



WORLD BANK GROUP

PPP FISCAL RISK ASSESSMENT MODEL

PFRAM 2.0

USER MANUAL

SEPTEMBER 2019

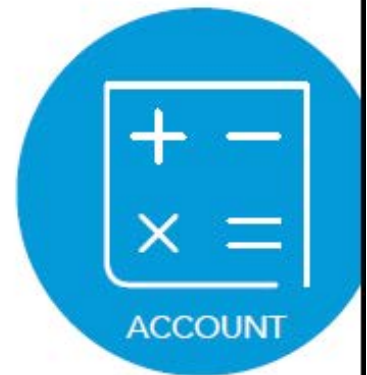


Table of Contents

- List of Acronyms 4**

- I. Introduction..... 5**
 - A. Why Develop an Analytical Tool to Assess the Fiscal Impact of PPPs? 5
 - B. What Is the Scope of PFRAM 2.0? 8

- II. Understanding PFRAM 2.0..... 9**
 - A. What PFRAM 2.0 Can Do 9
 - B. What PFRAM 2.0 Cannot Do 11

- III. Core Concepts Underpinning PFRAM 2.0 12**
 - A. Definitions of PPPs 12
 - B. Financing versus Funding 14
 - C. Government Support to PPPs 15
 - D. Accounting and Reporting PPPs 17
 - E. Fiscal Risks Matrix 24

- IV. PFRAM 2.0 at work 30**
 - A. Data and IT Requirements of PFRAM 2.0 30
 - B. Starting PFRAM 2.0..... 31
 - C. First frame: Portfolio information 32
 - D. Second Frame: Input Country Information 33
 - E. Third Frame: Project Information 35
 - F. Fourth Frame: Output Project Simulation 50
 - G. Fifth Frame: Shock Simulation 52
 - H. Editing PFRAM 2.0 56

- V. Examples using PFRAM 2.0..... 61**
 - A. Creating a PPP Portfolio 61
 - B. Government-Funded Hospital Project..... 61
 - C. User-Funded Road Project 70
 - D. Combined Funding Recycling Center project..... 73
 - E. Aggregating a Project in a PPP Portfolio and Simulating a Macroeconomic Shock 77
 - F. Assessing One Project under Different Funding Mechanisms 82

- ANNEX I. Risks in the Project Fiscal Risk Matrix..... 85**

The PFRAM 2.0 user manual was drafted by a team led by Isabel Rial and comprising Arturo Navarro, Maximilien Queyranne, Rui Monteiro (all IMF), and Katja Funke and Noel Gallardo (external experts), with contributions from David Duarte (World Bank Group). This project was completed under the supervision of Geneviève Verdier (IMF).

This user manual was partially financed by the Debt Management Facility Thematic Fund II.

List of Acronyms

BOT	Build, operate, and transfer
DOM	Domestic currency
DSA	Debt Sustainability Analysis
GDP	Gross domestic product
GFSM	<i>Government Finance Statistics Manual 2014</i>
IMF	International Monetary Fund
IPSAS	International Public Sector Accounting Standards
IRR	Internal rate of return
MAGA	Material Adverse Government Actions
MTEF	medium-term expenditure framework
MRG	Minimum revenue guarantee
NPV	Net present value
PFRAM	Public Fiscal Risk Assessment Model
PIM	Public investment management
PPA	Power purchase agreement
PPP	Public-private partnership
PSDS	Public Sector Debt Statistics
ROT	Rehabilitate, operate, and transfer
SPV	Special purpose vehicle
WBG	World Bank Group

I. INTRODUCTION

The Public Fiscal Risk Assessment Model, PFRAM developed by the IMF and the World Bank Group (WBG), is an analytical tool to assess fiscal costs and risks arising from public-private partnership (PPP) projects. It is designed to assist governments in assessing fiscal implications of PPPs, as well as in managing these projects in a proactive manner. Since it was launched in April 2016, **PFRAM** has been used in the context of IMF and WBG technical assistance, as well as by country authorities (for example, PPP units in Ministries of Finance, public corporations) to better understand the medium- to long-term fiscal implications of PPPs.

Building on experience gathered from developers and users, this user manual describes a new version of the tool, PFRAM 2.0. The new version improves the user interface making it easier to understand by non-PPP experts and extends the tool’s coverage and functionalities. This document describes the scope of PFRAM 2.0 and its functionalities, discusses the core concepts underpinning the tool, and presents examples that apply PFRAM 2.0 to specific PPP projects and a simple portfolio.

A. Why Develop an Analytical Tool to Assess the Fiscal Impact of PPPs?

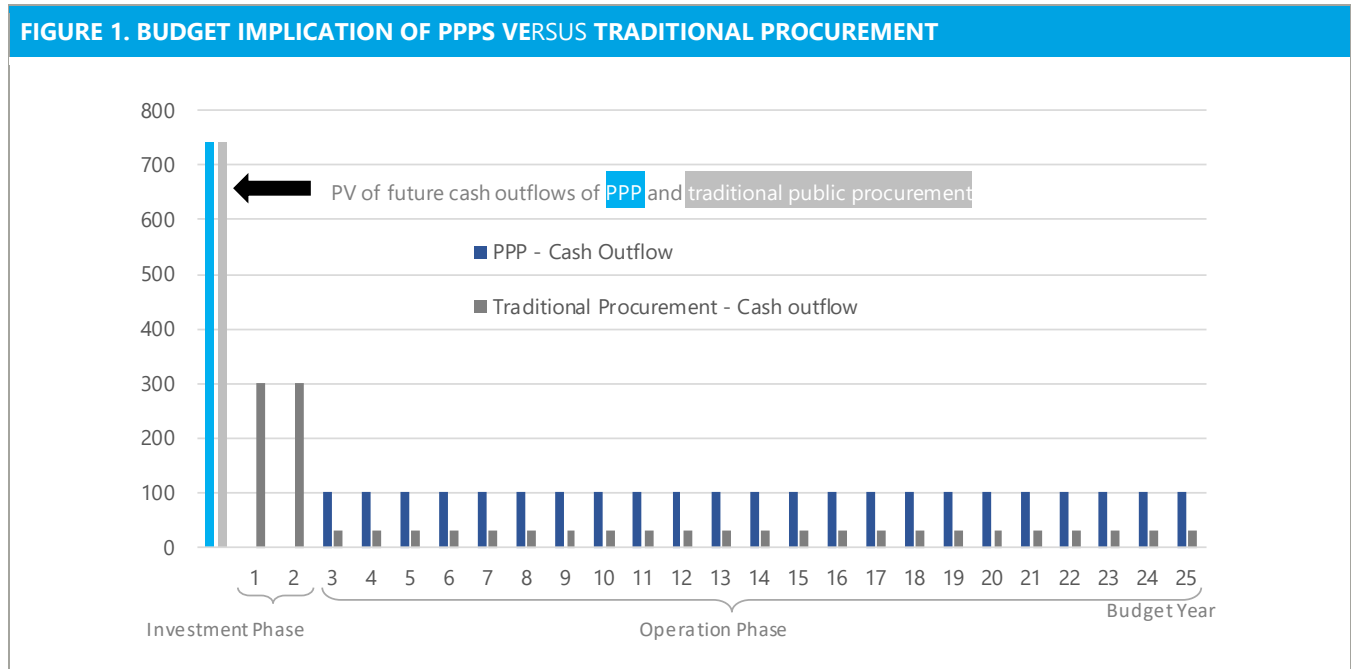
PPPs can improve the efficiency of public investment, but their fiscal implications should be properly assessed and managed.

- Many governments use or plan to use PPPs to acquire public infrastructure and to deliver public services. Some countries realize a substantial share of their public investment through PPPs.
- PPPs—if done for the right reasons and if managed well—can help to improve the efficiency of public investment, because the private sector can help execute projects on time and on budget and/or can lead to more innovative solutions for public service delivery.

There is a risk that PPPs could be perceived as a means for delivering infrastructure for free and that governments enter PPPs without fully understanding their fiscal implications.

- PPPs are often perceived as a mechanism to overcome fiscal constraints, that is, a tool to realize public investment—often large public infrastructure—even if the government does not have the resources to implement these projects on budget as in traditional public procurement.
- In PPPs, the private partner invests in the infrastructure asset, and the government and/or users pay the private partner for the service received. The government compensates the private partner for the total cost of providing the service: investment and financing costs, operation and maintenance costs, and profit margin. Hence, the infrastructure is not free; the fees for the service should cover the investment cost and the private partner’s profit margin.

- Compared to traditionally procured public investment, PPPs postpone the cash outflow from the budget (Figure 1). However, the overall cost to the taxpayer, i.e., the net present value (NPV) of the total cost, is largely the same and often even higher for the PPP.¹



- Due to their characteristics as long-term contracts that postpone payment obligations and spread them over very long periods, the fiscal consequences of PPPs are often overlooked in the short-term.
- The full fiscal implications of PPPs become clear only once PPP-related payment obligations—from firm or contingent liabilities—affect the budget during operation.
- For countries that lack a longer-term perspective on public finances—where there is little control over commitments beyond the budget year and/or no medium-term expenditure framework (MTEF)—PPP projects may look attractive and affordable due to their delayed impact on the budget.
- Experience shows that fiscal sustainability has been undermined in several countries by PPP programs with long-term fiscal implications that were not well understood and managed by the government.²
- Assessing these fiscal implications before entering into a PPP and managing the fiscal implications throughout the PPP contract are essential to safeguard the sustainability of public finances.

PFRAM 2.0 has been developed to support governments in assessing and managing fiscal costs and risks from PPPs and to promote informed decision-making on infrastructure.

¹ This is due to the private sector profit and the higher financing costs that the private sector encounters, compared to the public sector.

² “Public-Private Partnerships in the Caribbean Region—Reaping the Benefits While Managing Fiscal Risks,” IMF, FAD No 19/07, M. Queyranne, W. Daal, and K. Funke (2019).

- In practice, assessing PPPs involves gathering specific project information and, given the long-term nature of the contract, making judgments about the government's behavior at key stages of the project cycle.
- PFRAM 2.0 provides a structured process for gathering basic information relevant to a PPP project and portfolio in a simple and user-friendly way. Following simple steps and using a questionnaire-style approach, PFRAM 2.0 allows the user to estimate the fiscal costs from an individual project, a set of projects, or a complete portfolio of PPPs. It determines the expected timing and magnitude of government payments, as well as their impact on the government's deficit and debt.
- PFRAM 2.0 also estimates the potential fiscal impact of contingent liabilities related to PPPs, namely, debt and MRGs. These contingent liabilities can turn into fiscal costs if a specific situation occurs; for example, if the debtor does not service the debt that has been guaranteed by the government, or if actual demand for the project is much lower than forecast at the time of the contract awarding. PFRAM 2.0 estimates the fiscal impact under the worst-case scenario to incentivize more prudent management of PPPs.
- By assessing both fiscal costs and risks in PPPs, PFRAM 2.0 allows the government to make informed decisions on public investment, ensuring that (1) the fiscal impacts of existing PPPs are well understood and appropriately managed; and (2) new PPPs are only awarded if they do not undermine the long-term sustainability of public finances.

PFRAM 2.0 has been designed to facilitate communication across and within government entities and to promote fiscal transparency.

- To promote fiscal transparency, PFRAM 2.0 assesses the fiscal implications of PPPs in line with international accounting and statistical standards.³ The tool delivers standardized information and summary reports, allowing the user to follow the implementation of projects over time and throughout the project cycle, and to make assessments comparable across projects.
- To facilitate communication and discussion about projects among the different levels of government, PFRAM 2.0 generates information on short-, medium-, and long-term impacts on the government's deficit, gross debt, and net worth of (1) individual PPPs, such as a highway; (2) a specific set of projects, such as in the transport sector; and (3) the overall PPP portfolio, including the transport, energy, health, education, and other sectors.
- Results are generated automatically and presented in standardized tables and graphs that are easily accessible and that can be used for communication with non-PPP analysts.

³ International Public Sector Accounting Standards (IPSAS) and *Government Finance Statistics Manual 2014 (GFSM)*.

B. What Is the Scope of PFRAM 2.0?

All types of PPP projects

PFRAM 2.0 is designed to accommodate PPP projects where the private partner invests in an asset that is used for delivering a public service, which is fully or partly delivered by the private partner and for which the government, the user, or both pay (see Section III A for a definition of PPPs). This includes economic infrastructure, such as roads or airports, and social infrastructure, such as hospitals or schools. Also, PFRAM 2.0 can be used for both greenfield and brownfield projects.

Thus, **PFRAM 2.0 can accommodate various types of PPPs**, including:

- **Government-Funded PPPs:** PPP projects, in which the government pays the private partner for the assets and/or services provided.
- **User-funded PPPs:** Concessions, in which users are expected to be the main source of revenue of the private partner (for example, through tolls), even if the government provides additional support in the form of subsidies or guarantees.
- **Projects with combined funding:** PPP projects, in which the cost of providing the asset and the service is partly paid by the user and partly by the government (see Section III B for how projects can be funded, and Section III C for how the government may provide support or funding to a project).

PPP project ideas and existing projects

- To assess a PPP project, **PFRAM 2.0 requires a minimum set of information** on the project, including the following:
 - The contract parameters—when the contract starts and ends.
 - The funding—who pays for the service.
 - The financing—how the investment will be financed, that is, what portion will be financed by debt and equity, respectively.
 - The asset—what the value of the total investment, the length of the construction period, and the expected useful life of the asset are.
 - The service to be provided—what the demand and the price per unit of the service are.
 - The cost of the service—what the maintenance and operation costs are.
 - Guarantees, if they exist—whether the government provides any debt or minimum revenue guarantees (**MRGs**).
- **PFRAM 2.0 can be used to assess PPP projects at any stage of their life cycles** if this information is provided and/or estimated.
 - In the case of **project ideas** at the early stage of the project life cycle, the information would be based on the initial ideas and assumptions, which can be tested and adjusted throughout the design and decision process. Different designs for the same PPP project can be entered as separate projects in PFRAM 2.0 and then compared to the fiscal implications of the design options. PFRAM 2.0 can thus be used to guide the fiscal aspects of the project design.
 - In the case of **existing projects** for which a contract has been signed or is under implementation, the contract and the financial model should provide the information required by PFRAM.
 - In case of **information gaps**, users can make assumptions about missing data and discuss the potential fiscal implications of alternative scenarios.

Individual projects and PPP portfolio

- **PFRAM 2.0 can be used to assess individual projects or a portfolio of projects.**
 - PFRAM 2.0 records the information on the PPPs on a project-by-project basis, but one PFRAM 2.0 file can analyze up to 30 different projects.⁴
-

⁴ See section IV. A. Data and IT requirements of PFRAM 2.0.

	<ul style="list-style-type: none"> ■ The fiscal impact assessment can be done for individual projects or for a selected group of projects: <ul style="list-style-type: none"> ✓ At the project level, PFRAM 2.0 estimates the impact of the specific project on the government deficit and debt over the entire project cycle. ✓ At the portfolio level, PFRAM 2.0 aggregates the estimated impact of all or a group of PPP projects on the government’s deficit and debt. All projects are assumed to be independent; PFRAM 2.0 does not model any potential correlation among individual projects.
<p>Accrual and cash accounting basis</p>	<ul style="list-style-type: none"> ■ Although PFRAM 2.0 is modeled in accordance with accrual standards (IPSAS 32), it estimates the impact of a project both on an accrual basis (income statement, balance sheet) and on a cash basis (cash statement). ■ Therefore, PFRAM 2.0 can be used in countries with accounting systems at different levels of development.
<p>Firm and contingent government liabilities</p>	<ul style="list-style-type: none"> ■ PFRAM 2.0 follows international accounting standards for PPPs (IPSAS 32 see Section III D) in determining whether a PPP is treated on-balance sheet or off-balance sheet of the government. If the PPP is treated on-balance sheet, it will generate a firm liability for government and a related non-financial asset of equal value, regardless of the type of PPP project or financing structure (that is, whether it is government- or user-funded PPP). These firm liabilities will be classified as loans in public sector debt statistics (according to <i>GFSM 2014</i>). ■ In addition, if the government provides a debt or MRG to the private partner, these guarantees should be recorded as contingent liabilities of the government, following the corresponding accounting standard, IPSAS 19. Contingent liabilities are not included in public sector debt statistics but are reported separately as memorandum items.

II. UNDERSTANDING PFRAM 2.0

A. What PFRAM 2.0 Can Do

<p>Looks at a project from the private partner’s perspective</p>	<ul style="list-style-type: none"> ■ Estimates the annual cash flows (costs and revenues) of each project, its internal rate of return, and the value of the project’s related assets and liabilities for the entire life cycle. ■ By doing so, it allows the user to check whether the project makes sense financially. This is important to ensure that the private partner has a genuine interest in the project. The forecasted project cash flows will allow the private partner to operate and manage the project in the long-term and to realize a reasonable rate of return.
<p>Assesses projects at any stage in the project life cycle</p>	<p>PFRAM 2.0 can be used to assess the fiscal implications of a projects at any stage of the project life cycle:</p> <ul style="list-style-type: none"> ■ At the design and procurement stage (where the design might be refined or adjusted in the agreement with the project company), PFRAM 2.0 can be used to assess the fiscal implications of various design options. For this purpose, the different design options would be entered in PFRAM 2.0 as various projects.⁵

⁵ In this case, projects could be compared to one another but could not be treated as a portfolio, because they are mutually exclusive options for a single project.

	<ul style="list-style-type: none">■ At the project selection stage, PFRAM 2.0 can be used to assess the fiscal impact of the project individually or as part of the project portfolio.■ At the implementation stage, PFRAM 2.0 allows the user to monitor the project and helps to manage the fiscal implications of individual projects and the project portfolio.
Estimates the marginal fiscal impact of one project	<ul style="list-style-type: none">■ From an accounting perspective, it calculates the fiscal costs of a PPP, presenting the marginal impact of the individual PPP on (1) the government financial statement, that is, revenues and expenses following accrual accounting; (2) the government balance sheet, that is, assets and liabilities; and (3) the government cashflows, that is, cash inflows or revenues and cash outflows or expenses in line with cash accounting or as relevant to the cash budget.■ From a statistics perspective, it shows the marginal expected impact from an individual PPP project on the government's (1) net lending and borrowing; (2) gross debt; and (3) cash balance.■ It also estimates the value of contingent liabilities arising from: (1) debt guarantees; and (2) MRGs.
Estimates the marginal fiscal impact of a PPP portfolio	<ul style="list-style-type: none">■ It allows the user to work with a portfolio of up to 30 projects. The composition of the portfolio can be changed by selecting or deselecting each project individually, allowing the user to work with a subset of projects within the overall portfolio, for example, roads or schools.■ It aggregates the fiscal impact of the portfolio of PPP projects by calculating a simple sum of the fiscal variables of the individual projects.
Generates a fiscal risk matrix on a PPP project	<ul style="list-style-type: none">■ Following a structured questionnaire, PFRAM 2.0 assists the user in identifying the main risks arising from a PPP project, likelihood, and impact, as well as potential mitigation measures. Information provided by the user is summarized in a Project Fiscal Risk Matrix (see Section III E).
Supports sensitivity analysis	<p>PFRAM 2.0 allows the user to estimate the impact of macroeconomic shocks on the PPP portfolio:</p> <ul style="list-style-type: none">■ A macroeconomic shock can be designed as a temporary or permanent deviation of (1) GDP growth, (2) inflation, or (3) the nominal exchange rate from the baseline projection.■ PFRAM 2.0 presents and compares the baseline and shock-based projections for (1) net lending and borrowing, (2) the cash balance, (3) gross debt, (4) the stock of contingent liabilities, that is, the debt and MRGs, and (5) expected payments under MRGs. <p>PFRAM 2.0 can also be used to assess the sensitivity of fiscal indicators to alternative project design options.</p> <ul style="list-style-type: none">■ Entering different design options as separate projects in a PFRAM 2.0 file allows the user to directly compare the fiscal implications of changing the design of the project and so to compare multiple design options.
Simulates contract termination	<ul style="list-style-type: none">■ PFRAM 2.0 determines the potential fiscal costs of terminating a PPP project, calculating the impact of contract termination (1) on project gross debt and (2) on the government's cash balance, when compensating the private partner (a) for the book value of the asset or (b) for the loss in returns from the project.

