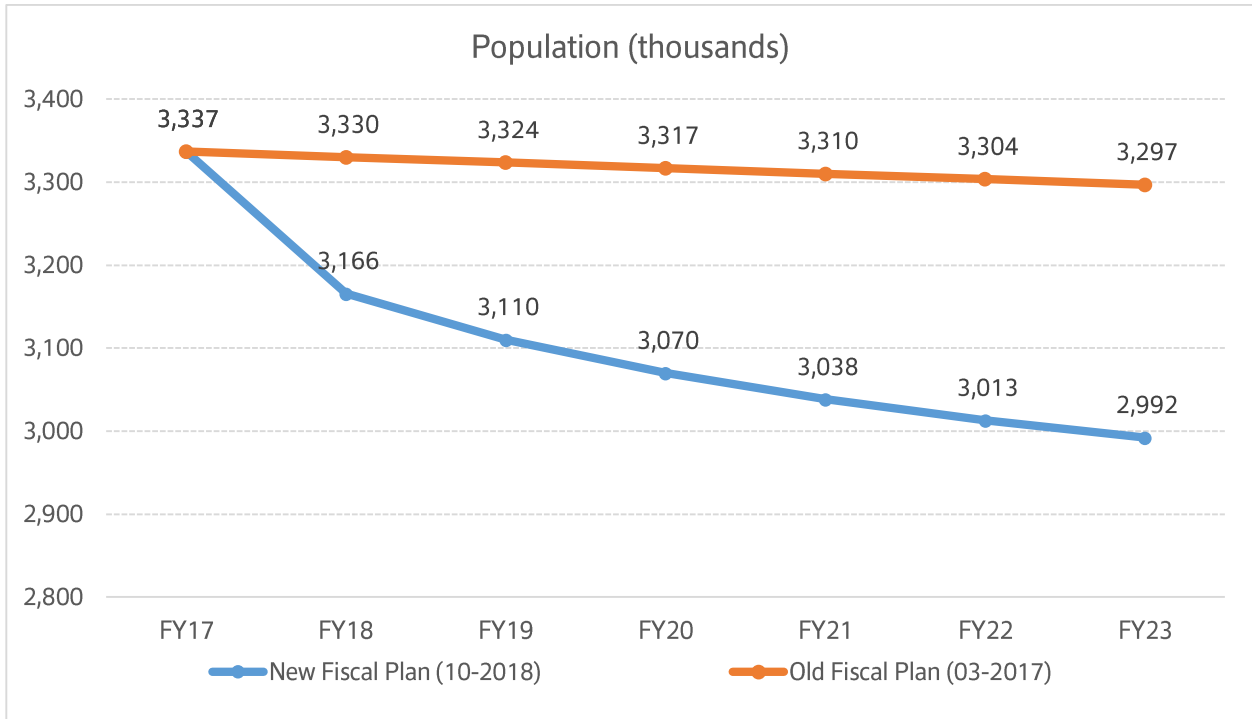


Figure 3

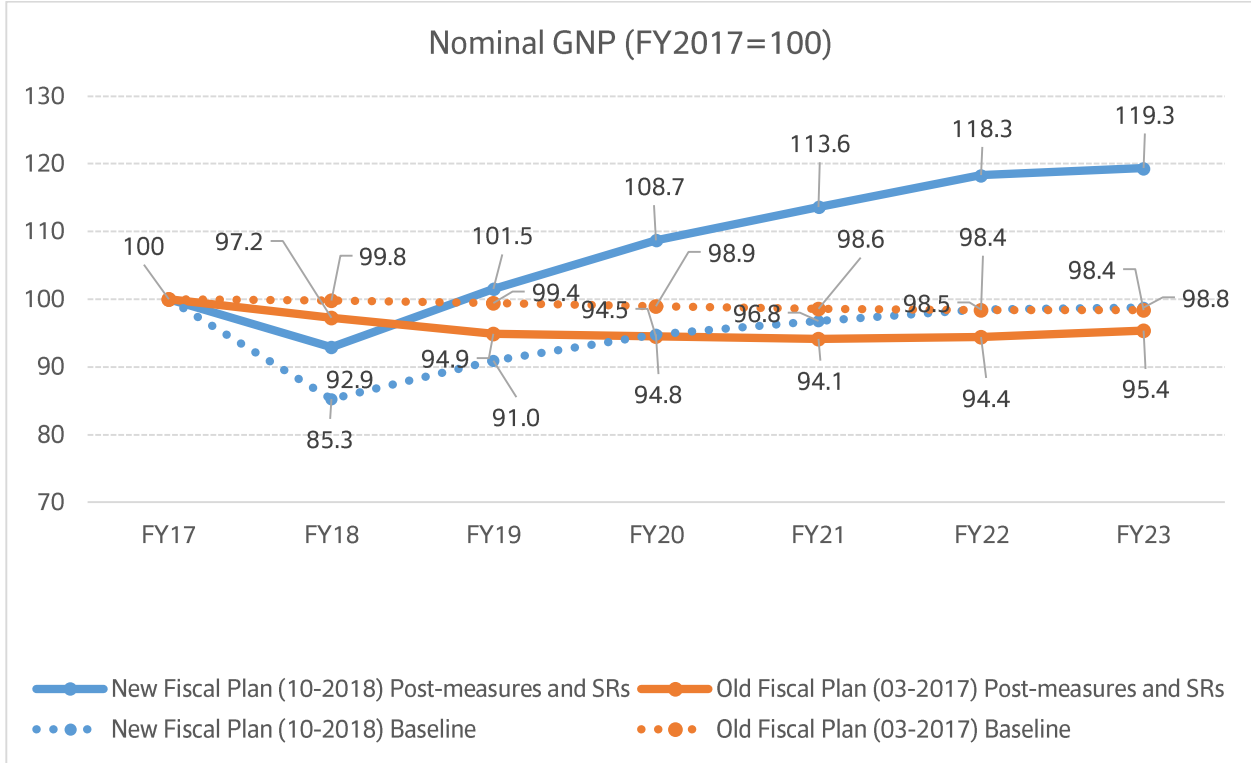
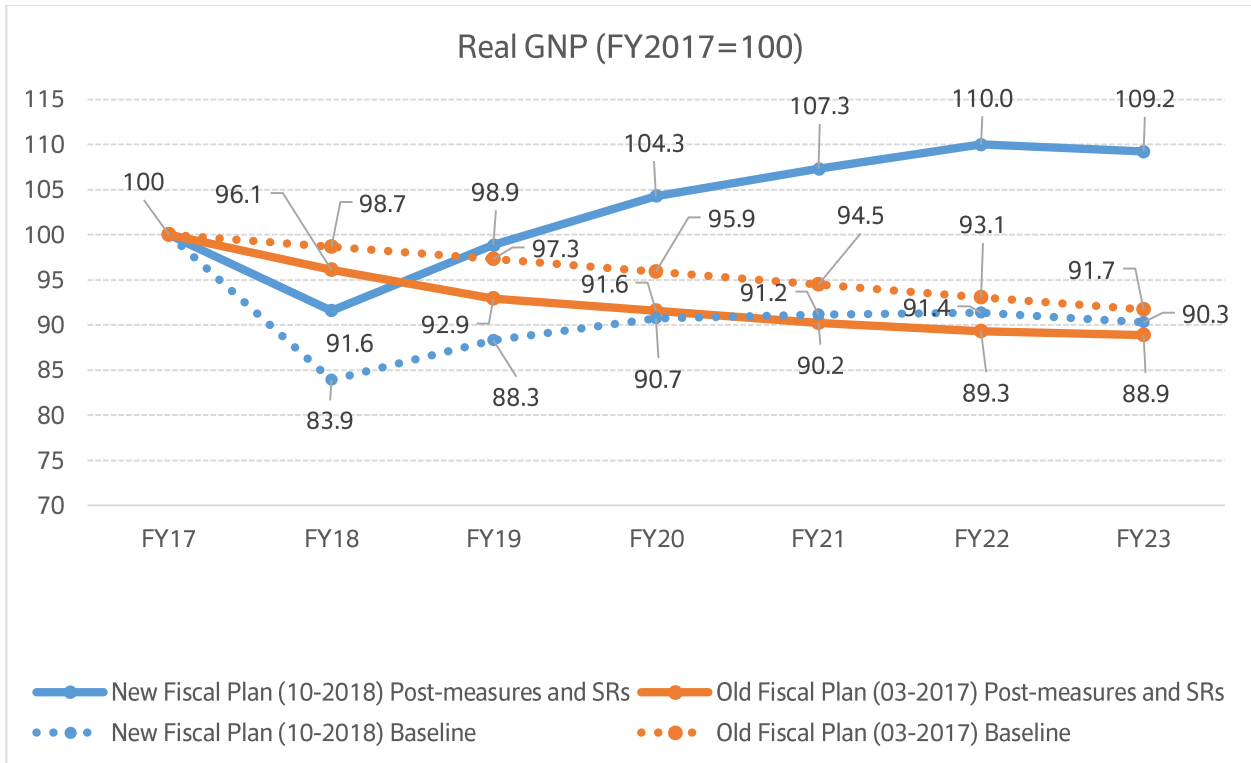


Figure 4



The figures show that

- (i) the short-term baseline scenario is more pessimistic in the new fiscal plan; but
- (ii) the short-term scenario for post-fiscal measures and structural reforms is more optimistic in the new fiscal plan.

Basically, the new fiscal plan projects that the positive macroeconomic effects of federal relief will outweigh the negative effects of the destruction caused by the hurricanes. Conditional on the funds being effectively received by Puerto Rico, the validity of the assumptions in the FOMB's plan will depend to a large extent on how the revenues created by the multiplication of economic activity caused in the economy by those funds is used.

#### THE FOMB'S DEBT SUSTAINABILITY ANALYSIS

The October 2018 fiscal plan includes a debt sustainability analysis (DSA) that attempts to provide an assessment of Puerto Rico's debt payment capacity. The main premises of the FOMB's DSA are the following:

- In order to assess the sustainable debt service, U.S. states are used as the comparison group.
- In order to determine a range of debt service capacity, the following five metrics are considered: (i) debt to own-source revenues, (ii) debt per capita, (iii) debt to state personal income; (iv) debt to GDP; (v) fixed costs to own-source revenues.
- The analysis uses the 30-year macroeconomic forecasts included in the fiscal plan.
- The debt capacity is calculated using a range of interest rates and including a risk factor that contemplates the possibility of shocks that might impact the resources that would be available for debt service. An  $x$  percent risk factor case means that only  $100 - x$  percent of the projected cash flow would be available for debt service.
- The aggregate debt service on all fixed payment restructured tax-supported debt is capped at a maximum level. The cap is derived from what Moody's calls the "Debt Service Ratio," which is the ratio of total payments due in a year on all existing net tax-supported debt over

a state government’s own-source revenues (i.e., excluding federal transfer payments) in that year. The fiscal plan quotes Moody’s reporting that the average Debt Service Ratio for the all U.S. states is 4.5% and that the average Debt Service Ratio for the top 10 most indebted states is 9.2%.

Exhibit 27 of the fiscal plan (reproduced below) illustrates the computation of the implied debt capacity range for a range of interest rates (4% to 6%) and risk factors (10% to 30%), and for varying projected annual cash flows available for debt service (\$400 million to \$1 billion).

**EXHIBIT 27: IMPLIED DEBT CAPACITY BASED ON RANGE OF INTEREST RATES AND RISK FACTORS (\$M)**

Implied debt capacity based on range of interest rates and contingency, \$M

Illustrative Cash Flow Available		Sensitivity Analysis: Implied Debt Capacity at 20% Risk			
		\$400	\$600	\$800	\$1,000
Sensitivity Analysis: Varying PV Rates	4.0%	\$5,533	\$8,300	\$11,067	\$13,834
	5.0%	4,919	7,379	9,838	12,298
	6.0%	4,405	6,607	8,809	11,012

Illustrative Cash Flow Available		Sensitivity Analysis: Implied Debt Capacity at 5% PV Rate			
		\$400	\$600	\$800	\$1,000
Sensitivity Analysis: Varying Risk	10.0%	\$5,534	\$8,301	\$11,068	\$13,835
	20.0%	4,919	7,379	9,838	12,298
	30.0%	4,304	6,456	8,609	10,761

\*Values in \$Millions

The exhibit shows a precise mapping from risk factors, annual available cash flow, and interest rates, to debt payment capacity. For example, for an annual available cash flow of \$1 billion, a risk factor of 20%, and an interest rate of 6%, the debt that could be sustained would be \$11.012 billion (a number that would be in line with the calculations provided by this study, by GGS, and by other studies that are reviewed below). However, the plan is silent about what the views of the FOMB are on the sensible ranges of parameters for the variables that determine the debt payment capacity, which makes it impossible for analysts to assess what the FOMB’s views are on how much debt can be sustained.



## OTHER ESTIMATES

Other studies, using different metrics for assessing the sustainability of the debt position, arrived at figures of the necessary debt relief that are in the range of what this study and GGS find.

Makoff (2018) begins with a premise similar to that of the FOMB's fiscal plan, which establishes that the island's debt service burden as a percentage of its own revenue should approximate that of the fifty states. The computation of the necessary debt reduction proceeds as follows: First, a scale factor value is chosen to approximate the island's debt service burden as a percentage of its own revenue to that of the fifty states. That scale factor value is 3.5%, which is about 20 percent below the 4.5% average for the fifty states—a value justified by Puerto Rico's deteriorated long-term growth prospects with respect to the fifty states. Next, the analysis defines a revenue base of \$10 billion, based on Puerto Rico's tax ability record. Third, the annual cash flow available for debt service is computed by multiplying the \$10 billion revenue by the 3.5% debt service-to-revenue ratio to obtain an estimated sustainable annual debt service of \$350 million. Finally, the nominal debt amount that can be sustained is computed: Using a discount rate of only four percent, the present value of thirty years of \$350 million annual payments is approximately \$6.1 billion. Hence, the study concludes that creditor recoveries would be about 13.6 cents on the dollar.