B. What PFRAM 2.0 Cannot Do

- PFRAM 2.0 estimates the macro-fiscal implications of a PPP project based on a limited amount of information (typically included in the financial model of the project) and the analyst’s assumptions. As a result, it provides a broad estimation of the potential fiscal costs and risks of a project.
- Yet, **PFRAM 2.0 does not...**

<p>Justify the economic and/or social relevance of a project (good versus bad projects)</p>	<ul style="list-style-type: none"> ■ Whether a project should be considered for implementation, or whether it should be decided on based on a rigorous project appraisal, which is part of a comprehensive public investment management (PIM) process. ■ PFRAM 2.0 does not replace a comprehensive project assessment and does not constitute a cost-benefit analysis. ■ Therefore, while PFRAM 2.0 does provide information on the fiscal implications of a project, it does not provide input for judging the quality and/or relevance of a project. PFRAM 2.0 does not help in distinguishing good from bad projects or in prioritizing projects.
<p>Ascertain a project procurement option (PPPs versus traditional public investment)</p>	<ul style="list-style-type: none"> ■ PFRAM 2.0 looks at the macro-fiscal implications of a project when carried out as a PPP and does not investigate the implications of the same project being carried out through traditional procurement. ■ The decision whether to procure a project that has been chosen for implementation as a PPP or through traditional procurement should be based on a comparison of the advantages—economic and other—of the two alternatives.
<p>Substitute a complete financial and economic project evaluation</p>	<ul style="list-style-type: none"> ■ PFRAM 2.0 assesses the fiscal implications of a project. It does not assess the viability of the project. This assessment is usually done by means of a comprehensive business plan, including a detailed financial model. ■ PFRAM 2.0 provides some high-level presentations of the financial flows for the project company; however, these not meant to replicate or replace the financial model. <p>NOTE: The financial model is often prepared by or under the responsibility of the private partner. The public partner and the government entity responsible for managing public finances should have access to the initial financial model and any updates. Without this information, it is unlikely that the public partner would be in a position to understand the economics of the project.</p>
<p>Cover special types of PPP projects (for example, PPA, flexible term)</p>	<ul style="list-style-type: none"> ■ PFRAM 2.0 has been designed to assess the most common and straightforward type of PPPs, namely, projects that include the creation of the asset and the delivery of services in one contract and that have a fixed term. ■ Power Purchase Agreements (PPAs) <ul style="list-style-type: none"> ■ PPAs that do not involve the creation of an asset—for example, a powerplant is usually created under a separate contract, which can be a PPP or not—only create a stream of current expenditures from the government/public sector budget for the purchase of power in each period. Simple PPAs do not create an asset or a liability. Therefore, PFRAM 2.0 is not suitable for capturing this type of contract. ■ In cases where the PPA also includes the creation of an asset, the contract has two components: (1) a PPP for the creation of the asset, for example, a power plant, which

can be captured by PFRAM 2.0; and (2) a pure PPA component for the purchase of a service or utility, for example, power, which PFRAM 2.0 does not capture automatically and so should be added manually.

■ **Projects with flexible duration**

- PFRAM 2.0 is also not suitable for assessing contracts with a flexible duration. The logic of PFRAM 2.0 builds on determining the interest rate, that is, the financing costs for the government, at which the payments received by the project company cover the cost for investment, operation and maintenance, and financing. If the contract is open ended or has a flexible duration, this interest rate and the financing cost cannot be calculated, and the model cannot operate.

Accounts for the correlation among different risks within a project or across projects

- Although PFRAM 2.0 assesses the cumulative fiscal impact of a PPP portfolio, **it does not consider the correlation among different fiscal risks**, either within a project or across projects. It implicitly assumes that all risks and projects are not correlated.
-

III. CORE CONCEPTS UNDERPINNING PFRAM 2.0

A. Definitions of PPPs

Although there is no single definition of PPPs, some common features exist across national practices. A PPP is a **long-term contract** between the **public sector and a private partner**, providing for the **financing, construction, and operation** of a **non-financial asset**.

PPPs exclude simple joint ventures, the sale of public assets, or of public company shares—which are part of a privatization process—and arrangements in which the private partner is not required to finance investment.

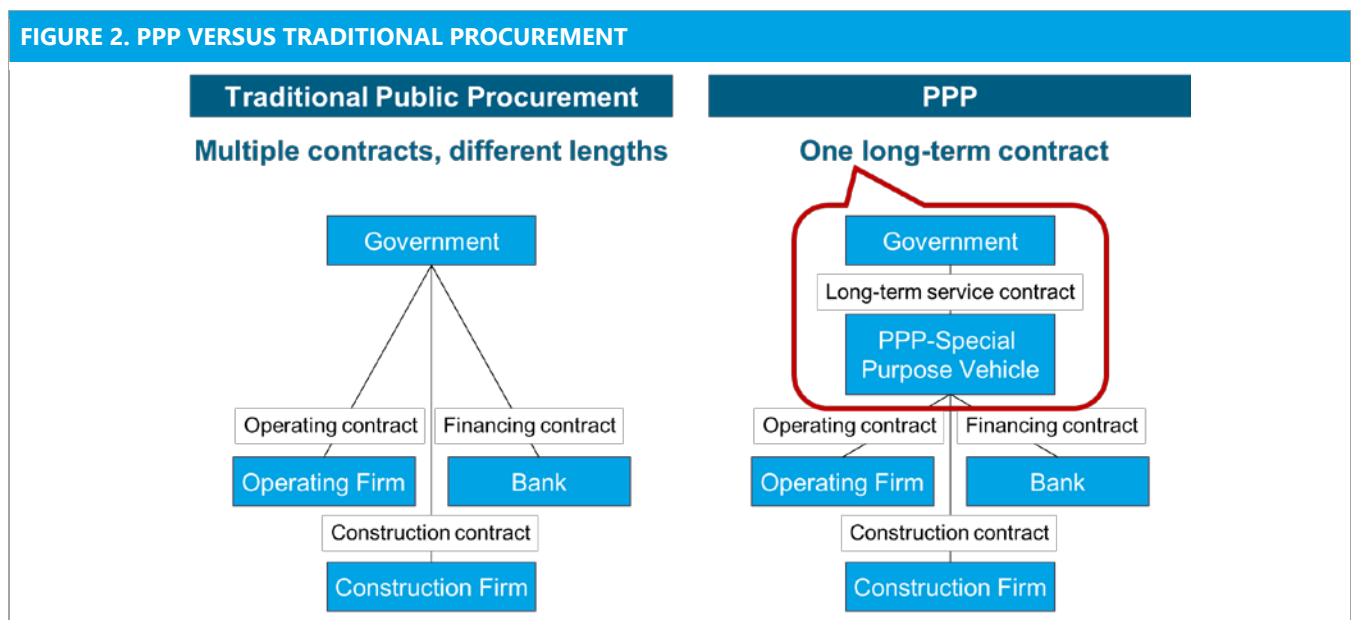
There are two types of PPP projects, although most projects are a combination of the two:

- **Government-funded PPPs:** projects in which the government pays the private partner for the assets and/or services provided, for example, availability payments
- **User-funded PPPs:** projects in which users are expected to be the main source of revenue of the private partner, for example, concessions, even if the government provides additional support in the form of subsidies or guarantees.

For the purpose of PFRAM 2.0, PPPs are defined by the following main characteristics:

- Long-term arrangements between a public and a private partner; the public partner could be public entity controlled by the central government, a subnational government, or a public corporation
- Significant risk-sharing between the public and private partners
- Private partner responsibility for the project finance
- Government remuneration of the private partner linked to performance.

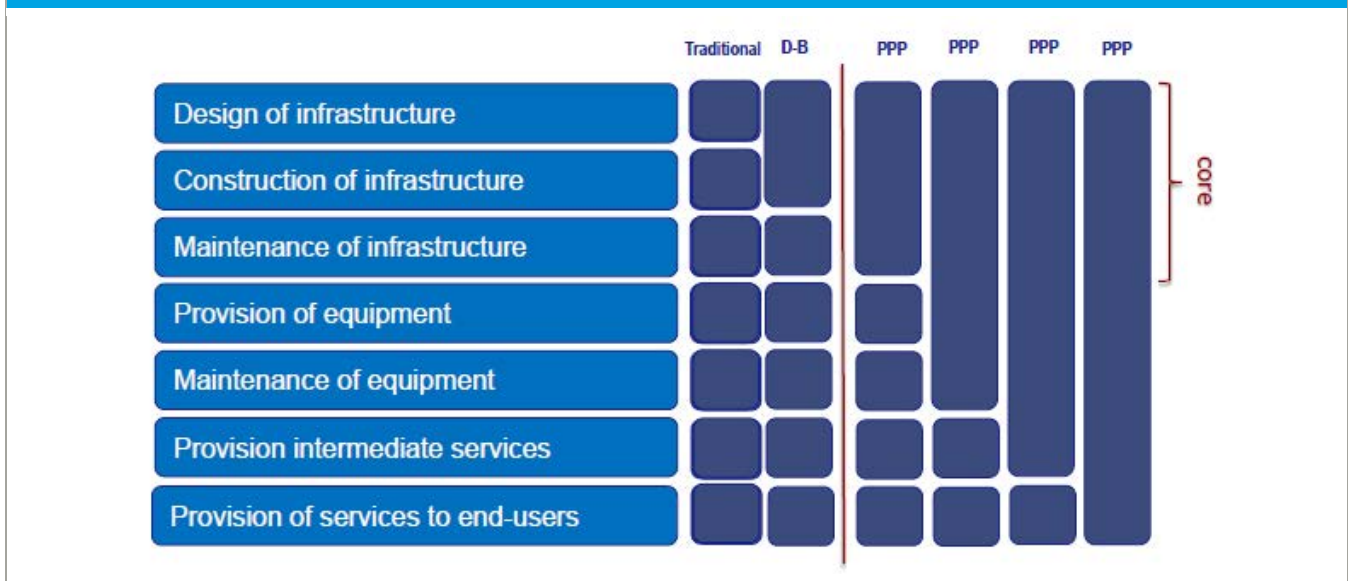
PPPs change the role of the government relative to infrastructure (Figure 2). In traditional public procurement, the government manages a set of independent short-term contracts: with banks and investors for procuring project finance; with construction firms for developing the asset; and with operating firms for operating the asset. The government is ultimately responsible for designing, financing, constructing, operating, and managing the asset, although it hires private companies to do these on its behalf. In a PPP, the government signs one long-term contract with the private partner (often established as a special-purpose vehicle, SPV). The SPV is responsible for providing an infrastructure asset and services in line with the contract specifications agreed to with the government. Then, the private partner manages a set of contracts with banks and construction and operating companies; the government ensures that the asset and services provided are in line with the performance specifications agreed to in the PPP contract.



In PPPs, the private partner does the following (Figure 3):

- supplies **infrastructure assets and services** on behalf of the public partner
- makes a **significant investment** to either:
 - ✓ **create a new non-financial asset**, which can be by constructing a non-movable asset, such as a road, bridge, hospital, school, prison, administrative building, power plant, water treatment facilities, or waste treatment facilities; and/or by providing movable assets, such as equipment for public transport or for operating a port
 - ✓ **expand and/or rehabilitate an existing asset**, such as by adding lanes to a road, refurbishing an existing hospital building, or replacing existing equipment.
- is **involved in the exploitation** of the non-financial asset **throughout the life of the PPP**; the private partner is responsible for **maintaining the asset**, but it also may be responsible for **delivering part or all of the services** related to the exploitation of the asset.

FIGURE 3. PPP SCHEMES



Note: D-B corresponds to design and build; each box/rectangle represents a contract to be signed by the government.

- **In turn, the government is responsible for monitoring and managing the PPP contract over the short and the long-run**, including the following:
 - during construction, ensuring that the private partner delivers the assets to provide the services in line with the performance specifications agreed in the PPP contract
 - during operation, compensating the private partner as agreed to in the PPP contract, for example, by regular payments or by allowing the private to collect fees directly from the user; deducting the necessary amount in case of nonperformance; and making any strategic decisions needed.

B. Financing versus Funding

When assessing the impact of a PPP in government accounts, it is critical to distinguish between the funding and financing of a PPP project:

- **Funding** of a PPP project refers to how investment and operational costs are repaid over time to compensate the private partner that provides the debt or equity for the project. Ultimately, public infrastructure can only be paid (1) by users of the infrastructure through direct user charges, such as tolls in the case of highways; or (2) by taxpayers through the government’s periodic payments to the private partner. PPP projects funded by users of the infrastructure are user-funded; those funded by taxpayers are called government-funded.
- **Financing** of a PPP project refers to raising money upfront to pay for the design, construction, and early operational phases of an infrastructure asset, whether through debt or equity instruments of a public or private nature. This responsibility is ideally the role of the private partner, even if the government provides some type of support. The private partner will only provide financing in the expectation that it will be repaid, including a rate of return commensurate with the risks borne.

The funding structure—user-funded, government-funded, or a combination—is **key to estimating the impact of a PPP in the government’s accounts**. Once the asset is considered to be controlled by the government (see Section III D for how to determine whether a PPP asset is government-controlled), the funding structure determines the way that it impacts the government accounts in terms of deficit and debt. The financing structure impacts the way the project is accounted for by the private partner; although this impact is important to understanding the viability of the project, it does not directly affect government accounts.

PFRAM 2.0 asks the user to provide both the funding and the financing structures of the PPP project. The funding information is used to estimate the impact on the government financial statements and statistical reports at different stages of the project cycle. The financing information is used to generate a rough indication of the private partner’s cash flows during the entire life cycle of the project.

C. Government Support to PPPs

To make a PPP project viable while keeping the cost of government and/or the prices for users at a politically acceptable level, governments can provide financial support to the private partner in the PPP in various forms.

GUARANTEES

- Under a **debt guarantee**, the government guarantees the repayment of part or all of the debt of the SPV to finance the investment under the PPP.
- Under a **MRG**, the government guarantees the private partner a minimum revenue from the user paying for the service provided by the PPP. The MRG can be determined as a fixed amount or in the form of a minimum volume and/or a minimum price. In case of a shortfall of revenues, the government makes payments to the private partner to make up for any difference between the actual revenues collected and the agreed minimum.
- PFRAM 2.0 captures the following:
 - **debt guarantees** as a percentage of the total debt of the private partner guaranteed by the government. The guaranteed amount is assumed to be fully amortized over the life of the contract.
 - **MRGs** by setting a guaranteed price or tariff and guaranteed volume. Together, these two components determine the minimum revenue amount guaranteed by the government. PFRAM 2.0 provides two estimations:
 - ✓ the **outstanding stock of the MRG** as the cumulative nominal value without discount of the MRG by the government for the rest of the PPP contract (the maximum government exposure). By doing this, PFRAM 2.0 estimates the contingent liability for government guarantee in the worst-case-scenario. Given that is a simple accumulation of expected payments over time, the value of the guarantee decreases over the life of the contact.
 - ✓ the **government payments linked to the MRG** when it is called. Under the baseline scenario, the government is not expected to make payments linked to the MRG (under normal circumstances the

guarantee is not called); in the event of a shock, such as a decline in real GDP growth, project revenues could fall below the MRG and trigger government payments.

- ✓ Although **PFRAM 2.0 does not estimate the probability** of the MRG being called, it provides a range for the potential fiscal impact of the MRG at any point: maximum impact (outstanding stock) and expected payments in the event of a shock.

SUBSIDIES

- If **(1)** the government deems that the full-cost price of a service would be too high for the user, or **(2)** if the project is not economically viable with the price and volume forecast, the government can assume a portion of the cost by providing a **subsidy**.
- Subsidies can be provided as lump-sum payments, or they may be linked to the volume produced and sold by the private partner:
 - The **lump-sum subsidy** is recorded as a one-off payment from the government. It is an outflow from and cost for the government, and an inflow or revenue to the private partner.
 - The **volume-based subsidy** is calculated from a subsidy amount per unit and the volume consumed. These payments constitute a periodic outflow from and cost for the government, and a periodic inflow or revenue to the private partner.
- PFRAM 2.0 allows the user to record both under a **combined funding** option, where services are paid partly by users and partly by the government.

EQUITY INJECTIONS

- A **government may participate in the equity of a project company, namely, the SPV established for the purpose of the PPP**. This participation can be done for various reasons, including the desire to retain influence or control over the project company, or in the event of a lack of equity from investors. An equity injection is a contribution from the government to finance the project company, which may require a cash outflow.
- In contrast to subsidies, **equity injections are a financial transaction for the government**; they constitute an increase in financial asset, shares, and equity, with the counterpart being a decrease in another financial asset or cash or an increase in a liability.
- PFRAM 2.0 calculates the shareholding of the government based on the total investment cost and the percentage of shares held by the government.
- In practice, **government shareholdings have the same economic effect as government debt guarantees**; they are equivalent to a government promise to cover potential losses that the project company might incur. Thus, PFRAM 2.0 treats equity injections the same way as government debt guarantees. This reflects the fact that an actual payment of the equity injection will be required if the company incurs losses and needs to use the equity to cover the losses. In such a case, the equity will be lost. The loss has to be absorbed by the government, which will not recover its equity contribution, in the same way that the government would absorb the call of a debt guarantee. In turn, if the equity is not used

to cover losses, the government equity would be returned to the government at the end of the PPP project. This process has the same effect as a guarantee that is not being called.

TAX AMNESTY

- The government might grant the private partner a **tax amnesty**, exempting it from certain taxes, for example, to reduce the private partner's cost of business or to reduce service cost for users.
- PFRAM 2.0 estimates the **income tax** of the PPP project that the private partner would have to pay and the revenues to the government generated from this tax.
- To assess the **impact of a tax exemption**, the project would have to be entered into PFRAM 2.0 twice, with and without the reduced tax rate. This process allows the user to determine the tax amnesty benefit to the project company and the cost of the tax expenditure to the government.

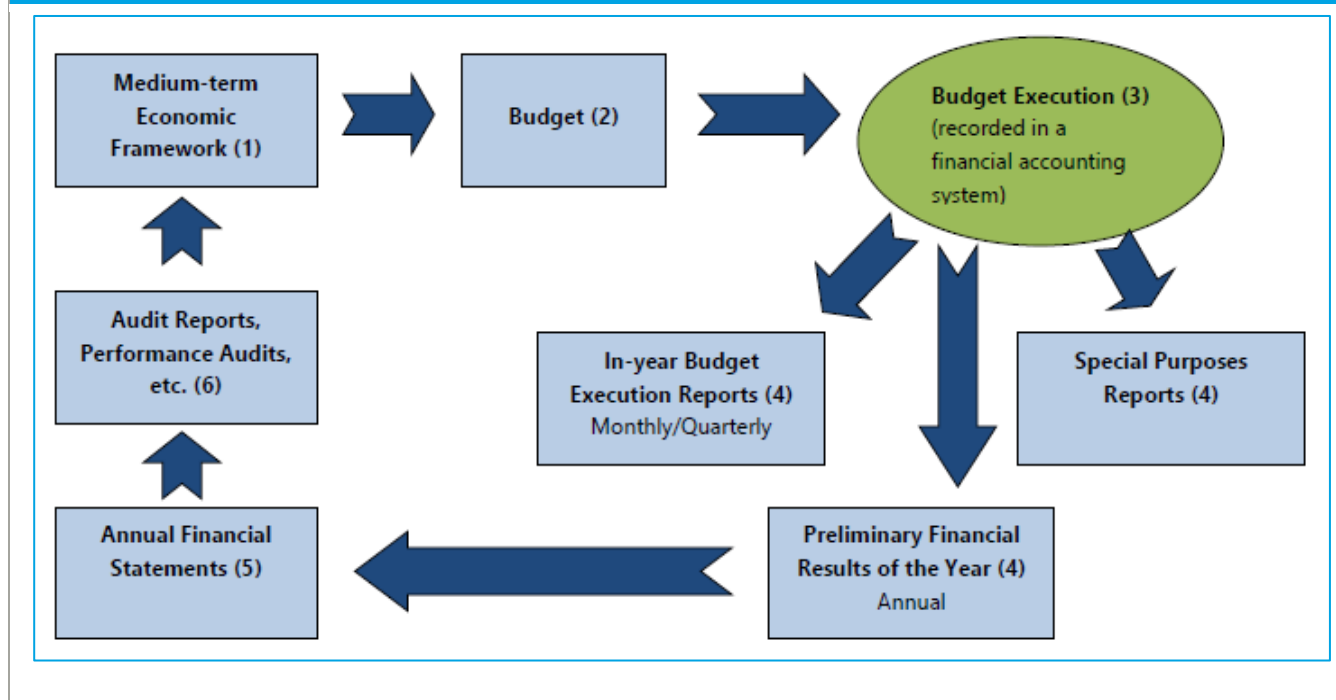
CONTRIBUTION IN KIND

- Governments often provide contributions in kind to the project company. These includes the **transfer of existing assets or the right to use government assets temporarily**, for example, the right to use the ground around a public infrastructure, such as a road, for commercial exploitation.
- These **contributions in kind are often critical to the economic viability** of the PPP.
- These **contributions are often material in terms of the opportunity cost**, since the government could have otherwise used the asset or sold the rights.
- The contributions in kind provided by the government should thus be considered when assessing the fiscal costs and risks of a PPP.
- In PFRAM 2.0, these contributions can be recorded if a valuation is available as "**other Government payments**" as part of the funding arrangements.

D. Accounting and Reporting PPPs

The way that PPPs are included in the public sector's accounts varies across countries, depending on which set of information is used in the assessment. First, it is important to clarify what "public sector accounts" means. Information about public sector performance can be generated at different stages of the fiscal cycle based on different—although related—information systems (Figure 4).

FIGURE 4. THE FISCAL CYCLE



Sources: Fact Sheet, Government Finance Statistics (GFS), Statistics Department, IMF (2009).
<http://www.imf.org/external/pubs/ft/gfs/manual/comp.htm>.