Setser (2018) follows a similar rule of thumb in order to reach an approximation of the debt service capacity. He explains:

*The state average is around 4.5 percent. New York pays 8 percent. The most indebted states, on average, pay just over 9 percent. Puerto Rico's revenues—using the board's definition of the entities that make up the commonwealth, net of federal aid—are expected to rise to \$15 billion over the next few years. Keeping Puerto Rico's debt service in line with the average state implies overall payments of close to \$0.7 billion a year. Keeping it in line with, say, New York would imply payments of \$1.2 billion a year, and keeping it below the average of the most indebted states would imply holding payments under \$1.4 billion a year.*

Setser (2018) also adds that the upper bound of that range is not a sensible benchmark for Puerto Rico, given its poorer condition. We interpret that his analysis suggests that an upper bound of \$1 billion a year makes more sense, which is also a figure in line with the ranges suggested by this study and GSS.

### 3. THE COFINA DEAL

A restructuring of a major portion of the bonded debt—the COFINA—has already taken place. The agreement established that the bondholders of COFINA senior and junior bonds will exchange their old bonds for new senior lien bonds backed by 54% of a 5.5% sales tax law; \$11.8 billion in current interest bonds, with a coupon of almost 6%, were exchanged for \$9.6 billion of new bonds with an average coupon of 4.5%, and \$6 billion of capital appreciation bonds were exchanged for \$2.4 billion of a new capital appreciation bonds.<sup>4</sup> Senior bondholders will get 93 cents on the dollar with an additional 2 cents for being in the negotiation groups. Junior bondholders will get 56.4 cents on the dollar. This section puts those numbers in a macroeconomic perspective and analyzes the implications of this deal for the entire public debt restructuring process.

#### 3.1. ANALYSIS OF THE ACTUAL RELIEF

The numbers of the COFINA deal have been advertised by the government of Puerto Rico and the FOMB as a substantial relief or “savings” for Puerto Rican taxpayers. However, a careful inspection of the deal reveals that the reality is less rosy than has been suggested. There are a number of subtleties that must be taken into consideration in order to understand the full implications of this deal.

First, the COFINA deal is not a simple exchange of old bonds for new bonds with lower value. With this exchange, bondholders are gaining in important ways. While the old bonds were a mix of senior and junior bonds, the new bonds are all senior. The old junior bonds get the largest reduction but they gain seniority. In effect, the deal has improved rather than decreased the bondholders’ expected recovery, as reflected by the increase in the prices of those bonds over the last year due to increasing optimism over the expected recovery—an optimism that was confirmed by the exchange.

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<sup>4</sup> The capital appreciation bond is not a regular bond: it does not pay a coupon, but has a structure of “accreting” payments that lead to increasing payments over time, which can easily confuse non-experts on the actual debt burden that it entails.

Second, even if the considerations above were not taken into account for choosing the discount factor for future debt payments, the Puerto Rican government's announcement that the deal entails savings of \$17 billion is simply wrong. That figure assumes, first, that the future payments scheduled for the old and the new COFINA bonds should be discounted at the same rate; and second, it assumes a discount rate of zero. None of those assumptions make sense.

One measure that is often invoked in restructuring episodes is the market haircut. While it must be noted that the market haircut is not a measure of relief of the debtor but an approximation (albeit imprecise) of creditors' losses, its computation sheds some light on the the meaning of the COFINA deal. The market haircut ( $h$ ) is

$$h = 1 - \frac{PDV\ new}{PDV\ old}$$

where  $PDV\ new$  denotes the present discounted value of the exchange bond and  $PDV\ old$  denotes the present discounted value of the old defaulted bond. To compute the present value of future flows, a discount factor has to be selected. The market haircut uses the restructuring exit yield as the discount factor for the flows of both the new and old bond. This is problematic, and generally leads to a misleading assessment of the losses of the bondholders at the moment of the restructuring; if the restructuring is effective in reducing the probability of a future default, the value at which the flows on the defaulted bond are discounted should be higher than the exit yield.

In order to cope with that problem and offer a more comprehensive picture of the implications of the deal for bondholders, we compute the market haircut for different combinations of discount factors for the new and old bond. We take combinations of yields in a discrete space  $[0, 0.1; 0.05]$  where  $[0,0.1]$  is the range of discount factors and 0.05 is the interval between each value of the discount factor, and compute the 882 haircuts that correspond to all the combinations of yields for both the lower-bound and upper-bound cases. Many of those combinations, of course, provide values that are totally irrelevant. For instance, all the combinations in which the yield for the old bonds is larger than for the new bonds are irrelevant. But many others of those combinations provide useful information on what the deal actually entails. The results are shown in Table OA.1, available in the online Appendix.<sup>5</sup> We reach the following conclusions:

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<sup>5</sup> Available at <http://espaciosabiertos.org/wp-content/uploads/Table-OA.1-final-1.pdf>

- If both *PDV new* and *PDV old* were computed using the same discount factor of zero, the haircut would be \$16.8 billion—a number that approximates what the government of Puerto Rico has advertised as the actual savings.
- The haircut becomes smaller when, as is reasonable in this case, we use a higher discount factor for the old than for the new bonds.
- There are reasonable combinations of parameters for which the haircut becomes close to zero. For instance, for a discount factor of 6% for the new bond and 9% for the old bond, the haircut is just 16%. For a discount factor of 5% for the new bond and 9% for the old bond, the haircut is 2%.

### 3.2. GAINS AND LOSSES

Puerto Rico's bonds market has constituted a fertile area for speculation. The evolution of market prices over the last years, especially after hurricanes Irma and Maria and later after the COFINA deal, delivered large gains for some at the expense of losses for others. In order to understand how the gains and losses are distributed, a simple illustrative story may help.

Suppose that in the aftermath of the hurricanes, in January of 2018, a cash-constrained Puerto Rican citizen sold old COFINA bonds of the senior series for \$100,000 at the prevailing market price of 40 cents on the dollar and that those bonds were purchased by a Wall Street hedge fund. Suppose that that hedge fund decided to sell one year later, in January of 2019, at the market price of 80 cents on the dollar.<sup>6</sup> That operation would have resulted in a net gain of \$100,000 for the hedge fund.

The question is: Who pays for it? If the January 2019 market expectations of a high recovery rate that had led to the increase in market prices had not been validated later with the COFINA deal, those who spent \$200,000 in January of 2019 to purchase the bonds would have experienced a loss. But the deal meant that those buyers did not face a loss—in fact, they even gained. In this story, sellers of the bond in January of 2018 experienced a loss, because they had to sell in a time

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<sup>6</sup> Note that on January 11, 2019, those bonds traded at 80.25 cents.

of distress at a lower price than they had paid; and taxpayers end up paying more than markets were expecting in the aftermath of the hurricanes, by a substantial margin.<sup>7</sup>

### 3.3. MACROECONOMIC AND DISTRIBUTIONAL IMPLICATIONS

The COFINA deal leaves a legacy of bonded debt of \$12 billion. Under the deal, the annual debt payments will increase from \$420 million in fiscal year 2019 to almost \$1 billion in fiscal year 2041. With a COFINA debt legacy of \$12 billion implied by the deal and assuming that the primary fiscal balance stabilizes in 2026 at the value projected by the old fiscal plan, then following GSS computations the necessary reduction on the remaining stock of public debt would have to be between 85.4% and 95.3%. This macroeconomic perspective suggests that even though the deal does not imply that the sustainability of the debt position will not be achieved after the ongoing public debt restructuring, the necessary reduction on the other public debt claims will have to be very large, or else Puerto Rico will fall again into a situation of debt distress.

There is considerable uncertainty about the long-term projections, and the COFINA exchange implies a particular way of dealing with that uncertainty. The deal entails a massive transfer of risk, basically to two groups: on the one hand, to Puerto Ricans living or wishing to live in Puerto Rico—both workers and pensioners; and on the other hand, to the holders of the other debt claims. Thus, the deal means that there will either be large inter-creditor inequities—with the holders of General Bonds bearing the largest part of the debt adjustment—or, if the debt reduction on the other debt claims is insufficient to restore the sustainability of the public debt position, the citizens of Puerto Rico will end up suffering the consequences of a new state of debt distress, in the form of a higher tax burden, depressed economic activity and fewer opportunities on the island, with the consequent outmigration that reduces the tax base even more, implying an even larger burden for those who stay. Such a situation would eventually end up in another costly restructuring.

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<sup>7</sup> A narrow reading of this story could suggest that taxpayers actually saved money, because they will end up paying less than what the debt contracts established. But that reading does not recognize that the promise of full payment was already broken, and that the entire structure of promises was unsustainable—the very same reason that led to the enactment of PROMESA.