There are three main sets of public sector accounts that use information at different stages of the fiscal cycle: budgeting, accounting, and statistics. Ideally, the treatment of PPPs should be consistent among the three sets of public sector accounts; budgeting, accounting, and statistical reporting standards of PPPs should result in similar impacts on the main fiscal aggregates of deficit and debt. However, in practice, the impact of PPPs reported by governments in these three set of accounts could differ. **PFRAM 2.0 assumes that PPPs are on-budget, are on-balance sheet, and are included in government finance statistics.**

PPPS ON-BUDGET OR OFF-BUDGET: BUDGETING FOR PPPS

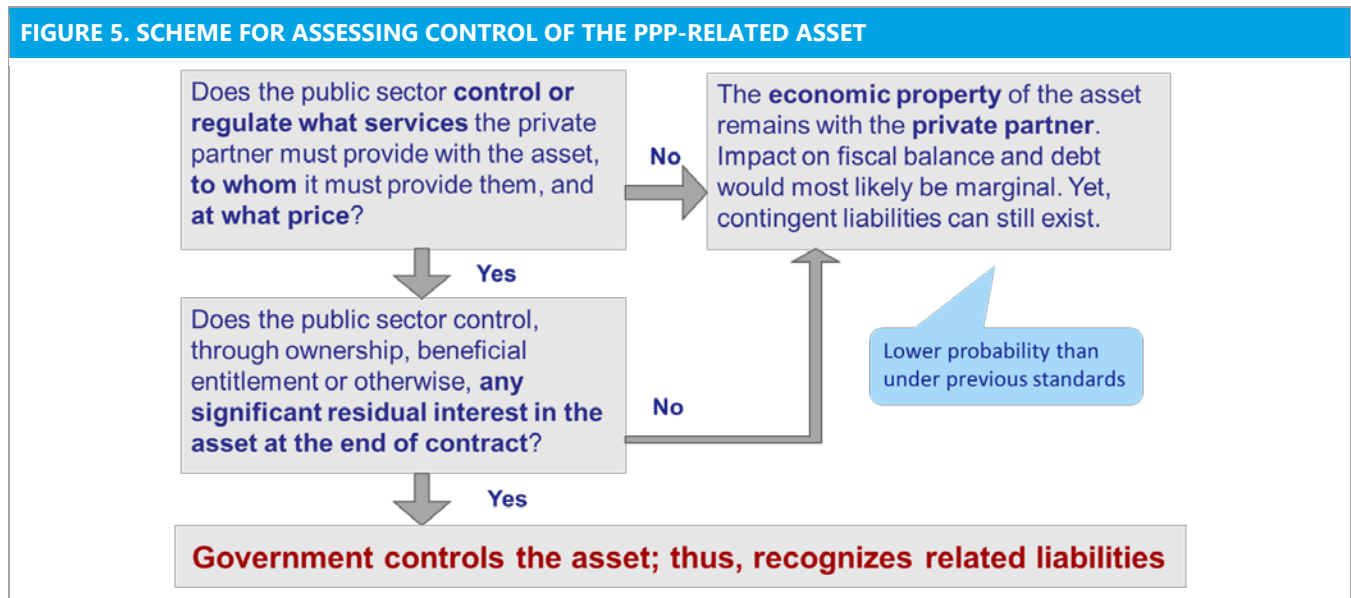
- **Good practices suggest that PPPs should be included in the government’s budget.** PPPs should compete for budgetary funds with other investment projects. Ideally, there should be no difference with the way in which traditional and PPP projects are recorded in the budget. If the PPP creates a public asset that is controlled by government, the budget implications should be the same as when the public asset is procured traditionally. However, this is not the case when the government’s budget is on a cash basis.
- **Most countries do their budget on a cash basis, and so PPPs will mainly impact budget deficits when the government makes regular payments to the private partner once the asset has been constructed and becomes operational.**⁶ In PPPs the private partner is responsible for constructing the asset by using its own financing and will be repaid later during operation. The government does not face

⁶ Although not very common, governments can also contribute during the construction phase.

any cash flows related to the PPP during the construction phase. Only when the asset becomes operational, and if it is a **government-funded PPP**, will the government need to make regular payments, recording the corresponding cash outflows from the budget as expenses. If it is a **user-funded PPP**, such as a concession, the government’s cash flows would typically be zero, since the private partner constructs the asset and the user pays it back directly through fees or tariffs.⁷ Therefore, nothing is recorded when the government’s budget is on a cash basis and PPPs are user-funded, hampering budget discipline and transparency.

PPPS ON-BALANCE AND OFF-BALANCE: ACCOUNTING FOR PPPS

- The **International Public Sector Accounting Standards (IPSAS)** comprise the set of accounting rules to record all transactions undertaken by public entities. Accounting of PPP contracts is governed by **IPSAS 32 “Service Concession Agreements: The Grantor.”** IPSAS 32 prescribes the rules for accounting PPP contracts in the public sector accounts, including government-funded and user-funded PPPs.
- In practice, **the adoption of IPSAS 32 has a large impact on public sector accounts, since under IPSAS 32 most PPPs contracts would be reflected in the government financial statements:** the statement of government operations, the balance sheet, and the government cash statement.
- According to IPSAS 32, **if the government has the control of the PPP-related asset**, the asset and related liability are regarded as belonging to the government, whether it is funded by the government or users. The government controls the asset (1) if it controls or regulates what services the private partner must provide with the asset, to whom it must provide them, and at what price; and (2) if it controls—through ownership, beneficial entitlement, or other means—any significant residual interest in the asset at the end of the term of the arrangement (Figure 5).



⁷ Concessions can generate cash inflows for government, for example, when there are revenue sharing agreements with the private or lease payments to governments. It can also generate outflows for government if guarantees are called.

- If the government controls the PPP-related asset, then the **asset should be included in the government financial statements, including the government balance sheet**. This is often referred to as “on-balance sheet” treatment.
 - **On-balance sheet:** The cost of creating the asset and providing the service are recorded in the government accounts, irrespective of whether they are government- or user-funded PPPs. The assets created by the PPP and the corresponding liability are recorded on the government’s balance sheet.
 - **Off-balance sheet:** The cost of the project, other than regular payments made from the government budget to the private provider, is not recorded in the government accounts, as prescribed by IPSAS. Also, the assets created by the PPP and the corresponding liabilities are not recorded on the government’s balance sheet.
- **Under IPSAS 32, most PPPs would be treated on-balance sheet.** This is because PPPs are used to deliver a public service and the government usually determines the kind of service, the access to the service, and the price of the service. Once it has been decided that the PPP asset is to be treated on-balance sheet, all expenditures and revenues related to the asset, as well as the corresponding liabilities, are accounted for in the government accounts. Thus, the fiscal implications of procuring the asset or service through a PPP are very similar to those of traditional procurement, regardless of whether the project is government- or user-funded.
- Therefore, **whether a PPP is on- or off-balance sheet depends on the characteristics of the PPP asset**—the extent to which the government controls it—**and on the national accounting standards followed by a specific country.**
- **PFRAM 2.0 estimates the impact of a PPP project under the assumption that the government controls the asset.** It applies IPSAS 32 to estimate the PPP impact on government: (1) non-financial assets and liabilities (balance sheet on accrual basis); (2) income statement (accrual basis); and (3) cash statement (on a cash basis).

IN/OUT GOVERNMENT FINANCE STATISTICS: REPORTING PPPS IN PUBLIC DEFICIT AND DEBT

- The IMF’s ***Government Finance Statistics Manual 2014 (GFSM 2014)*** and the ***Public Sector Debt Statistics 2012 (PSDS 2012)*** are the international standards for the public sector statistics.
- According to *GFSM 2014* and *PSDS 2012*, **if the government bears most of the project’s risks and rewards according to the PPP contract, the PPP-related asset is regarded as a public asset.** In this case, the **government is the economic owner of the asset**, which is different from the **legal ownership** that in a PPP is typically assigned to the private partner until the contract expires. If the government is the economic owner of the asset, all transactions related to this asset would impact the government finance statistics, namely, net lending/borrowing, gross and net debt, and cash balance.
- **If the private partner is regarded as bearing most of the risks and reaping most of the benefits of the PPP project, then PPP-related asset is regarded as private.** In this case, there is no impact on the government finance statistics, until the asset reverts to the public sector at the end of the PPP contract. At that point, the government would recognize the transfer of the asset from the private partner to its own balance sheet, recording a capital transfer with the counterpart being a change in other economic flows.

- To support the **assessment of risks arising from the PPP project**, PFRAM 2.0 assists the user to identify risks and how they are allocated in the contract, as well as to discuss their likelihood and potential fiscal impact. A set of 11 main risks and 52 subcategories is discussed in the context of **PFRAM's fiscal risk matrix** (section III E).
- *GFSM 2014* and PSDS 2012 do not distinguish between government-funded and user-funded PPPs, recording all PPPs, regardless of their funding structure.
- **Although fiscal statistics differ from budgeting and accounting information, they ideally should be consistent and complementary, to allow their integration when assessing public sector performance.** The difference in assessing a PPP-related asset as public or private either using the control approach (IPSAS 32) or the risks and reward approach (*GFSM 2014*), are more theoretical than practical.
- **In practice, both set of standards provide a different outcome, leading to a different assessment of the fiscal impact of PPPs, only in limited contexts.** Even if outcomes are different, they can be easily reconcilable. Unreconcilable discrepancies among these three public sector accounts reduce fiscal transparency and potentially undermine timely and adequate fiscal policy responses.
- To safeguard consistency and transparency, national practices should ensure that a PPP is consistently treated on- or off-balance sheet, even if this means that either for accounting or reporting purposes, the national treatment is not fully in line with international standards.
- **PFRAM 2.0 treats PPPs consistently in the budget, accounting, and statistics.** Yet, it is based on principles prescribed by IPSAS 32 and assumes that they are applicable for budget and reporting purposes (Box 2).

Box 2: Why Use IPSAS 32 in PFRAM 2.0

First, the use of IPSAS 32 eliminates the accounting bias in favor of PPPs. According to IPSAS 32, the impact of PPPs in government accounts is the same as if infrastructure projects would be procured traditionally (on-budget, included in the public sector financial statements, included in fiscal statistics). As a result, PPPs would be undertaken based on their own value-added—they are the most cost-effective way to procure a project—rather than because they can be excluded from the public sector accounts.⁸

Second, while IPSAS 32 and GFSM 2014 approaches for asset recognition in the case of PPPs are different in nature, their implementation should typically lead to similar outcome and to a similar impact on main fiscal aggregates. In only a few cases would IPSAS 32 and GFSM 2014 result in PPPs treated differently in accounting and statistics, and these instances should be regarded as exceptions

Third, in an integrated information system, accounting records are reconciled with budget execution reports, since both are the basis for compiling fiscal statistics. Therefore, by accounting for PPPs following IPSAS 32, we are indirectly promoting consistency among budgeting, accounting, and statistics.

⁸ Irwin, Funke and Rial (2013), *Budgeting and Reporting for Public-Private Partnerships*, OECD Transport Forum, Discussion Paper 2013-07.

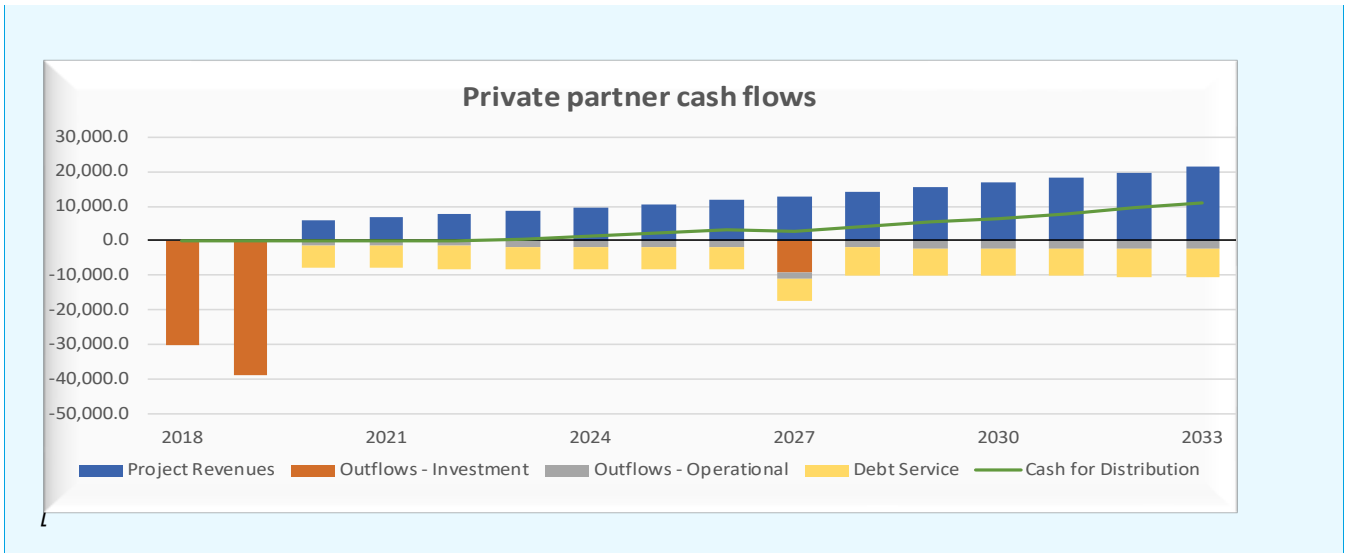
ESTIMATING THE PRIVATE PARTNER'S FINANCIAL STATEMENTS

Although PFRAM 2.0 focuses on the government, it also estimates the impact of a PPP project on the private partner's financial statements (referred as the "concessionaire" in the Excel file) for several reasons.

First, from an accounting point of view, the private partner's financial statements provide the counterpart entries for estimating the government's financial statements. For example, in government-funded PPPs, cash inflows for the private partner should correspond to cash outflows for the government. Therefore, when data from public contracting entities are scarce, the user can take advantage of information collected from the private side and typically included in the financial model of the PPP contract.

Second, the private partner's statements allow the user to better understand the PPP contract from the private partner's perspective. For example, a key question to ensure that the private partner has a genuine interest in the project is the following: do expected project cash flows allow the private partner to service its debt and operate the asset during the entire contract period with a reasonable profit margin? If that is not the case, the project may not be profitable enough to lock the private partner in the contract for the long-term, raising the risk of renegotiation and/or contract negotiation. PFRAM 2.0 looks at these questions based on the information collected at the time that the PPP contract reaches financial closure at the beginning of the contract. Yet, during the overall project cycle, the private partner can take actions that could change the profit margin of the project, for example, refinancing its debt or transferring profits to equity holders. PFRAM 2.0 does not model such private partner actions.

Data are presented in two main statements: the income statement (accrual based) and the cash flow waterfall (Box 3). The latter is used to estimate the private partner's internal rate of return (IRR) based on its future free cash flows.



E. Fiscal Risks Matrix

Risk allocation is a centerpiece of structuring a PPP contract. The basic principle is that each risk should be allocated to the party best able to manage it. Risks may be allocated to one party or shared in a specified way.

In principle, a PPP **contract should define a complete allocation of project risks.** Based on the contract, the contracting authority's contract manager should create a risk matrix and a risk register, documenting the evaluation of risk likelihood and risk impact, as periodically assessed by the contracting authority.

However, fiscal risks may also result from **risks not identified or not clearly allocated in the contract.** The most obvious is the risk that the private partner does not have the managerial capacity to implement the project or face the stipulated risks, culminating in its bankruptcy and potentially the failure of the project. Project finance solutions, with limited or no recourse to the assets of the borrower, require a careful assessment of the capital and private-sector guarantees needed for sound project execution to spread the risk among multiple investors, insurers, and diverse financial entities.

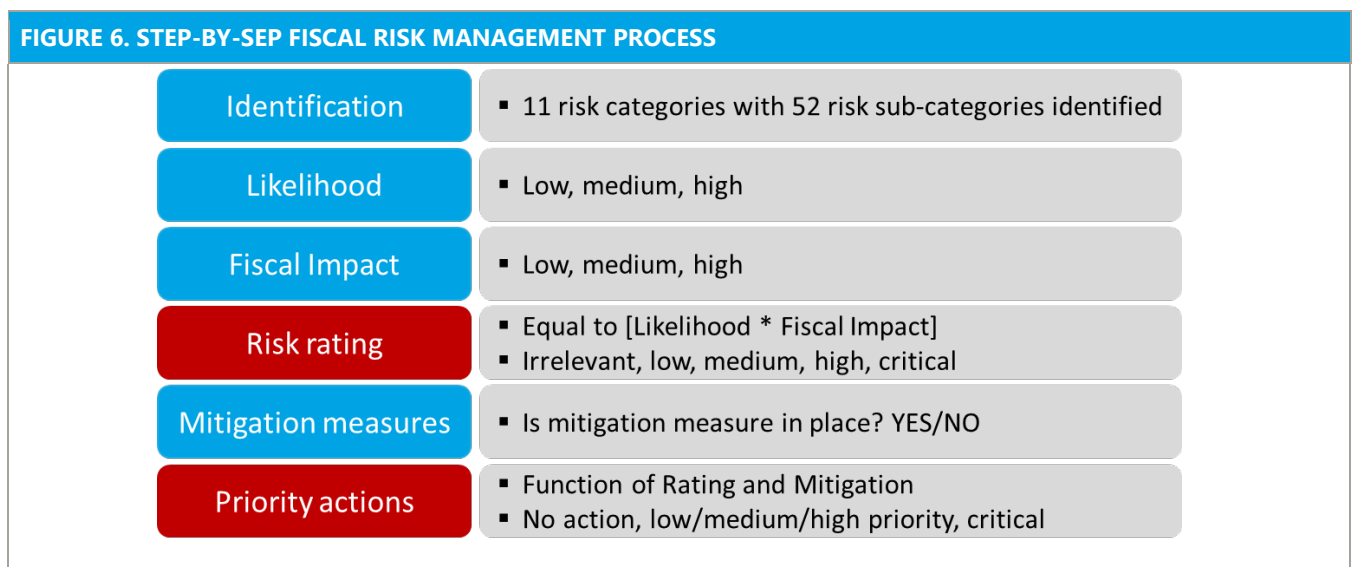
Changes to the project and the contract, especially if not triggered by the private partner, are a fiscal risk. When negotiating and agreeing to such changes, the private partner always has greater leverage than the public partner. The two most common sources for such changes are as follows:

- Fiscal costs related to **project changes or policy changes introduced by government** during the term of the contract. Typical examples for this are (1) transferring some cost overruns to the government when the government asks for changes in project design, or (2) renegotiating the contract when the government decides to change the user-fee structure in response to lower-than-expected demand. It is key to understand the impact of government-initiated change on PPPs and for mechanisms for moderating the will for change, pondering the costs and benefits of each change.

- Fiscal costs triggered by **exogenous changes** resulting, for example, from technological evolution, demographic movements, or changes in consumers' preferences. It is crucial for the government to manage the consequences of exogeneous changes in a continuous and proactive manner to mitigate the impact on projects and provide solutions to challenges.

With the fiscal risk matrix, **PFRAM 2.0 supports the identification, assessment, and mitigation of common fiscal risks** from each specific PPP project. The fiscal risk matrix, which is prepared on a project-by-project basis, is a tool to formalize the user's assessment of the various fiscal risks of a project, including those specified and unspecified in the contract.

The overall **assessment of fiscal risks of a PPP project follows a six-step approach**, as summarized in Figure 6. With the tool's guidance, the user provides required information to proceed through the first three steps of identifying the risk, determining the likelihood of the risk, and assessing its potential fiscal impact (blue). Based on this information, in the fourth step, PFRAM 2.0 automatically generates a risk rating (red). Based on the risk rating and with the user providing information on mitigation measures in the fifth step (blue), PFRAM 2.0 provides a sense of the priority of required actions (sixth step, red).



IDENTIFYING AND ASSESSING FISCAL RISKS

In a first step, the PFRAM 2.0 risk matrix assists the user in identifying the main fiscal risks often found in PPP projects.

- PFRAM 2.0 focuses on those risks that may have significant fiscal implications. It does not assess all of the potential risks that can arise during the project cycle.
- In doing so, it looks into both contractual risks and other risks not allocated directly by contract (for example, risks arising from the governance structure, legal framework, or government institutional capacity).
- The risk matrix covers 11 main risk categories and 52 subcategories. The main risk categories, as well as the subcategories included in PFRAM 2.0, are presented in Table 1 and explained in detail in Annex I.

- For each of the risk categories and subcategories, PFRAM 2.0 poses questions that allow the user to assess whether the particular risk is relevant for the specific project.

NOTE: At the early stage of the project design and when preparing the draft contract, by systematically guiding the user through the major risk categories, the risk matrix helps to identify the important fiscal risks from the project that should be covered in the PPP contract or the legal framework.