## 4. RELATED ANALYSES

Puerto Rico's debt crisis has attracted considerable attention on multiple fronts. There is already an abundant and growing literature that analyzes the fundamental problems, the policies that are needed to address them, and the consequences of the policies that are being implemented. This section provides a brief and partial review of that literature and draws conclusions as to what consensuses have emerged.

### THE STRUCTURAL PROBLEMS

Puerto Rico's crisis is not just a debt crisis but a more profound failure of the economic and political system. There seems to be consensus on the premise that restructuring the debt is not a sufficient condition for the island's economic recovery, but that a deeper restructuring of the economy is needed.

Caraballo-Cueto and Lara (2017) offer a careful analysis of the factors that contributed to the crisis. They relate the debt crisis to the failure of an economic model focused on tax-incentivized industrialization. They provide evidence that supports the hypothesis that a deindustrialization process, triggered by a change in U.S. tax and trade policies and the subsequent failure of government policies and the private sector to adapt, led to a deterioration of the productive capacity of the economy and consequently to a long-lasting decline in economic activity with a consequent reduction in government revenues and an increase in the burden of debt. Similarly, the deindustrialization implied that the electricity and water companies lost their main customers, the manufacturing plants, and therefore suffered a structural decline in revenues that left them in an unsustainable position.

Still open to debate is how to create the comparative advantages associated with a more dynamic economy, thus ensuring a revenue capacity that will leave the debt troubles in the past. Views on what kind of restructuring the economy needs vary, with differing positions on what role the state should play and what policies are needed in order to transform the economy.

## FISCAL AND DEBT POLICIES

There is seldom so much consensus among economists about the main premises of a fiscal and debt policy path that needs to be followed in order to give an economy a chance for recovery.

In a letter published on January 24, 2018 (“A Fiscal Plan for Puerto Rico Recovery,” 2018), twenty-six internationally renowned economists agreed on a number of principles that a plan for recovery should respect as well as on conclusions as to the implications of what was being done. The economists argued that *“the pre-hurricane fiscal plan did not provide for economic recovery,”* that it included *“a number of unrealistic assumptions,”* and that the new fiscal plan had to be *“fundamentally different than the previous one if Puerto Rico is to have a chance for recovery.”* They added that the new fiscal plan had to *“deal realistically with the problem of Puerto Rico’s more than \$70 billion [in] unpayable debt, addressing both the \$51.9 billion debt included in the fiscal plan and the more than \$20 billion of public sector debt not included in the fiscal plan,”* and that any new plan should recognize *“that this debt is unpayable both in the short and long term, and propose steps to write down most or all of it, suspending any payments until the economy recovers.”* They warned that *“without such a decisive step, the ‘debt overhang’ and legal actions by creditors (including some who bought at huge discounts to seek full payment) will exercise a drag on future investment and growth,”* and that *“the alternative—especially a return to austerity in any plan that fails to curtail the debt overhang—[will] provoke further out-migration and accelerated economic decline, and prolong the current humanitarian crisis.”*

While they recognized that the core principles put forth by the FOMB to guide the post-hurricane fiscal plan, which included *“sufficient resources to ensure appropriate immediate emergency response-and-recovery efforts in anticipation of federal funds, including provision of public safety, health care, and education, in order to avoid increased outmigration; [and a] capital expenditure plan [that] must provide the basis for a long-term economic recovery plan for Puerto Rico, focusing on increased and expedited support for rebuilding critical infrastructure such as energy, water, transportation, and housing”* were positive statements, the path to actual policies consistent with those statements is unclear.

These conclusions are also shared by Merling et al. (2017), who have gone further and warned that *“both the Board and legal proceedings have failed to adequately address the underlying*

*causes and consequences of Puerto Rico's debt crisis, some of which are unique to the island due to its special political status. If Puerto Rico is going to have a chance to avoid a continued deterioration of living standards and loss of population, either the policies imposed from outside will have to change, or Puerto Rico will have to change its political status."*