TABLE 1. PFRAM 2.0 RISK MATRIX RISK CATEGORIES AND SUBCATEGORIES	
MAIN RISK CATEGORY	NUMBER OF RISKS SUBCATEGORIES
1. Governance Risks	3 detailed risks
2. Construction Risks	19 detailed risks
3. Demand Risks	10 detailed risks
4. Operation & Performance Risks	7 detailed risks
5. Financial Risks	4 detailed risks
6. Force Majeure Risks	No subcategories
7. Material Adverse Government Actions (MAGA)	No subcategories
8. Change in Law	No subcategories
9. Rebalancing of Financial Equilibrium	3 detailed risks
10. Renegotiation Risks	No subcategories
11. Contract termination Risks	2 detailed risks

After identifying the relevant risks for a PPP project, PFRAM 2.0 requires the user to assess the following:

- Likelihood.** What is the likelihood of such risks materializing in the future? The user does not need to be overly precise in this estimate; it is sufficient to identifying whether the likelihood is low, medium, or high. A number of factors can help determine the likelihood. For example, the following logic could be used:

SCALE	LIKELIHOOD
Low	<ul style="list-style-type: none"> ▪ Very unlikely but not negligible ▪ Would require highly unusual circumstances
Medium	<ul style="list-style-type: none"> ▪ Likely and possible ▪ Not unprecedented
High	<ul style="list-style-type: none"> ▪ Very likely, almost certain ▪ Extensive precedents

- Fiscal impact.** What would be the potential fiscal impact if such a risk materializes? When considering the impact of a specific type of risk, it is important to realize that PFRAM 2.0 mostly

focuses on the macro fiscal implications of such risks, for example, the government’s deficit and gross debt. This focus does not mean that these are the only implications of such risks. The fiscal implications of governance risk materializing would be reflected also in terms of the government’s loss of reputation, efficiency, availability, and transparency. To the extent possible, the user should evaluate the potential fiscal impact of a particular risk in a holistic manner, providing as much information as possible to support the assessment of low, medium, or high. In the following practical example, where parameters X, Y, and Z would be country specific (X=0.1% of GDP; Y=0.2% of GDP):

SCALE	VALUE	FISCAL IMPACT
Low	< X % of GDP	<ul style="list-style-type: none"> Impact on government deficit and debt lower than X % of GDP (accumulated construction cost of the asset) Minimal damage to government’s reputation, service availability, and operation
Medium	X % - Y % of GDP	<ul style="list-style-type: none"> Impact on government deficit and debt between X% and Y% of GDP (accumulated construction cost of the asset) Limited damage to government’s reputation, service availability, and operation
High	<Y % of GDP	<ul style="list-style-type: none"> Impact on government deficit and debt above Y % of GDP (accumulated construction cost of the asset) Significant damage to government’s reputation, service availability, and operation

Based on the user’s input, PFRAM 2.0 generates a risk rating to determine the severity of the risks being assessed. In this step, the likelihood and the fiscal impact are put together to estimate the overall risk rating (typically called the *severity of the risk*). This is done by combining the likelihood and fiscal impact, as show in Figure 7. Risks assessed as having a high likelihood and a high fiscal impact, would be regarded as “critical” (and highlighted automatically in the file in deep red). A “high” risk rating would be the result of a high likelihood and a medium fiscal impact, as well as a medium likelihood and a high fiscal impact (and highlighted with a clear red). Following a similar logic, risks would be assessed as “medium” (orange), “low” (green), or “irrelevant” (light green). PFRAM 2.0 automatically generates a formula-based risk rating assessment and color coding based on the user’s inputs for likelihood and fiscal impact.

FIGURE 7. CALCULATION OF RISK RATING

Risk Rating = Likelihood x Fiscal Impact				
Fiscal Impact	HIGH	Medium	High	Critical
	MEDIUM	Low	Medium	High
	LOW	Irrelevant	Low	Medium
		LOW	MEDIUM	HIGH
		Likelihood		

MITIGATING FISCAL RISKS IN PPPS

The PFRAM 2.0 risk matrix allows the user to record existing mitigation measures and assists in identifying potential mitigation measures.

- For each risk identified, PFRAM 2.0 asks the user to assess whether the government has mitigation measures in place.
- Possible mitigation measures vary with the risk, and PFRAM 2.0 provides some indication of possible measures for each given risk.
- For example, in financial risks, a subcategory deals with the risks of the private partner not being able to cope with excessive interest rate volatility/. In this case, PFRAM 2.0 suggest a typical mitigation measure: *“Proper due diligence on private bidders' financial conditions and their ability (technical and managerial) to conduct the project. Establish adequate qualification requirements, bid bonds and performance bonds will discourage adventures from bidding for PPPs.”*
- The user can compare existing measures with those suggested by the tool.
- PFRAM 2.0 suggestions are not meant to be exhaustive; they represent typical mitigation measures based on international good practices.

GUIDANCE ON PRIORITY ACTIONS

Based on the risk rating and the mitigation measures in place, PFRAM 2.0 provides a sense of the priority of the required actions. It helps the user to decide what to fix. As a general rule, the more severe risks—those with a high rating—should be addressed first. Addressing the less important risks, even if they are an easy fix, does not improve the overall risk profile of the project and does not reduce the risk for the government. Not all risks are worth addressing, and some loss for government is not only expected but admissible, based on the cost of fixing the issue. PFRAM 2.0 identifies priority actions by looking at both risk rating and mitigation measures, as shown in Figure 8. Those risks assessed as irrelevant would never trigger a priority action, regardless of whether mitigation measures are in place or not (color-coded in light green). On the contrary, risks rated as critical, paired with no mitigation measures in place, would result in the need to implement a “critical” priority action (deep red); the priority would be considered a “high priority” if mitigation measures exist (light red).

FIGURE 8. DETERMINING AREAS FOR PRIORITY ACTIONS

Priority action = Risk rating x Mitigation measure						
Mitigation measure	NO	No action	Medium priority	High priority	High priority	Critical
	YES	No action	Low priority	Medium priority	Medium priority	High priority
		IRRELEVANT	LOW	MEDIUM	HIGH	CRITICAL
Risk Rating						

Depending on the stage of the project cycle, risks identified as areas for priority actions can be addressed (1) by **changing the design of the project** to avoid the risk—this is only relevant before the PPP is contracted; (2) by **introducing additional mitigation measures** in place; or (3) by creating fiscal space **to absorb** the potential fiscal cost if the risk materializes.

RISK MATRIX PRESENTATION

PFRAM 2.0 generates a summary project risk matrix. The matrix presents the fiscal risk assessment for each of the 11 risk categories in the form of a heat map (Figure 9):

FIGURE 9. EXAMPLE OF PROJECT FISCAL RISK MATRIX

Risk identification	Likelihood	Fiscal impact	Risk rating likelihood*impact	Mitigation strategy is it in place?	Priority actions	Suggested Mitigation Strategy
Governance risks	Low	Medium	Low	No	Medium priority	
Construction risks	Medium	High	High	Yes	Medium priority	
Demand risks	Medium	Low	Low	No	Medium priority	
Operational and performance risks	Low	Low	Irrelevant	Yes	No action	
Financial risks	Medium	Medium	Medium	No	High priority	
Force majeure	Low	Low	Irrelevant	Yes	No action	
Material adverse government actions	Medium	Medium	Medium	No	High priority	
Change in law	Medium	High	High	No	Critical	
Rebalancing of financial equilibrium	High	Medium	High	Yes	High priority	
Renegotiation	High	Low	Medium	Yes	Medium priority	
Contract termination	Medium	Medium	Medium	Yes	Medium priority	

As part of the risk matrix, PFRAM 2.0 allows the user to document a suggested mitigation strategy.

IV. PFRAM 2.0 AT WORK

A. Data and IT Requirements of PFRAM 2.0

To be fully functional, PFRAM 2.0 requires Excel 2013 or a later version. If run on earlier versions, PFRAM 2.0 may not be fully functional, and calculations and presentations of the analysis may not be accurate.

Inputting numerical data

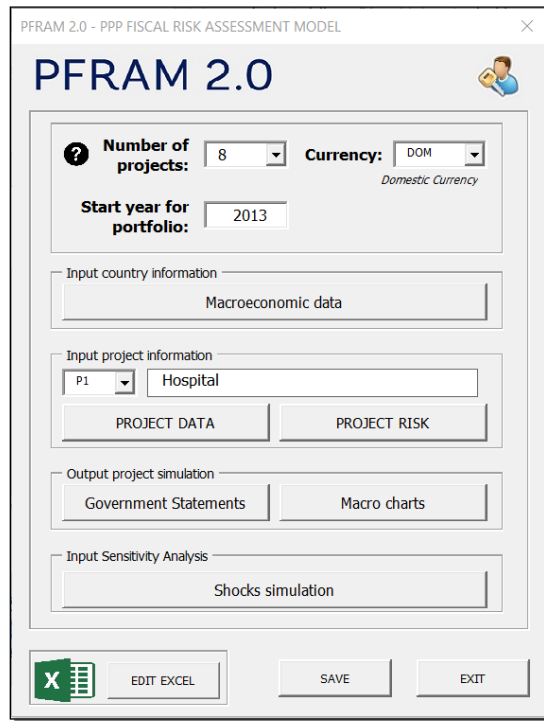
- Care should be exercised when entering numerical data to account for the characters used to separate thousands and decimals.
- PFRAM 2.0 is designed to work under the **anglophone number setting**: decimals are separated by "." and thousands are separated by ",". For example, one million would be shown as 1,000,000 and one and a half would be shown as 1.5.
- By default, Microsoft Excel uses the number format that is defined in the **regional settings in the Control Panel**. If the user chooses a different setting from the anglophone presentation described, the user can temporarily replace the system separators with custom separators in Excel by doing the following:
 1. **Click File > Options.**
 2. **On the Advanced tab, under Editing options, clear the Use system separators check box.**
 3. **Type new separators in the Decimal separator and Thousands in the separator boxes.**

PFRAM 2.0 design is based on user form dialog boxes to provide a **more user-friendly interface**. A user who is not interested in using the dialog boxes can enter information directly in the Excel spreadsheet. This section describes how to navigate the tool using the new dialog boxes.

The navigation of PFRAM 2.0 works around a main menu (Figure 10) that comprises of **five frames** through which all the functionalities contained in PFRAM 2.0 can be accessed:

- The **first frame** contains the minimum information related to the PPP portfolio (Number of projects, Currency, and Start year of Portfolio).
- The **second frame**, "Input country information," contains all of the information related to macroeconomic and government data.
- The **third frame**, "Input project information," contains all of the data related to PPP projects, including the fiscal risk matrix for each project.
- The **fourth frame**, "Output project simulation," contains detailed information on the government's financial statements and the macro analysis of the portfolio.
- The **fifth frame**, "Input Sensitivity Analysis," includes the shock simulation function, where the user can simulate shocks to macro variables and estimate the impact on main fiscal aggregates.

FIGURE 10. MAIN MENU

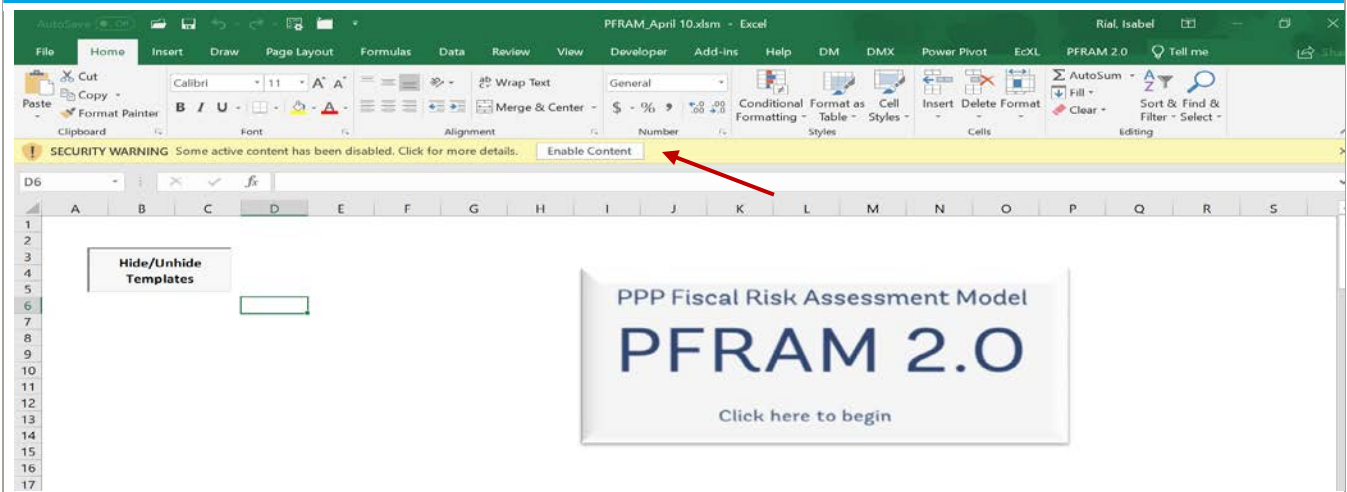


The following sections describe in detail each of the five frames of PFRAM 2.0.

B. Starting PFRAM 2.0

As a first step, the user opening the file is required to enable macros to allow the macros in the tool to run. This step involves pressing the button under the menu bar (Figure 11). The process could take a few seconds, depending on the memory of the computer. The user should wait for the “**Enable Content**” message to disappear before using the tool. The tool comes without any restrictions or protections; if the file appears as “read-only,” then the user will enable editing.

FIGURE 11. ENABLING MACROS

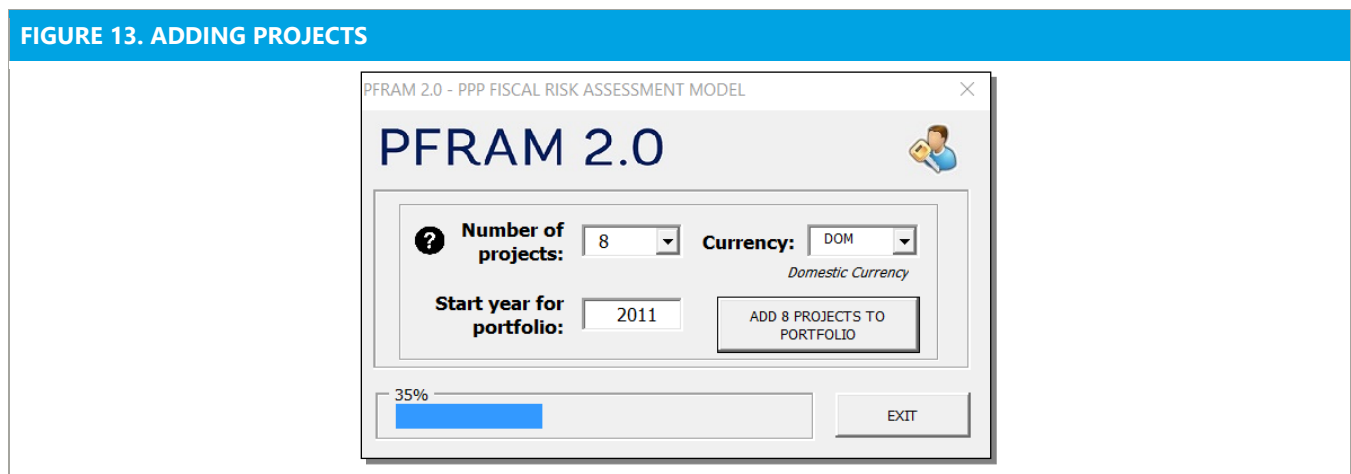


Once PFRAM 2.0 is opened, the user will **click on the image with the PFRAM 2.0 label** (Figure 12) to start using the tool.



C. First frame: Portfolio information

When starting a new PFRAM 2.0 file, the user will first complete the general information related to the portfolio, as shown in Figure 13. For example, Figure 13 shows a portfolio of 8 PPP projects, with the oldest project starting in 2011.



- **Number of projects** is the quantity of projects to be assessed in one PFRAM 2.0 file. This number can be adjusted later, as needed.
 - A **maximum of 30 projects** can be handled in one file.
 - If the **number of projects is increased** (for example, from 8 to 9 projects), previous project sheets will be preserved, and new project sheets will be added.
 - If the **number of projects is reduced**, existing project sheets up to the new number selected will be preserved.

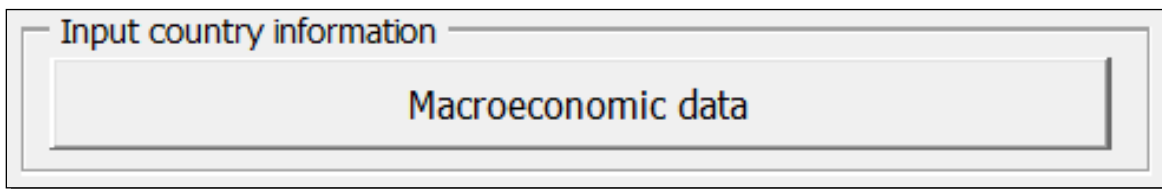
- To **erase the entire portfolio**, the user will enter the number of projects as 0.
- The **tool does not offer the option to erase a specific project**, except for the last project entered. Projects will simply be deleted starting with or added after the last project in the file. For example, if the file includes 8 projects and (1) two projects are deleted, then projects 7 and 8 and all related information will be removed; or (2) if two new projects are created, then projects 9 and 10 will be added.
- **Start year of portfolio**: This refers to the starting point of the oldest project in that portfolio. For example, in Figure 13, the portfolio starts in 2011, the starting year of the oldest project. Other projects may start after 2011 and will subsequently be entered individually. A user who is not sure whether he/she will be working with an older project later can select an earlier starting year to allow additional space (for example, 2008). Doing this will not affect the assessment; however, macroeconomic data starting from the start year of the portfolio must be entered afterward.
- **Currency**: The user will enter the currency in which the portfolio will be denominated: domestic or foreign. PFRAM 2.0 is largely designed to enter information in domestic currency, although it is possible to enter information in **domestic currency or foreign currency**. To ensure that PFRAM 2.0 performs optimally, if the information on PPP projects is in foreign currency, it is recommended that the user convert it and input it in PFRAM 2.0 in domestic currency.



By clicking on this icon, the user has the option of generating a **user profile** with a name and password as a security procedure to initiate future sessions. Both will be required each time the user opens PFRAM 2.0.

D. Second Frame: Input Country Information

FIGURE 14. SECOND FRAME



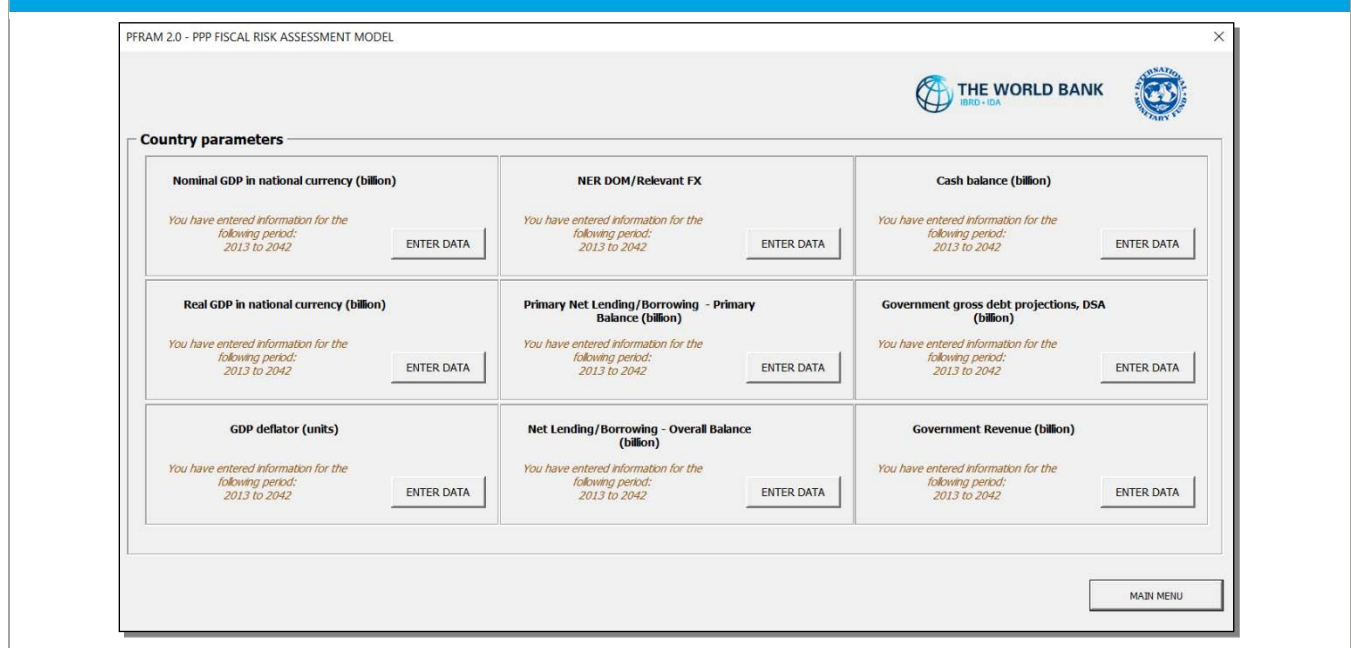
By pressing the “**Macroeconomic data**” button (Figure 14), the user enters the section where the macroeconomic data of the country will be added by clicking on the button «**ENTER DATA**» corresponding to each macro variable (Figure 15):

- Nominal GDP in domestic currency (billions)
- Real GDP in domestic currency (billions)

- GDP deflator (units)⁹
- Nominal Exchange Rate DOM/FX ¹⁰
- Primary Net Lending/Borrowing—Primary Balance in accrual basis (billions)
- Net Lending/Borrowing—Overall Balance in accrual basis (billions)
- Cash balance (billions). If not available, the user will enter the same figure as in Net Lending/Borrowing.
- Government gross debt projections (billions)—If available, the user will enter projections for the debt sustainability analysis (DSA)
- Government revenue (billions)

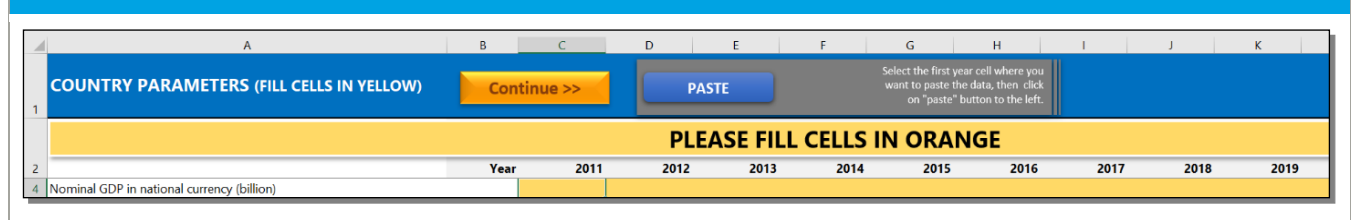
The information entered in this section provides the macro fiscal framework for the entire portfolio.