Concerns about the implications of the COFINA deal that are aligned with the findings of this study have also been raised. Weiss, Setser, and Lachman (2018) have alerted that *"the COFINA restructuring [...] saddles Puerto Rico with escalating debt payments for the next 20 years, even though the economy has been in a decade-long slump. It also sets a dangerous precedent. If Puerto Rico's government and the oversight board created by Congress agree to similar terms with creditors who hold General Obligation bonds, it will be just a question of time before the commonwealth is forced to default yet again or curtail public pension payments upon which more than 325,000 workers depend."* They add that *"the Puerto Rican government and its oversight board similarly appear to be unrealistically optimistic about the island's economic growth prospects and thus its ability to pay,"* and that while *"structural reforms that improve the efficiency of doing business in Puerto Rico are important and would help boost economic growth[,] . . . they cannot reasonably be expected to offset the loss of federal funds, the contractionary effects of fiscal consolidation[,] and ongoing outmigration."* They conclude that *"with Puerto Rico's limited ability to repay, generosity to one set of bondholders necessarily reduces what the commonwealth can reasonably offer to other bondholders and claimants. The sustainability of Puerto Rico's debt restructuring needs to be assessed comprehensively, not by looking narrowly at each piece of the bigger puzzle."* Summers (2018) endorses those views, and claims that part of the problem lies in an excessively optimistic view of those who have the decision-making power. Setser (2018) offers a complementary and more detailed analysis of the meanings and implications of the deal. Similar views on the negative consequences of the fiscal plan and the COFINA deal are shared by Alameda Lozada (2018). Finally, Aranoff (2018) offers a comprehensive picture of the bondholders' profitable speculative behavior that is associated with large distributional consequences—an outcome that has been made possible by the way the actors with decision-making power have worked throughout this saga.



## 5. CONCLUDING COMMENTS

There is a strong consensus among economists that if the island's liabilities are not properly restructured, Puerto Rico will remain in a debt trap. But the way in which events have been evolving is worrisome. The debt policies that the FOMB is implementing are leaving a legacy of debt and risk that may undermine the future of Puerto Rico's economy. The COFINA deal does pose a serious risk of a failed debt restructuring; if similar terms are agreed to with creditors who hold General Obligation bonds, Puerto Rico will be forced to default again or else suffer even more fiscal austerity that will lead the economy once again into a destabilizing spiral of recession and outmigration by the time the federal disaster relief funds start to cease, instead of allowing the economy to prolong its recovery.

In fact, the COFINA deal only makes sense if the other groups of Puerto Rico's creditors get a large haircut. The arithmetic is simple. The ability to pay revealed by our calculations, as well as by calculations by others who arrived at similar results with different methodologies, implies that generosity with the COFINA bondholders can only be sustained if the reduction on the rest of the public debt lies between roughly 85% and 95%—if, that is, the restructuring is designed with the goal of restoring debt sustainability.

Furthermore, the terms of the COFINA deal imply that COFINA bondholders will be getting far more than they could have expected a year ago. Prices of both COFINA and general obligation bonds have steadily increased, owing to a political game among the FOMB, the Puerto Rican government, the U.S. Congress, and the bondholders over disaster relief funds that has been playing out against the interests of Puerto Rican citizens.

More generally, the sustainability of Puerto Rico's debt restructuring needs to be assessed and addressed comprehensively. This is not happening. Overall, Puerto Rico's FOMB is still supporting too much debt service and is addressing one piece of the debt puzzle at a time in a way that will likely prove inconsistent.

Finally, we have argued that a sensible approach would be to compute a range of how much debt could have been paid in total before the hurricane and determine that range as the basis of how much debt can be sustained after the hurricane. Otherwise, part of the expansionary effects that

the federal relief will have on Puerto Rico's economy will constitute an implicit bailout to the bondholders.

## REFERENCES

- A Fiscal Plan for Puerto Rico Recovery (2018). <http://recovery4pr.org/>
- Alameda Lozada, José (2018). "The Plan of Adjustment of Debt of COFINA: Sustainability and Financial Capacity of Puerto Rico's Economy." <https://inesi.upr.edu/wp-content/uploads/2019/02/The-Plan-of-Adjustment-of-Debt-of-Cofina-Sustainability-and-Financial-Capacity-of-Puerto-Ricos-Economy.pdf>
- Aranoff, Kate (2018). "Vulture Funds Stand to Make Millions in Wake of Hurricane Maria." September 28. <https://theintercept.com/2018/09/28/puerto-rico-hurricane-maria-recovery-funds/>
- Carballo-Cueto, Jose, and Juan Lara (2018). "Deindustrialization and unsustainable debt in middle-income countries: The case of Puerto Rico." *Journal of Globalization and Development* 8(2), 1-11.
- Feliciano, Zadia M. (2018). "IRS Section 936 and the Decline of Puerto Rico's Manufacturing." *Centro Journal* 30, No. 3: 30-42.
- Gluzmann, Pablo A., Martin M. Guzman, and Joseph E. Stiglitz (2018). "An Analysis of Puerto Rico's Debt Relief Needs to Restore Debt Sustainability." *National Bureau of Economic Research Working Paper No. 25256*. Also available as *Espacios Abiertos Paper*: <http://espaciosabiertos.org/wp-content/uploads/DSA-English.pdf>
- Guzman, Martin (2018a). "Down for the Count." *Milken Institute Review*. <http://www.milkenreview.org/articles/down-for-the-count>
- Guzman, Martin (2018b). "The Elements of Sovereign Debt Sustainability Analysis." *Centre for International Governance Innovation Paper No 196*.
- Guzman, Martin, and Daniel Heymann (2015). "The IMF debt sustainability analysis: issues and problems." *Journal of Globalization and Development* 6, No. 2: 387-404.
- Guzman, Martin, and Joseph E. Stiglitz (2017). "PROMESA's Dangerous Premises." *Project Syndicate*.
- Jayadev, Arjun, and Mike Konczal (2010). "The boom not the slump: The right time for austerity."