FIGURE 15. COUNTRY PARAMETERS MENU



Once the user selects the data category, the user will be guided by a prompt to copy or enter the information in the file (Figure 16). The information can be copied from a third source or entered manually.

FIGURE 16. COPY & PASTE FUNCTION



⁹ GDP deflator calculated as nominal GDP divided real GDP times 100.

¹⁰ FX refers to foreign currency. It may be used to refer to a specific foreign currency (for example, US dollars or Euros) or a currency basket (that is, weighted average of various currencies).

Option copy & paste or enter manually: The user will be redirected to an entry screen where the data for the variable should be entered. The user will enter the values for each corresponding year.

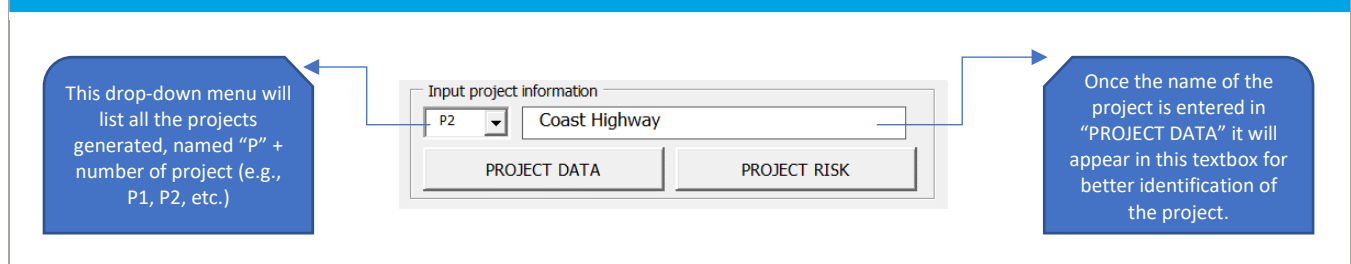
- To enter **information copied from an external source**, the user will paste it using the **«PASTE»** button. This prevents unintended changes to the format, which could adversely affect the functioning of the file.
- When copying information, the user will ensure that the data are copied to the **correct years** and in the **correct amounts** (for example, billions for the macro variables).
- **Zeros (0) should be entered for fields that data are equal to zero.**
- Once the information has been entered, the user must click on the orange **«CONTINUE»** button. This button brings the user back to the previous menu (Figure 15) to continue the data entering process.
- This procedure to enter data manually can be used for other set of data, such as operational and maintenance costs.

E. Third Frame: Project Information

The third frame of the main menu (Figure 17) is used for the following:

- entering all **project data**
- assessing the **project risk**.

FIGURE 17. THIRD FRAME



PROJECT DATA MENU

This submenu contains **two sections** (Figure 18). In the first section, "Initial data," the user will enter general information on the project. In the second section, "Options," the user will navigate the project data section of the tool.

FIGURE 18. PROJECT DATA MAIN MENU

Initial data

- **Name of the project:** The project name allows the user to identify the different projects. It can be freely chosen and has no implication on the analysis (no restriction on format).
- **Start year—contract:** The year in which the PPP contract starts (*format: YYYY, e.g., 2015*).
- **Length of contract:** The total length of the contract in number of years (*format: integer number, i.e., no decimals allowed, e.g., 20*).

Options

- The Options menu will not be available for completion unless, the «Initial data» section is completed.

GENERAL INFORMATION

This section records general project information (Figure 19), including the following:

- **Type of project:** The project type (for example, build, operate, and transfer) is recorded for information purpose and has no implication for the analysis (*format: no limitation*).
- **Project funding:** Project funding refers to the entity that is paying for the project (for a discussion on the meaning and options for project funding see Section III B) (*format: drop down menu*)
- **Asset control:** This identifies the entity in control of the asset. Based on responses to the asset ownership questions and the public entity undertaking the contract, the user will determine which entity is in control of the asset (*format: drop down menu*).
- **Corporate income tax:** The tax rate is used to determine government revenues generated by the PPP (*format: number with % sign, e.g., 40.0%*)

- **Import component:** This specifies the impact of exchange rate fluctuations on the construction costs of the PPP (*format: number with % sign, e.g., 20.0%*)
- **Financing:** The information provided here determines the financing cost of the PPP for the private partner.
 - The tool requires information on the share of debt and equity used to finance the project and on the interest rate for the debt portion.
 - The tool does not allow the user to record multiple loans with varying terms; the user will provide an average interest rate. The duration of the loan or terms of repayment are not considered because the tool assumes that the PPP-related debt is repaid over the contract duration.¹¹
- If applicable, **government shareholding** will reduce the debt and equity financing for the SPV and add to the government’s contingent liabilities.
- The “Main Menu” and “Project Data Menu” button (Figure 19) allow the user to navigate back to the respective menu at any time.

FIGURE 19. PROJECT DATA MENU > GENERAL INFORMATION MENU

The screenshot displays the 'GENERAL INFORMATION MENU' within the PFRAM 2.0 software. The window title is 'PFRAM 2.0 - Coast Highway'. The interface is organized into several sections:

- General:** 'Type of project' is set to 'BOT' (with a note '(e.g. DBOT, BOT, etc.)'). 'How the project is funded?' is set to 'Tax payers - public funded'.
- Accounting drivers:** Two questions are asked: '1. Does the public sector control or regulate what services the private company must provide with the asset, to whom it must provide them, and at what price?' (Yes) and '2. Does the public sector maintain any significant residual interest in the asset at the end of the contract?' (Yes). 'Who is in control of the PPP related assets?' is set to 'Central Government'.
- General criteria:** 'Corporate income tax rate' is 0.00% and 'Imported component of assets' is 0.00%.
- Financing:** 'Share of investment costs financed by debt' is 70.00%, 'Share of debt in foreign currency (%)' is 0.00%, 'Interest rate on loans' is 8.97%, and 'Government shareholding (if any):' is 0.00%. A note below states: 'In case that the government is a shareholder of the PPP company, enter share (%) here.'

At the bottom, there are three buttons: 'MAIN MENU', 'PROJECT DATA MENU', and 'CONTINUE >>'.

ASSET-SPECIFIC INFORMATION

Within this frame, the user will enter the information related to the **project assets**, the non-financial assets developed or rehabilitated by the PPP contract. For example, a highway project has at least two assets: the base of the road (base) and the last layer of the road (surface), each with different cost structures and useful lifespans. Other assets in this example could include sidewalks, water drains, and elevated crosswalks.

¹¹ PFRAM assumes debt is only used to finance the cost of investment and not working capital needs.

PFRAM 2.0 can work with up to 10 assets for each project. The user will select the number of assets from a drop-down menu. Every time the number of assets is changed, the user will press the Update button to make the assets appear in the “Asset parameters” section (Figure 20).

The **number of assets is driven by the nature of the components included in the PPP investment.**

Assets with the same or very similar characteristics (such as office buildings) can be grouped into one asset. If an investment includes components with different characteristics—construction start, construction time, and useful life—the user will record the components as separate assets, for example, a hydropower plant could consist of the buildings and the turbines.

For each asset, the user will complete the following information (Figure 20).

- **Name of asset:** The name of the asset is for information purpose and has no implications for the analysis (*format: no limitation*).
- **Construction period:** The construction period is the number of years needed for constructing the asset.
- **Year construction begins:** This refers to the year when construction starts relative to the initial year of the contract. For example, if the construction of the asset starts in the first year of the contract, the year construction begins is year 1 of the contract (*format: number, i.e., no decimals allowed, must be 1 or greater but cannot exceed the “Length of contract”*). For example, if the contract starts in 2011 but the construction of the asset starts in 2012, the year that construction begins is 2.
- **Useful life:** this is the number of years that the asset can be used until it is fully depreciated and needs to be replaced (*format: integer number, i.e., no decimals allowed, must be 1 or greater and can exceed the “Length of contract”*). If the useful life is longer than the length of contract, this implies that the asset will have a residual value at the end of contract.
- **Construction cost:** is the total investment cost for the relevant asset. PFRAM 2.0 allocates the total investment in equal amounts over the years of the construction period (*format: millions of domestic currency, number, must be 1 or greater*).
- **Land cost paid by the private partner:** Often, the government provides land as a contribution to the PPP. If the private partner purchases land, the cost of the land is entered here (*format: millions of domestic currency, number, can be 0 (zero)*).

FIGURE 20. PROJECT DATA MENU, ASSET PARAMETERS

	ASSET 1	ASSET 2
Name of asset	Road Base	Asphalt
Construction period (total number of years):	3	1
Year construction begins (e.g. year «3» of contract):	1	3
Useful life (total number of years):	25	6
Construction cost (million DOM):	94000	11000
Land cost paid by the private partner (million DOM):	0	0

PROJECT REVENUE

In this section, the user will enter the information relevant for calculating the **project revenues**. The section is divided into two parts: **services and funding**.

Services

Typically, each PPP asset will be used to provide one service. For example, in a PPP prison project, one asset (prison-building) is used to provide one main service (security). **However, it is possible to provide additional services with the same asset.** For example, rehabilitation services could also be provided for eligible prisoners using the same prison building. Each service has its own cost structure, with different prices and volumes that will result in revenues for the private partner (either paid by the government or users directly).

PFRAM 2.0 allows the user to work with **up to 10 services for each project**, selecting the number of services from a drop-down menu (Figure 21). To estimate total revenue, PFRAM 2.0 requires the following **data for each service**:

- **Unit:** This refers to the units in which the service is measured, for example, cars, students, patients, or prisoners (*format: text, i.e., no decimals allowed*).
- **Start year:** This is equal to the last year of the construction period. For example, if the asset takes 3 years to construct and becomes operational in year 4 onward, the user should enter 3 as the start year (*format: integer number, i.e., no decimals allowed, must be 1 or greater and cannot exceed the "Length of contract"*).

- **Initial price:** This refers to the unitary price of the service in the first year of operation (*format: thousands of domestic or foreign currency, number*)
- **Initial demand:** This refers to the units of service delivered/expected to be delivered in the first year of operation, for example, the number of cars using the toll road in the first year of operation (*format: thousands of units, number, must be 1 or higher*).

FIGURE 21. PROJECT DATA MENU > SERVICES

Service 1	Unit (e.g. cars, pax, TEU, etc)	Start year	Government funded Initial Price Thousand	Government funded Initial Demand Thousand
1	Patents	3	80	120

Once the user has entered the parameters defining the service(s), the user will complete the Funding form.

Funding

Depending on the type of funding defined in the general project information (user, taxpayer, or a combination), the Funding form will prompt the user to input the requisite information.

- **Projection of user fees** (relevant for user-funded projects and projects with combined funding)
- **Projection of government payments to the private partner** (relevant for government-funded projects and projects with combined funding)

In all cases, the user will choose how to calculate the value of the service fees in one of two ways:

- by entering total revenues for the respective service for each year (select «**Enter Total**»)
- by calculating the revenues for each year based on annual information on the tariff and demand volume (select «**Calculate**») (Figure 22).

FIGURE 22. PROJECT DATA MENU, FUNDING

When choosing «**Enter Total**»:

- The user will enter the data using the **Copy & Paste** method.
- **NOTE:** When choosing this option, the revenue **projections will not be factored into the sensitivity analysis** (for information on how the sensitivity analysis works, see Section IV F).

When choosing «**Calculate**», information on the price and the demand volume for the service should be provided as follows for user fees and for government payments to the private partner:

- **Unitary price**
 - **Currency:** The user will indicate whether the tariff is set in foreign or domestic currency (*format: drop down menu*),
 - **Inflation indexation:** The user will indicate whether the tariff is indexed to inflation (*format: drop down menu*). PFRAM 2.0 automatically calculates the adjustment over the contract period, based on the macroeconomic data provided.
 - **Exchange rate indexed:** The user will indicate whether the tariff is linked to changes in the nominal exchange rate (*format: drop down menu*). PFRAM 2.0 automatically calculates the adjustment over the contract period, based on the macroeconomic data provided.

- **Other adjustment factors:** If other adjustment factors are relevant (for example, a specific commodity price or other price index), the user will enter them by clicking «**ENTER**» and using the **Copy & Paste** method.
- **Demand for service**
 - **Link to GDP:** The user will indicate whether the demand volume is linked to GDP, that is, whether the demand for the service is expected to increase in line with GDP (*format: drop down menu*). PFRAM 2.0 automatically calculates the adjustment over the contract period, based on the macroeconomic data provided
 - **Other adjustment factors:** If other adjustment factors are relevant (such as population growth), the user will enter this information by clicking «**ENTER**» and using the **Copy & Paste** method (see page 36).

If the government provides additional financing for the project, it may come in the form of other types of government payments to the project, including lump sum payments and subsidies. The user will enter this information in the bottom part of the screen by pressing «**ENTER**» and using the **Copy & Paste** method (*format: annual values to be provided in millions*).

MAINTENANCE, OPERATION, & OTHER COSTS

In this section, the user will enter the information relevant for calculating the **project cost, other than the investment costs**. PFRAM 2.0 allows for various cost categories, including maintenance, project operation, user fees collected on behalf of the government, royalties, other payments to the government (Figure 23). The user will enter the costs by using the **Copy & Paste** method (see page 36) (*format: millions of domestic currency units*).

FIGURE 23. PROJECT DATA MENU, O&MC

The screenshot shows the 'Operation and Maintenance Costs' menu in the PFRAM 2.0 application. The interface is organized into a grid of six input boxes, each representing a different cost category. Each box contains an 'ENTER DATA' button and a message indicating that no data has been entered yet. The categories are: Maintenance, Operation, User fees for government, Royalties, Other payments to government, and Other costs. The screen also displays the logos of The World Bank and IFC/IDA. At the bottom, there are four navigation buttons: 'MAIN MENU', 'PROJECT DATA MENU', '<< BACK', and 'CONTINUE >>'.

NOTE: It is important to note that these data are entered in the forms in nominal terms as fixed values; in principle, they are not linked to the macroeconomic variables as GDP, inflation, or nominal exchange rate. As a result, these costs will not be factored in the sensitivity analysis (for information on how the sensitivity analysis works, see Section IV F).

PROJECTION OF GUARANTEES

In this section, the user will enter the information relevant to estimating the government contingent liabilities arising from **debt guarantees** and MRG (Figure 24).

- **Debt guarantees.** The user will indicate which percentage of private debt that is guaranteed by the government (*format: drop down menu to select the percentages of debt being covered by the government guarantee, scale of 0.1 to 1 in intervals of 0.1*). The percentage is applied to the portion of the private partner investment financed by debt. PFRAM 2.0 does not allow the user to distinguish between different loans. The user will estimate and enter the percentage of total debt covered by a government guarantee.
- **MRGs.** The user will indicate the minimum level of revenue the government guarantees, that is, if the actual revenues fall below the MRG, the government would pay the difference between the MRG and the actual revenues.

The MRG may vary from year to year. The user will enter the information by using the **Copy & Paste** method in nominal terms that will be fixed for the whole project life cycle.

- **Guaranteed price/tariff:** The level of tariff that is guaranteed (*format: domestic currency units*)
- **Guaranteed demand:** The number of units for which a demand is guaranteed (*format: demand units. e.g., cars*).

NOTE: If only total annual values are given for the MRG, the user will enter the guarantee by entering the entire amount for each year as the tariff/price, while setting the guaranteed demand at "one" (or vice versa).

FIGURE 24. PROJECT DATA MENU > PROJECTION OF GUARANTEE

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

THE WORLD BANK
IBRD · IDA

INTERNATIONAL
MONETARY FUND

PROJECTION OF GUARANTEES

Debt guarantees

Percentage of private debt guaranteed by government

Minimum revenue guarantees (MRG)

Guaranteed price/tariff (In domestic currency) *You have not entered any data yet.*

Demand guaranteed (units) *You have not entered any data yet.*

MAIN MENU PROJECT DATA MENU << BACK CONTINUE >>

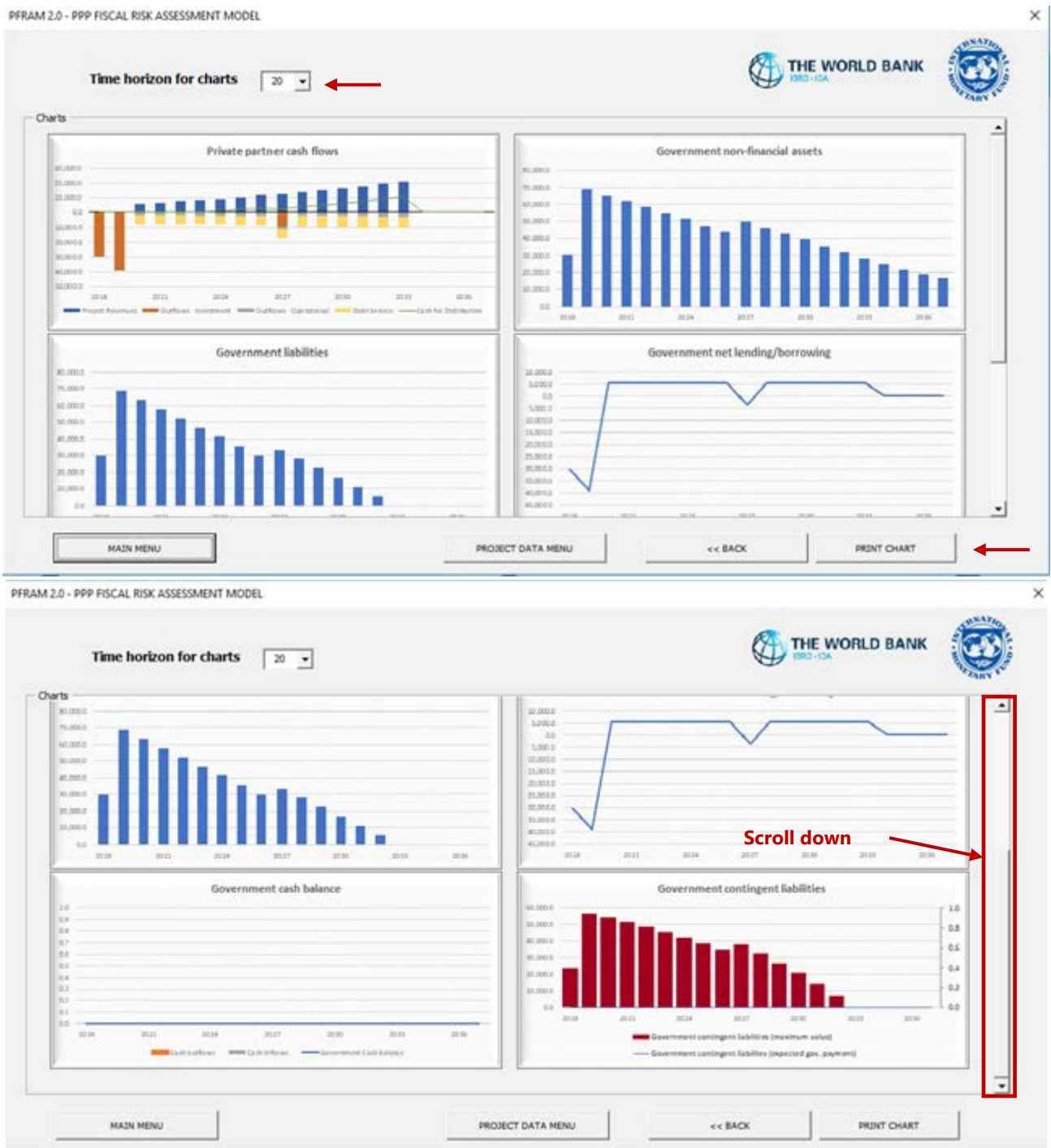
CHARTS

In this section, PFRAM 2.0 generates six **predefined charts** related to the project (Figure 25), including:

- an estimation of the **private partner's cashflow**
- **government's non-financial asset**: the asset constructed by the PPP, which builds up over the construction period and which is depreciated over the life of the asset
- **government liabilities** related to the project: these build up during the construction of the asset, reach the same value as the asset at the end of the construction period, and are amortized over the project contract duration
- **government lending and borrowing**: the impact of the project on the government deficit on accrual basis
- **government's cash balance**: the impact of the project on the government cash deficit
- **government contingent liabilities**: the estimated stock of debt and MRGs, if applicable.

The user can adjust the **horizon of the charts** by selecting the number of years covered from the drop-down menu in the top left corner of the frame. The user can **print the chart panel** in PDF format by using the **"PRINT CHART"** in the right button corner of the frame.

FIGURE 25. PROJECT DATA MENU > CHARTS PDF PRINTING



CONTRACT TERMINATION

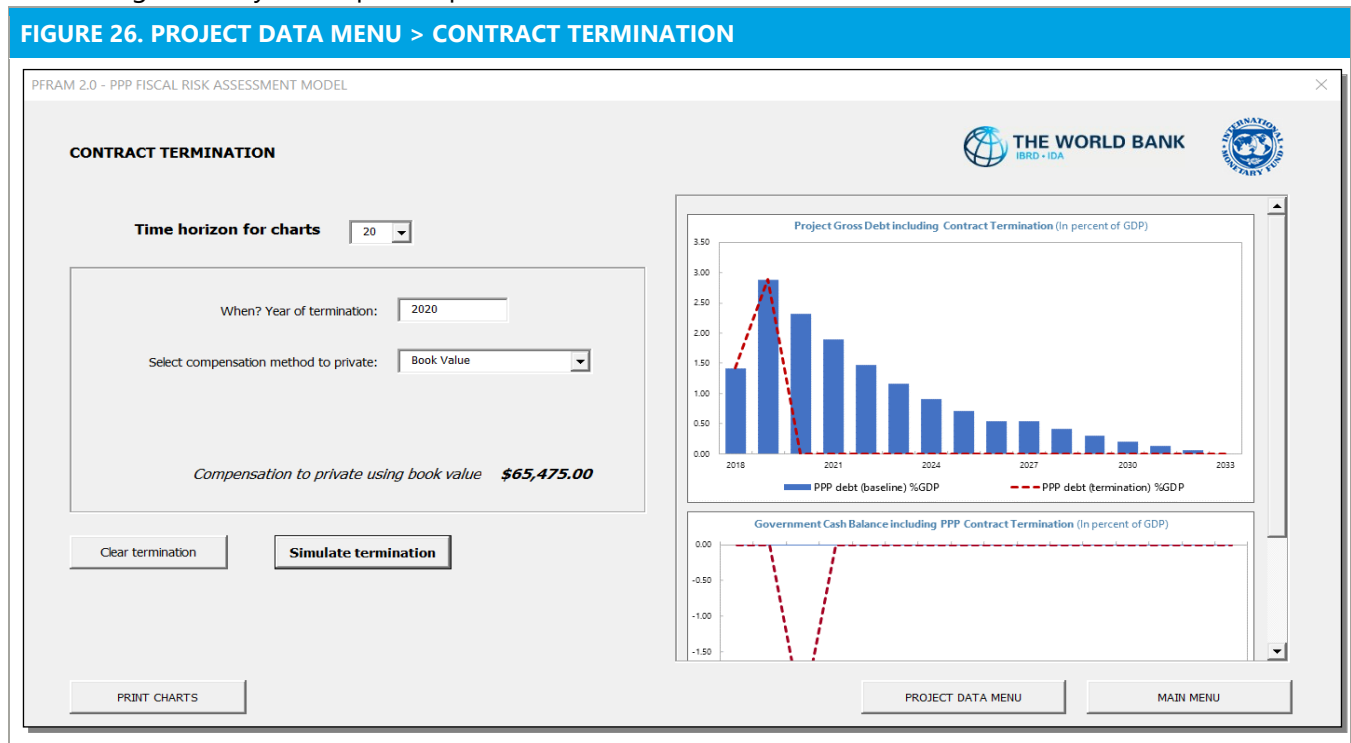
This section allows the user to estimate the potential fiscal impact if the contract is terminated.

PFRAM 2.0 allows the user to select the **year of termination** and the **method used for compensating the private partner** in the case of termination (Figure 26).

- **Year of termination:** This refers to the year in which the contract is terminated (*format: YYYY*)
- **Compensation method to private partner:** PFRAM 2.0 provides for two options:
 - **Private profit lost.** The government compensates the private partner by means of a percentage of the future profits that the private partner will not realize due to the contract’s termination. The user should input the percentage of the loss assumed by the government.
 - **Book Value:** The government compensates the private partner by buying back the asset at book value in the year that the contract is terminated. The book value is estimated as the liabilities of the private partner at the time of termination.

Termination payments are a key element of the risk allocation in the PPP contract and are crucial in determining whether the PPP project is bankable. They cover cases in which the PPP contract may be terminated prior to the normal term of the PPP contract, either (1) by the contracting authority in the event of failure by the private partner to comply with its obligations or for public policy, (2) by the private partner in the event of a failure of the contracting authority to comply with its obligations, or (3) by either party in the event of prolonged force majeure event, material adverse government actions (MAGA), or change in law. Termination provisions define the rules for computing the amount that will be payable by the contracting authority to the private partner.

FIGURE 26. PROJECT DATA MENU > CONTRACT TERMINATION

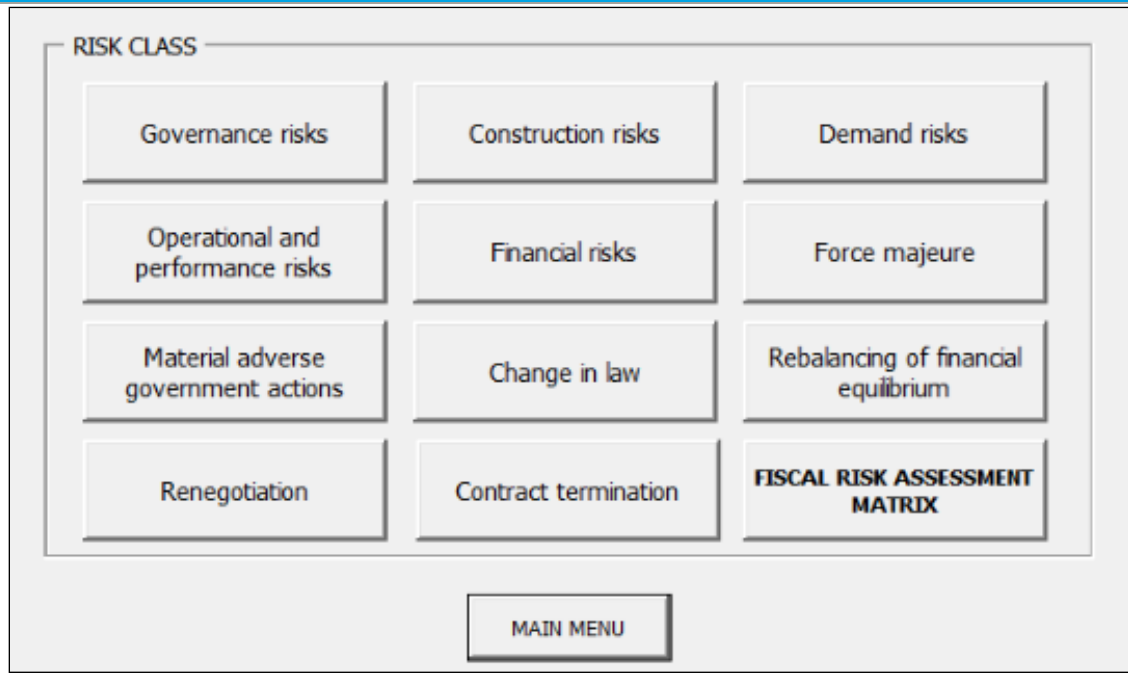


NOTE: Each time a change is made, or a simulation of contract termination is established for the first time, the user will click the «**Simulate termination**» button to reflect the changes on the charts. To restart, the user will clear the fields with the «**Clear termination**» action. The user can also print these contract termination charts in PDF format using the “**PRINT CHARTS**” option.

PROJECT RISK MENU

This submenu is designed to assist users with preparing the **project risk matrix** for each project, covering 11 risk classes (Figure 27). The concept of the risk matrix is discussed in Section III E.

FIGURE 27. PROJECT RISK MAIN MENU



Developing a project risk matrix requires users to use their own judgement for identifying and assessing the risk of a project. PFRAM 2.0 is designed to facilitate data collection in a consistent, structured, and comprehensive way.

Structure

PFRAM 2.0 covers **11 risks classes**, which are further detailed into **52 risks subcategories** (see Table 1).

The summary project risk matrix produced by PFRAM 2.0 shows the outcome of the risk assessment for the **11 main fiscal risks** (Figure 9). Although PFRAM 2.0 prompts the user to assess the 11 main fiscal risks, it is advisable to follow the prompts to cover the 52 risk subcategories to better understand the main sources of risks affecting the PPP project. However, in practice, the user could enter the assessment only for the **11 main fiscal risks**.

Entering the information

For main fiscal risks that are not broken down into subcategories, PFRAM 2.0 requires the user to do the following (Figure 28):

- assess the **likelihood** of the risk materializing (format: dropdown menu with choice of **Low**, **Medium**, and **High**)
- determine the potential **fiscal impact** (format: dropdown menu with choice of **Low**, **Medium**, and **High**)
- record any **mitigation measures** are in place (format: dropdown menu with choice of **Yes** and **No**)

Based on this information, PFRAM 2.0 determines the **Risk Rating** and areas for **Priority Actions**, as described in Section III E.

FIGURE 28. PROJECT RISK, RISK ASSESSMENT EXAMPLE I (FORCE MAJEURE RISK)

The screenshot shows the PFRAM 2.0 interface for a 'Force Majeure Risk Class'. At the top, it displays the title 'Force Majeure Risk Class' and three dropdown menus: 'LIKELIHOOD' set to 'Medium' (orange), 'FISCAL IMPACT' set to 'Low' (green), and 'MITIGATION STRATEGY' set to 'No' (red). Below these is a text area with the subcategory '6.1 Projects are always exposed to force majeure risks' and a red warning: 'RISK: The government paying compensation, adjusting or even terminating the contract due to force majeure events'. At the bottom, there are three empty text boxes for notes, with labels: 'The exact list of events to be considered here', 'Full or partial compensation by the government here', and 'The scope of the force majeure events should be'.

For main fiscal risks that are broken down in subcategories, PFRAM 2.0 requires the user to answer predetermined questions with **Yes** or **No** to identify whether the respective risk subcategories are relevant for the PPP project under evaluation (Figure 29).

- **If the risk is not relevant**, no further information is required for the respective risk subcategory.
- **If the risk is relevant**, the user will be prompted to (1) assess the **likelihood**; (2) determine the potential **fiscal impact**; and (3) record whether any **mitigation measures** are in place.
- For the **risk subcategories**, PFRAM 2.0 does not determine the **Risk Rating** and areas for **Priority Actions**.
- The information on the **likelihood**, **fiscal impact**, and **mitigation measures** for the **risk subcategories** is color coded to assist the user in making an overall assessment for **likelihood**, **fiscal impact**, and **mitigation measures** at the **risk class** level. The assessment at the **risk class** level follows the same logic as at the **risk subcategory** level.

Under each drop-down menu for assessing likelihood, fiscal impact, and mitigation measures, PFRAM 2.0 provides a **field for notes**, in which the user will be able to input information considered in the assessment. This function is important because it assists the user in documenting (**memory keeping**) the assessment and assumptions for each PPP project in the portfolio.

FIGURE 29. PROJECT RISK > RISK ASSESSMENT EXAMPLE II (GOVERNANCE RISK CLASS)

The screenshot displays the 'Governance Risk Class' assessment interface. It features two questions:

- 1.1**: "Does the government have a strong public investment management framework (PIM) guaranteeing that this is a priority project?" with radio buttons for 'Yes' and 'No'. Below the question, a red warning states: "RISK: The PIM may not have been strong enough to guarantee this is a priority project". To the right, there are three dropdown menus: 'Likelihood' (set to Medium), 'Fiscal Impact' (set to High), and 'Mitigation Strategy' (set to No). Below these are three text boxes: 'Depends on the strengths and weaknesses of the', 'Efficiency loss. Implementing a non-priority', and 'Reinforcing the public investment management'.
- 1.2**: "Does the MoF have the experience and/or capacity to manage fiscal risks from complex, long-term projects during their whole life-cycle?" with radio buttons for 'Yes' and 'No'. Below the question, it states "No risks identified".

At the bottom, a 'RISK ASSESSMENT' summary bar shows:

- GOVERNANCE RISKS**: Likelihood: Medium, Fiscal Impact: High, Mitigation: No.
- RISK RATING**: HIGH
- PRIORITY ACTION**: HIGH PRIORITY
- Buttons: SAVE FOR LATER, MAIN MENU, DETAILED REPORT, NEXT RISK >>

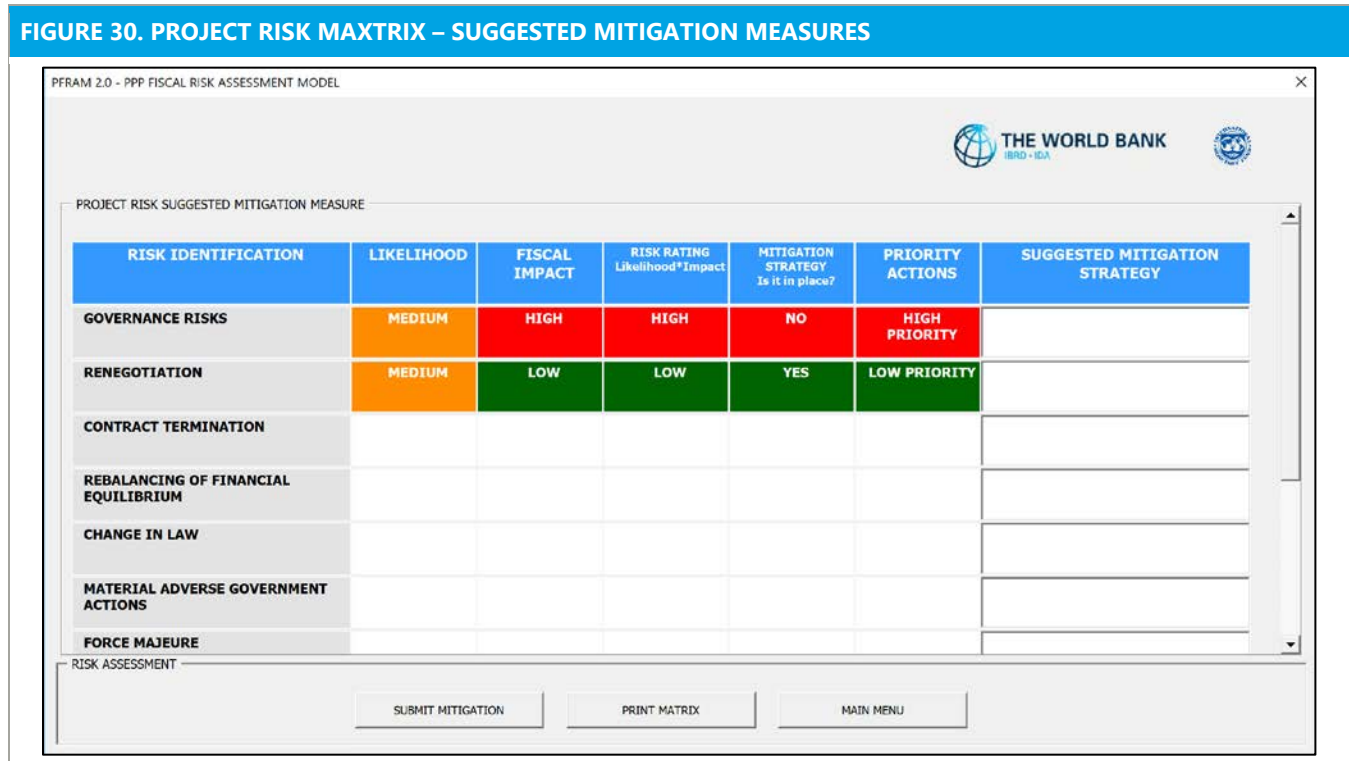
Navigation

- Developing the whole fiscal risk matrix for a project can take time. To **avoid losing information entered** for the assessment of any risk, the user will select the **"SAVE FOR LATER"** button. Information entered can be saved at any time, even if the information for a risk class or a specific risk is not complete. The user will be able to return at any time to change or complete the information.
- To **navigate among risks**, the user will select the **"NEXT RISK"** or **"PREVIOUS RISK"** button.
- To **return to the main menu**, the user will select the **"MAIN MENU"** button.
- Once all of the risk classes have been completed, PFRAM 2.0 allows the user to prepare a detailed report by selecting the **"DETAILED REPORT"** button. A pdf file will be generated with the detailed assessment of all fiscal risks of the project.

Matrix

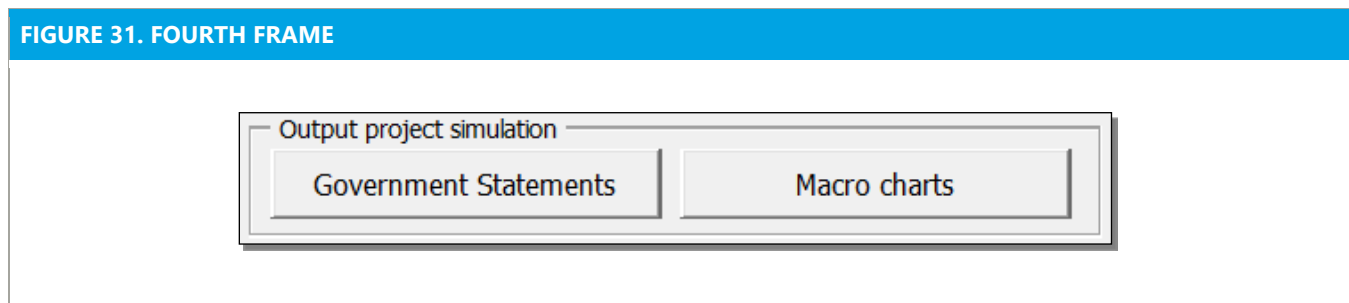
- Once the assessment of the 11 risk classes is completed, the user will press the **NEXT** button in the last window, and PFRAM 2.0 will generate a **fiscal risk matrix** (Figure 30).
- In the **fiscal risk matrix**, the risks are sorted according to their importance, with higher priority risks at the beginning and lower priority risks at the end.
- For each risk class, the **fiscal risk matrix** includes a field for including **suggested mitigation strategies**.

- Once mitigation strategies have been entered and submitted by using the **“SUBMIT MITIGATION”** button, the **fiscal risk matrix** may be printed in PDF format, including or excluding the mitigation strategies.



F. Fourth Frame: Output Project Simulation

From this frame, the user will be able to access the Government statements and Macro charts (Figure 31).



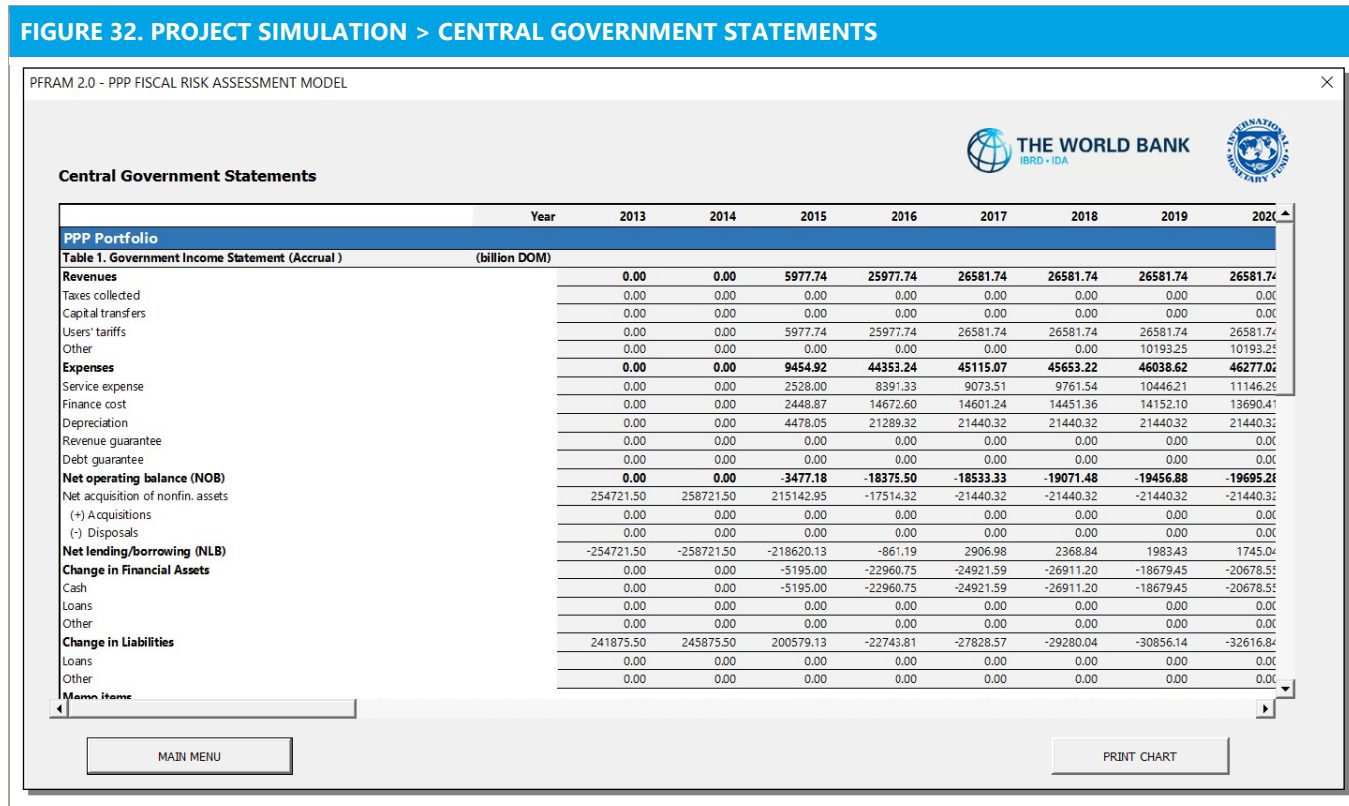
GOVERNMENT STATEMENTS

By clicking on **«Government statements»**, PFRAM 2.0 generates a presentation of the government financial statements following GFSM 2014 format (Figure 32), including:

- Government income statement** (accrual flows)
- Government balance sheet** (accrual stocks)
- Government statement of sources and uses of cash** (cash flows).