- Makoff, Gregory (2018). "An Update on PROMESA and a Proposal for Restructuring Puerto Rico's Debt." *Centre for International Governance Innovation Policy Brief No. 129*  
<https://www.cigionline.org/sites/default/files/documents/PB%20no.129web.pdf>
- Meléndez, Edwin, and Charles R. Venator-Santiago (2018). "Introduction to Puerto Rico Post-Maria: Origins and Consequences of a Crisis." *Centro Journal* 30, No. 3: 5-29.
- Lara Merling, Kevin Cashman, Jake Johnston, and Mark Weisbrot (2017). "Life After Debt in Puerto Rico: How Many More Lost Decades?" CEPR Paper.  
<http://cepr.net/images/stories/reports/puerto-rico-2017-07.pdf>
- Setser, Brad (2018). "Will the Proposed Restructuring of COFINA Bonds Assure Puerto Rico's Return to Debt Sustainability?" <https://www.cfr.org/blog/will-proposed-restructuring-cofina-bonds-assure-puerto-ricos-return-debt-sustainability>
- Summers, Lawrence (2018). "How to actually help Puerto Rico." *The Washington Post*, April 17.  
<https://www.washingtonpost.com/news/wonk/wp/2018/04/17/lawrence-summers-how-to-actually-help-puerto-rico/>
- Weiss, Antonio, Brad W. Setser, and Desmond Lachman (2018). "Puerto Rico Needs a Better Debt Deal." *Bloomberg*, October 8. <https://www.bloomberg.com/opinion/articles/2018-10-08/puerto-rico-needs-a-better-debt-deal>
- Wyplosz, Charles. "Debt sustainability assessment: Mission impossible." *Review of Economics and Institutions* 2, No. 3 (2011): 37.

## APPENDIX

**Table A.1:** Projected Debt Stabilizing Primary Fiscal Surplus

(R=0.05, fiscal plan's assumption on effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	2.5%	4.3%
10 % reduction	2.3%	3.9%
20 % reduction	2.0%	3.4%
30 % reduction	1.8%	3.0%
40 % reduction	1.5%	2.6%
50 % reduction	1.3%	2.1%
60 % reduction	1.0%	1.7%
70 % reduction	0.8%	1.3%
80 % reduction	0.5%	0.9%
90 % reduction	0.3%	0.4%

**Table A.2:** Projected Debt Stabilizing Primary Fiscal Surplus

(R=0.05, assuming zero effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	2.6%	4.4%
10 % reduction	2.3%	4.0%
20 % reduction	2.1%	3.6%
30 % reduction	1.8%	3.1%
40 % reduction	1.6%	2.7%
50 % reduction	1.3%	2.2%
60 % reduction	1.0%	1.8%
70 % reduction	0.8%	1.3%
80 % reduction	0.5%	0.9%
90 % reduction	0.3%	0.4%

**Table A.3: Projected Debt Stabilizing Primary Fiscal Surplus**

(R=0.055, fiscal plan's assumption on effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	3.1%	4.9%
10 % reduction	2.8%	4.4%
20 % reduction	2.4%	3.9%
30 % reduction	2.1%	3.4%
40 % reduction	1.8%	2.9%
50 % reduction	1.5%	2.5%
60 % reduction	1.2%	2.0%
70 % reduction	0.9%	1.5%
80 % reduction	0.6%	1.0%
90 % reduction	0.3%	0.5%

**Table A.4: Projected Debt Stabilizing Primary Fiscal Surplus**

(R=0.055, assuming zero effects of structural reforms)

<b>% of debt reduction</b>	<b>Minimum s</b>	<b>Maximum s</b>
no reduction	3.2%	5.1%
10 % reduction	2.8%	4.6%
20 % reduction	2.5%	4.1%
30 % reduction	2.2%	3.6%
40 % reduction	1.9%	3.0%
50 % reduction	1.6%	2.5%
60 % reduction	1.3%	2.0%
70 % reduction	0.9%	1.5%
80 % reduction	0.6%	1.0%
90 % reduction	0.3%	0.5%



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