The statements can be printed in PDF format by using the “**PRINT CHART**” button.

FIGURE 32. PROJECT SIMULATION > CENTRAL GOVERNMENT STATEMENTS



MACRO CHARTS

By clicking on «**Macro charts**», PFRAM 2.0 will generate six macro charts representing—depending on the selection of projects to be included in the charts—a single project, a group of projects, or the entire portfolio (Figure 33). In Figure 33, for example, the user selected projects P1, P3, P4 and P7; the charts show the accumulated results for the four projects (red bars) relative to the baseline (blue bars showing each macro fiscal variable without PPPs).

The six charts include:

- **Government Net lending/Borrowing** (deficit on accrual basis)
- **Government Cash Balance** (deficit on cash basis)
- **Government Gross Debt**
- **Government Assets** (non-financial assets developed by the PPP)
- **Government Contingent Liabilities** (addition of debt and MRGs, if applicable)
- **Minimum Revenue Guarantees** (empty if no MRG exists for the project)

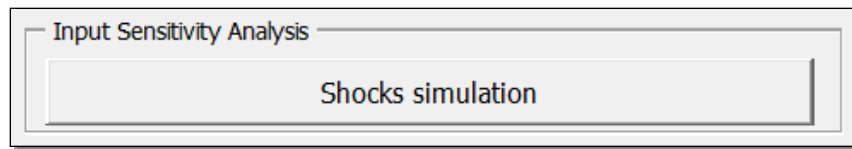
The user will choose the time horizon for the presentation of the chart. When the user presses the “**PRINT CHART**” button, PFRAM 2.0 will produce a PDF page that includes all six charts.

FIGURE 33. PROJECT SIMULATION > MACRO ANALYSIS



G. Fifth Frame: Shock Simulation

FIGURE 34. FIFTH FRAME



SCOPE OF SENSITIVITY ANALYSIS

This section allows the user to simulate a **macro shock** and to perform a **sensitivity analysis** for the impact of the shock on a single project or the entire portfolio.

- PFRAM 2.0 allows the user to simulate a shock on the following:
 - Change in **Real GDP** (percentage change, so that shocks are simulated in growth rates rather than levels)
 - **Inflation** (percentage change)
 - Change in **nominal exchange rate** (percentage change)
 - Joint shocks on inflation and nominal exchange rate (percentage change).
 - A shock combining all of the above.

NOTE: Although PFRAM 2.0 allows for combined shock, it does not ensure the macroeconomic consistency of these shocks. The user should assess such consistency independently of PFRAM 2.0.

PERFORMING THE SENSITIVITY ANALYSIS

- To simulate a shock, the user will go to the main shock simulation menu (Figure 35), click «**Enter Shock**», select the projects to be analyzed for impact, and enter the parameters of the shock (Figure 36).
- For each of the shocks, the user will set the **deviation from the baseline projection** (percentage change) and the **start and end year for the shock** (Figure 36). For example, a GDP shock of -2 percent would reduce the projected real GDP growth rate by 2 percentage points for each of the years to which the shock applies (in the example, these would be 2020 to 2023).
- Once projects that will be shocked are selected and the magnitude and timing of the shocks have been entered, the user will click «**Run shock**». To enter a new shock, the user will click «**Clear shock**» and enter the desired new shock.
- The **results of the simulation are presented in charts:**
 - Four charts that show how the macro variables deviate under the shock scenario from the baseline
 - For example, Figure 37 shows the impact on -2 percent shock in real GDP over 2020 to 2023
 - When the user clicks on «**Impacts on main fiscal aggregates**» (Figure 37), charts showing the impact of the shock on the main macro variables will be displayed. Six charts will present the impact on main fiscal aggregates relative to the baseline in percentage of GDP, including: Net lending/borrowing (NLB), Cash balance, Gross debt, Contingent liability, MRG, and Debt guarantee.
 - For example, Figure 38 shows the impact on the net lending/borrowing of a -2 percent shock in real GDP over 2020 to 2023.

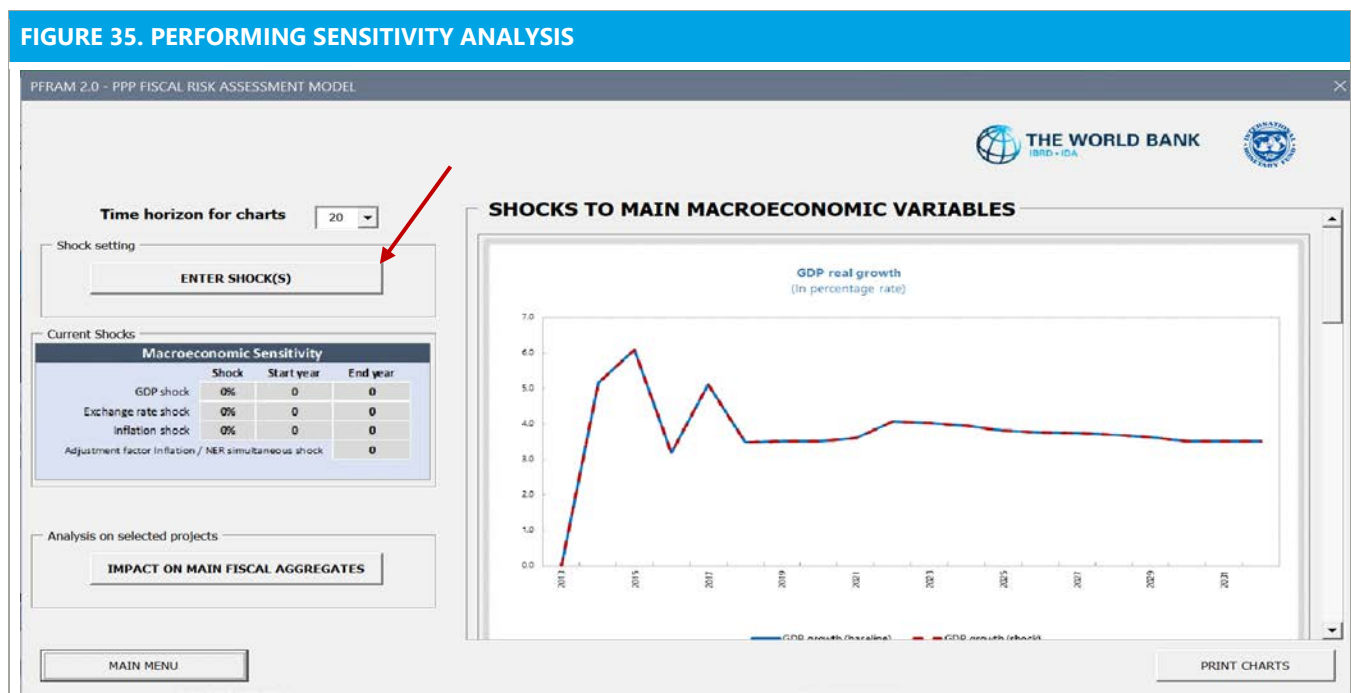




FIGURE 36. SHOCK SIMULATION, MAIN MENU

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

Sensitivity Analysis  **THE WORLD BANK** 
IBRD • IDA

1. Select Project/s to be shocked

Project 1 Project 2 Project 3 Project 4 Project 5 Project 6 Project 7 Project 8

Project selected:

P1: Hospital
P2: Coast Highway
P3: Public School
P4: Maximum Security Prison
P5: Millenium Suspension Bridge
P6: East-West Highway
P7: Crystal Water Sanitation Plant

2. Select shock and timing



	Shock	Start year	End year
GDP shock	-2.00%	2020	2023
Exchange rate shock			
Inflation shock			
Adjustment factor Inflation / NER simultaneous shock			

3. Run Shock

RUN SHOCK
CLEAR SHOCK
CANCEL

FIGURE 37. SHOCK SIMULATION, IMPACT ON MACROECONOMIC VARIABLES

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

 **THE WORLD BANK** 
IBRD • IDA

Time horizon for charts: 20

Shock setting: ENTER SHOCK(S)

Current Shocks

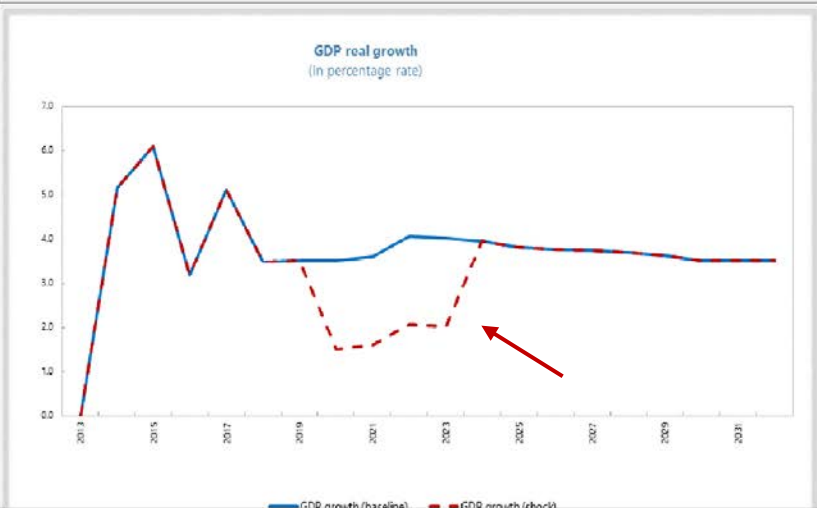
Macroeconomic Sensitivity			
	Shock	Start year	End year
GDP shock	-2%	2020	2023
Exchange rate shock	0%	0	0
Inflation shock	0%	0	0
Adjustment factor Inflation / NER simultaneous shock		0	

Analysis on selected projects: IMPACT ON MAIN FISCAL AGGREGATES

MAIN MENU

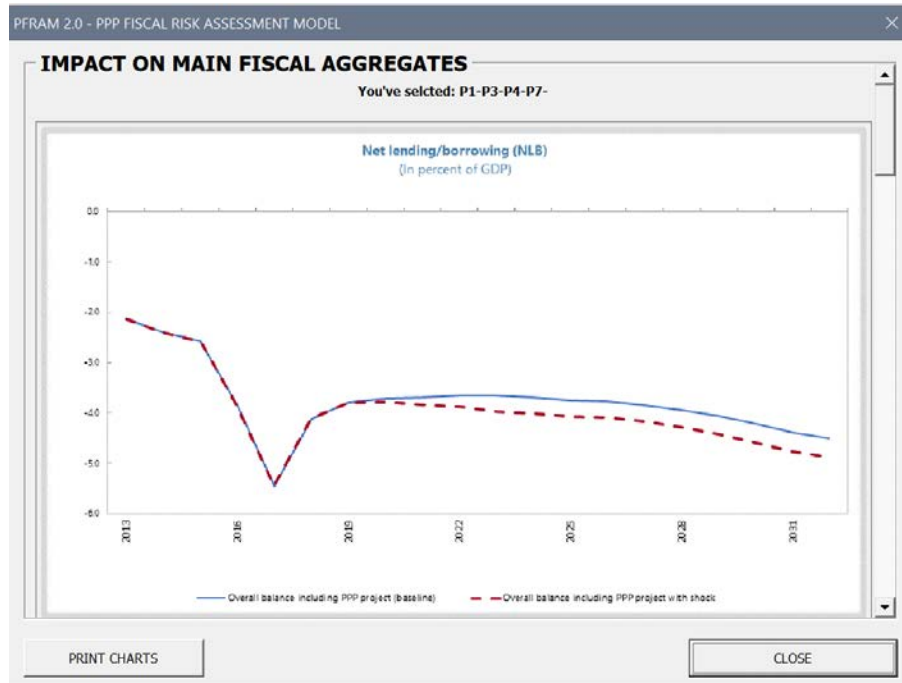
SHOCKS TO MAIN MACROECONOMIC VARIABLES

GDP real growth (in percentage rate)



PRINT CHARTS

FIGURE 38. SHOCK SIMULATION, IMPACT ON MAIN FISCAL AGGREGATES, NET LENDING/BORROWING



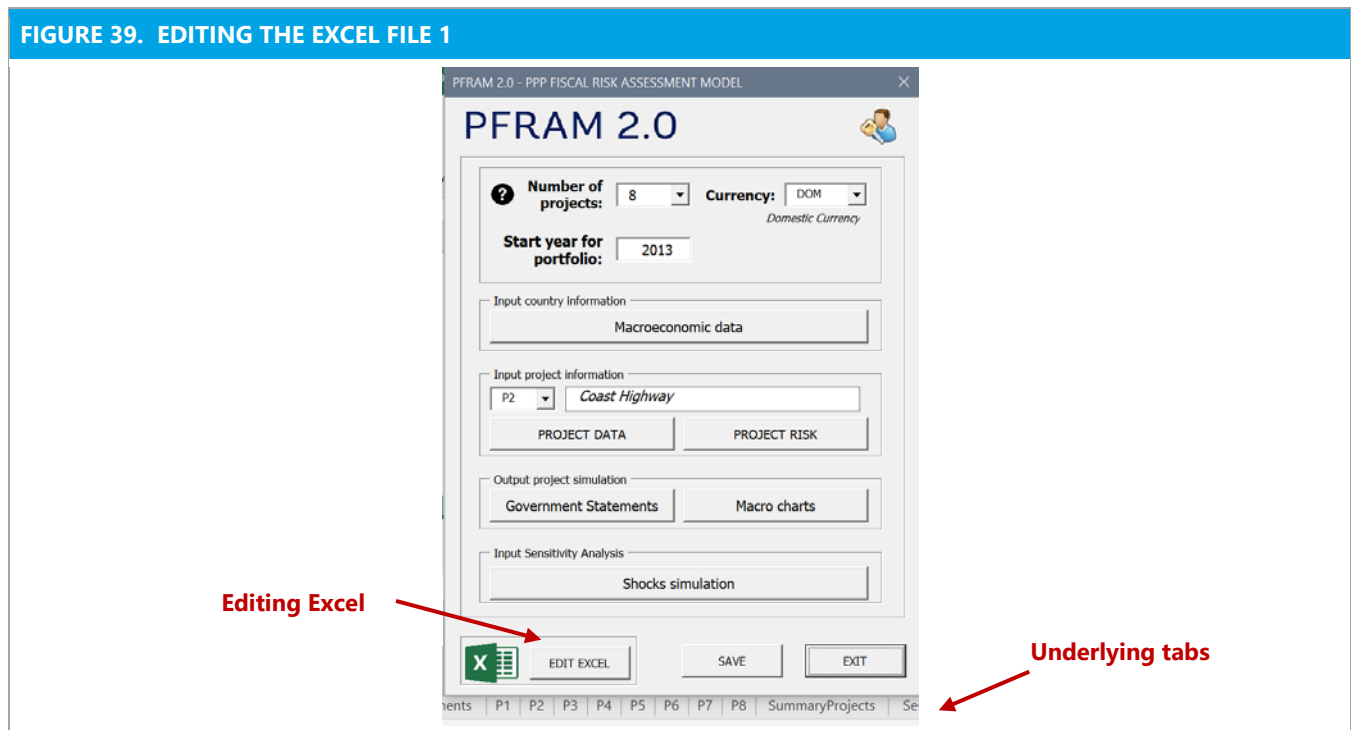
UNDERSTANDING THE IMPACT OF MACRO SHOCKS MODELED IN PFRAM

- **GDP shock.** A GDP shock has two effects: (1) it affects the denominator of the main aggregates expressed as a proportion of GDP; (2) it affects the PPP fiscal impact if the flows related to the PPP are linked to GDP. For example, in a government-funded project where government payments are driven by tariffs and demand volume, if demand is linked to GDP, then a positive GDP shock would increase demand and thereby government payments for the service.
- **Exchange rate shock.** Changes in the nominal exchange rate affect the PPP fiscal implication if constructions costs have import component, and whether fees and expenses are linked to the nominal exchange rate, which varies on a contract-by-contract basis. If the construction of the PPP asset depends to a large extent on import components, then the total cost of the project increases with the value of government liabilities and related assets. The nominal exchange rate can also affect the operational period of the PPP contract, for example, if government payments or user fees are set in foreign currency. Although this is not automatically modeled in PFRAM 2.0, the user will be able to manually link various cost and revenue components to the exchange rate in the spreadsheet directly to allow the effect of exchange rate changes on these variables to be taken into account.
- **Inflation shock.** Changes in inflation will affect PPP fiscal implications if project flows are linked to inflation.

H. Editing PFRAM 2.0

PFRAM 2.0 is designed with a user-friendly interface comprising the user forms presented in previous sections. The user forms prompt the user to enter information or perform certain tasks, without working directly in the Excel file. However, once familiar with the tool, the user may prefer **to work directly in the Excel file** to input data more quickly, or to tailor the file to consider contract features in a specific project.

At any point, the user will be able to click in **“MAIN MENU”** and select the **“EDIT EXCEL”** option (Figure 39). Doing this will allow the user to go directly to the different tabs in the Excel file and edit them. Editions may comprise simply to input project data (in cells highlighted in yellow), or to use the tool functionalities, such as simulations or contract termination.



TAILORING PFRAM 2.0 TO SPECIFIC PROJECT NEEDS

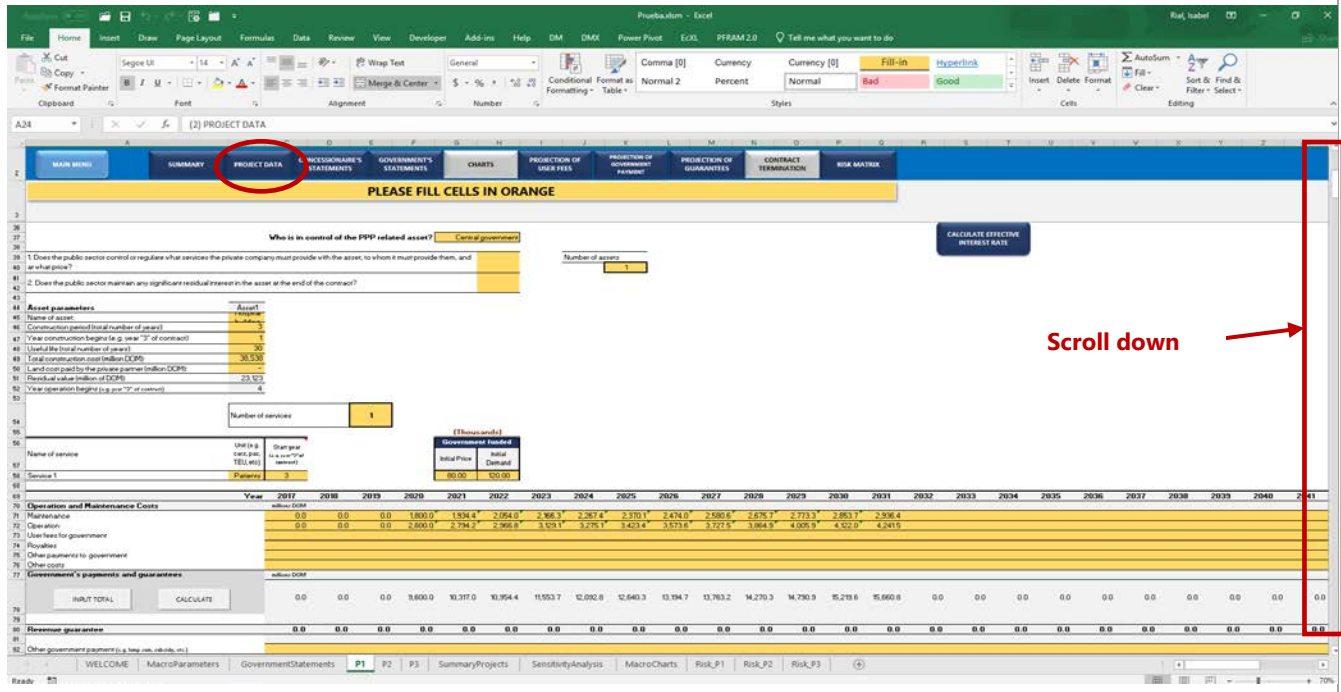
PFRAM 2.0 is designed to simulate the fiscal impact of standard PPP contracts. In practice, PPP contracts are much more complex than what PFRAM 2.0 can accommodate through the user forms. Yet, PFRAM 2.0 can be tailored to accommodate particular contracts by editing the Excel file directly.

One example is **linking operational and maintenance costs to main macroeconomic variables**, such as inflation or nominal exchange rate. By default, PFRAM 2.0 requires entering data for operational and maintenance costs in nominal terms. If the user simulates a macroeconomic shock on inflation and/or nominal exchange rate, the operational and maintenance costs would not be affected. The user can easily change the default option by intervening the corresponding input data directly in the Excel file. For example, if maintenance costs are linked to inflation, the user can perform the following steps:

- Click on **“MAIN MENU,”** and select **“EDIT EXCEL”**.
- Click on the project tab (for example, P1).

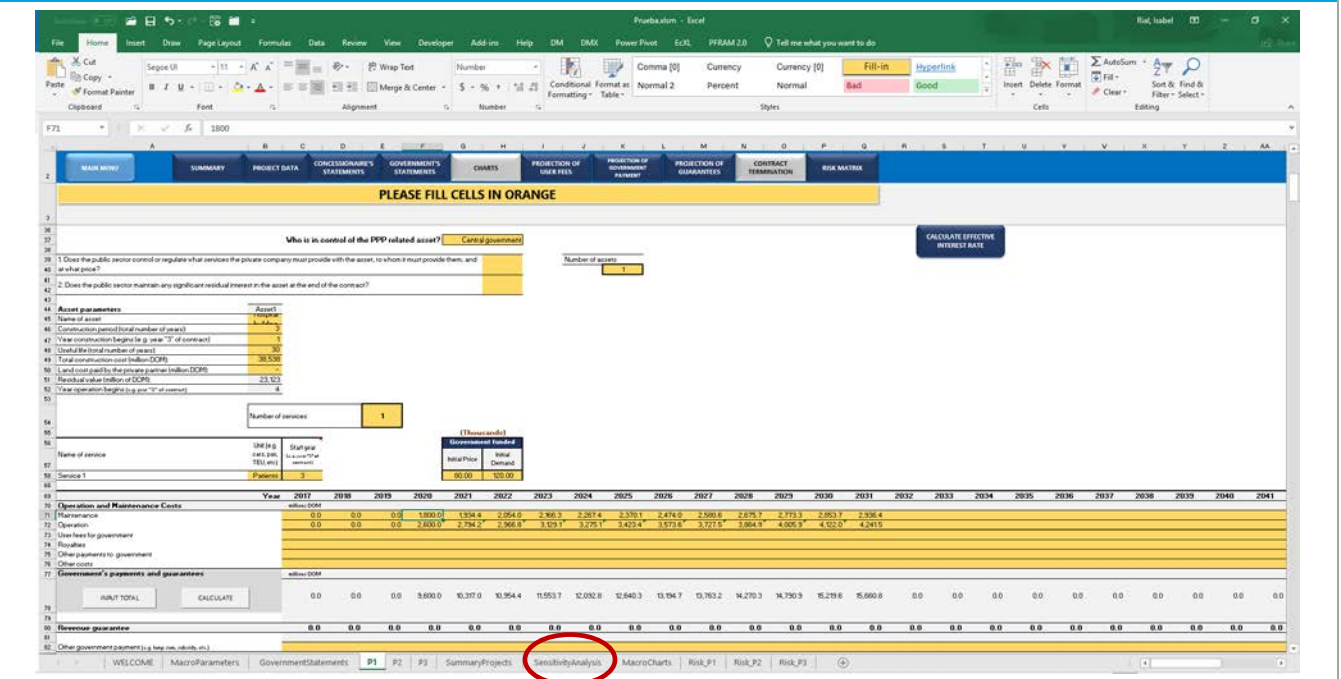
- Click on the **"PROJECT DATA"** button on the upper ribbon and scroll down to row 71 (Figure 40).

FIGURE 40. EDITING THE EXCEL FILE 2



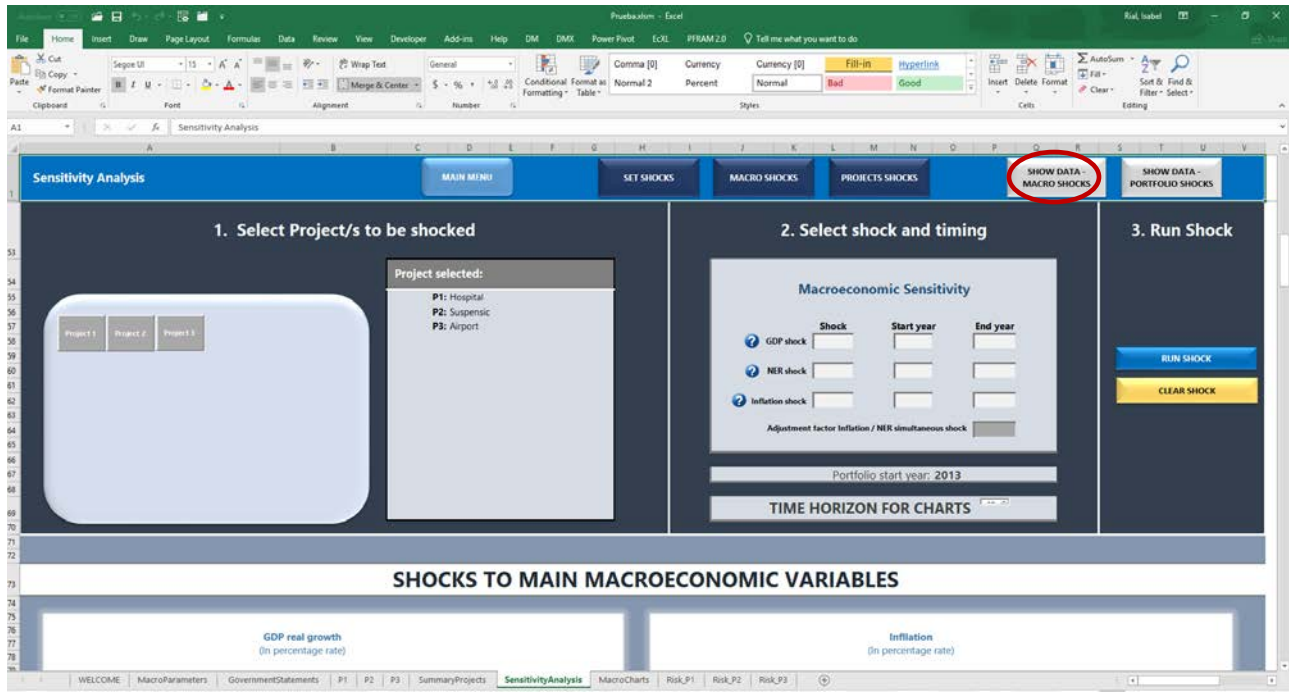
- Data in row 71 are in nominal terms, since they were entered through the user forms. To link them to inflation projections, the user can keep the initial value (for example, 1,800) for the first year of operation (2020) and link to inflation projections for the rest of the period (2021–31).
- To do this, the user will click on the tab **"SENSITIVITY ANALYSIS"** (Figure 41).

FIGURE 41. EDITING THE EXCEL FILE 3



- The user will next click on the **“SHOW DATA MACRO SHOCKS”** button (Figure 42).

FIGURE 42. EDITING THE EXCEL FILE 4



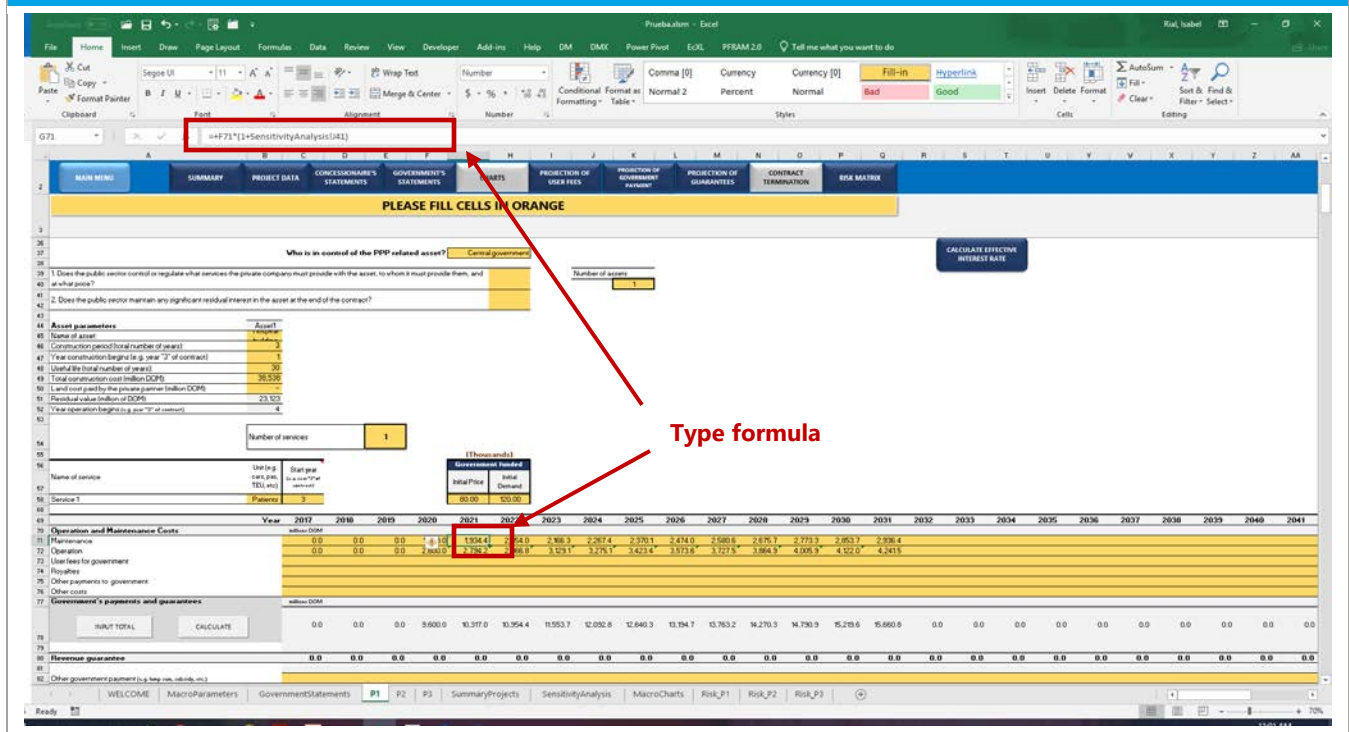
- The user will then go to rows 36 to 43. These rows comprise the projections of the macroeconomic variables: GDP, inflation, and nominal exchange rate, including a shock. Once the user simulates a macro shock, these rows will be updated and will support the simulation outputs computed in the file.

FIGURE 43. EDITING THE EXCEL FILE 5

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Assumptions																					
Nominal GDP in national currency (level) W/ Shock	2117	2392	2736	3052	3546	4017	4525	5055	5628	6219	6822	7422	8053	8722	9437	10145	10895	11604	12358	13161	14017
Nominal GDP (growth rates) W/ Shock	0.13	0.14	0.12	0.16	0.13	0.13	0.12	0.11	0.11	0.10	0.09	0.09	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.06
Real GDP in national currency (level) w/ Shock	1602.12	1684.90	1787.44	1844.35	1938.60	2006.15	2076.30	2149.19	2226.36	2316.98	2409.89	2505.08	2602.27	2697.78	2798.41	2901.39	3006.42	3111.64	3220.55	3333.27	3449.94
Real GDP (growth rates) W/ Shock	0.05	0.06	0.03	0.05	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
GDP deflator (units)	132.16	142	153	165	183	200	218	235	253	268	283	296	310	323	337	350	362	373	384	395	406
Change in GDP deflator (rate)	0.07	0.08	0.08	0.11	0.09	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03
NER (level)	205.66	236.39	293.88	326.30	389.16	409.37	434.10	457.98	483.28	509.66	509.66	509.66	509.66	500.00	480.00	479.00	468.00	462.00	445.00	430.00	412.00
NER (growth rates)	0.15	0.24	0.11	0.11	0.19	0.05	0.06	0.06	0.06	0.05	0.00	0.00	0.00	-0.02	-0.04	0.00	-0.02	-0.01	-0.04	-0.03	-0.04

- In this example, the user would like to link maintenance cost to inflation projections from 2021 onward. These projections are included in rows 40–41: GDP deflator, level, and change rate, respectively. The user will (1) return to the project tab (P1), (2) click in row 71 and the column corresponding to year 2021, (3) type a formula: $=F71*(1+SensitivityAnalysis!J41)$, and (4) copy this formula for the rest of the years (2022–31).

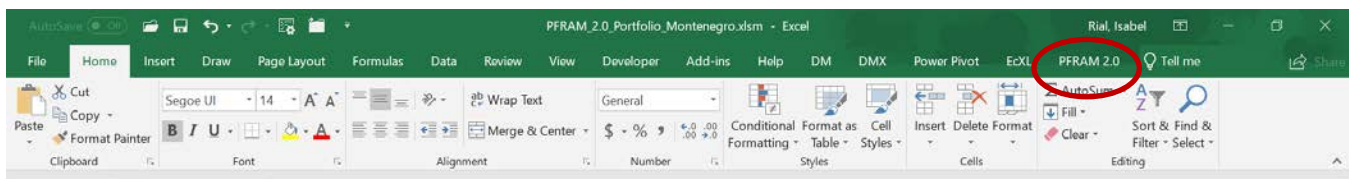
FIGURE 44. EDITING THE EXCEL FILE 6



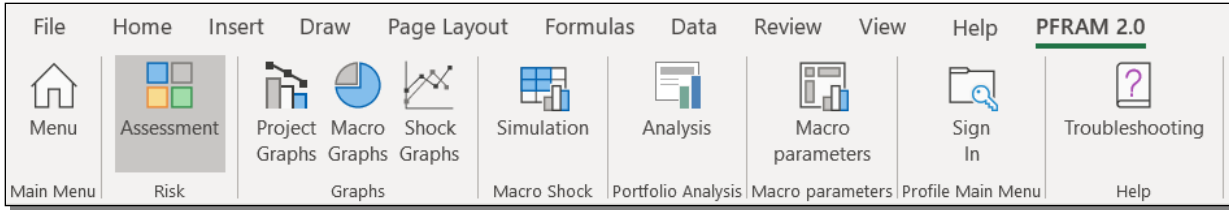
- The maintenance costs are now linked to inflation projections, including a shock. Once the user simulates an inflation shock, all of the variables linked to it, including maintenance costs, will be updated and computed in the file outputs.
- The same logic can be used for other project data entered in nominal terms—for example, other costs for government, and royalties—to link them to any of the macro variables, such as GDP, inflation, and nominal exchange rate.

PFRAM 2.0 RIBBON

To facilitate the navigation when working in the Excel work sheets directly, PFRAM 2.0 includes the following ribbon that allows users easy access:

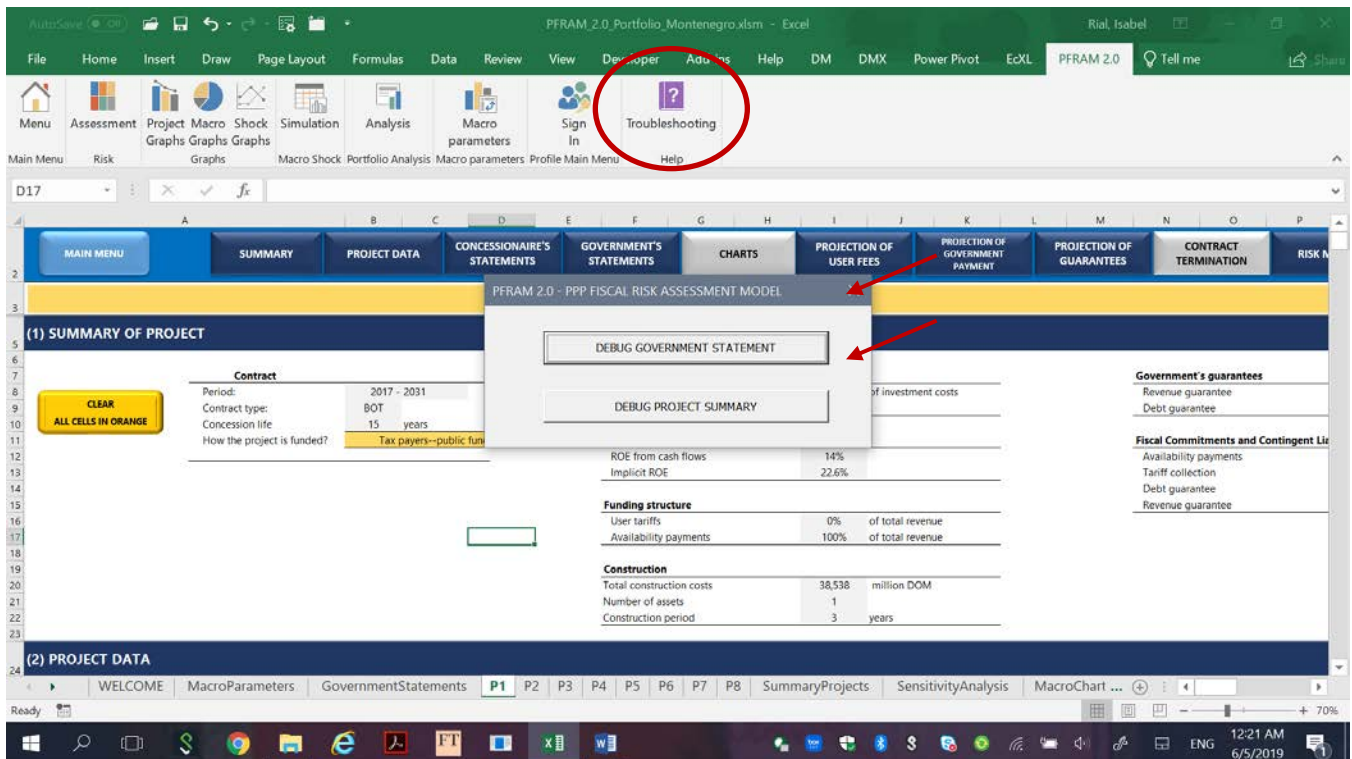


When the user clicks in the PFRAM 2.0 heading, the following ribbon is displayed:

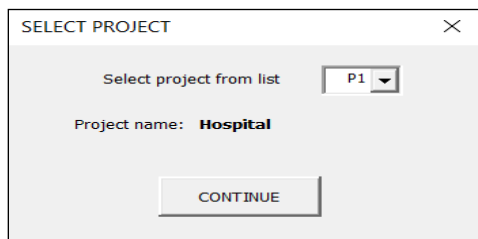


The user can navigate through the file by means of the ribbon, without losing any of the functionality discussed in previous sections.

In addition, the ribbon offers assistance with the debugging options presented in **“Troubleshooting.”** If an error is generated in the Government Statements tables or in Project Selection, the user will be able to perform debugging on both tables from the **«Help> Troubleshooting»** menu. These errors can occur when the user deletes projects from the portfolio, or deletes data entered in one project:



NOTE: When using the ribbon, some project-related shortcuts require the selection of a specific project:



V. EXAMPLES USING PFRAM 2.0

To guide the user in the functionality of the tool, this section describes three project examples using PFRAM 2.0. They do not reflect existing projects and are for illustration purposes only; the macroeconomic data and projections do not correspond to a specific country. This section describes some key features of PFRAM 2.0 based on the specificities of each project example. Detailed data entries and results for the three projects can be downloaded at <https://www.imf.org/external/np/fad/publicinvestment/>. For more guidance on how to input data, please refer to Section IV.

In the examples in this section, country X is a medium-size open economy exposed to exchange rate fluctuations and external demand risks. Inflation is high and persistent but with limited exchange rate pass-through to consumer prices. We assumed that the analysis is done in 2016. Country X has three PPP contracts: one starting in 2013 (recycling center), one starting in 2015 (hospital), and one starting in 2014 (road).

A. Creating a PPP Portfolio

The first step is to create a portfolio of projects. After opening PFRAM 2.0 and enabling macros, the user will click on the PFRAM 2.0 box. A window will open to allow the user to create a portfolio. The user will choose the number of projects in the portfolio (3 in this example); and the start year of the portfolio (2013), which should correspond to the first year of the oldest project in the PPP portfolio and which should be consistent with the first year of the macroeconomic framework. The users will also need to select the currency used in the PPP projects. The macroeconomic data have already been entered in the file from 2013–42.

B. Government-Funded Hospital Project

The first project is a government-funded hospital. Country X plans to create a new hospital using a build, operate, and transfer (BOT) contract signed in 2015. The private partner finances, designs, and constructs a hospital building and then operates and maintains it and provides additional services, including medical imaging. All other medical services will be provided by the government directly, because the government prefers to retain control over their quality. The construction, which will take three years, is financed by a mix of debt (70 percent) and equity (30 percent), with no government support. The private company will be remunerated directly by the government through budget payments. Although the useful life of a hospital is estimated to be 30 years, the government has decided to award the contract for only half that time, given the rapidly evolving needs and technologies in the health sector.

The following table summarizes the main parameters for this project. Values provided in this table should be input in PFRAM 2.0 without changes; for example, for the estimated construction costs of DOM 38538 million, the user will input 38538.

Contract & Asset Characteristics		Financing	
Year of PPP Start	2015	Leverage (debt to equity)	70%-30%
Type of contract	BOT	Interest rate on debt	8.96%

Length of contract (years):	15	Project Revenues	
Construction cost (DOM, millions)	38,538	Service 1: Fee per patient (DOM thousands)	60
Construction period (years)	3	Annual fee adjustment	Inflation
Construction start (contract year)	1	Hospital demand (patients, thousands)	100
Asset useful life	30	Demand adjustment	None
Project Costs		Service 2: Medical Imaging (DOM, thousands)	45
Maintenance (DOM, millions)	Fixed ¹²	Annual fee adjustment	NER
Operation cost (DOM, millions)	Fixed	Hospital demand (patients, thousands)	70
		Demand adjustment	None

First, the user will clarify how the project is funded and determine whether a public entity is in control of the PPP asset. Since this project is a BOT, this information should be input on the left-hand side in the top part of the “General Information” window, as shown in Figure 45. This information is for documentation purposes only and has no impact on how the project is accounted for in PFRAM 2.0. The government is funding this PPP through an availability payment, and the user will accordingly select the option **Tax payers – public funded** in the drop-down menu on the right-hand side of the same window. Then, in the middle of the same window, the user will determine whether the public sector controls the PPP-related asset, in line with IPSAS 32, to allow PFRAM 2.0 to properly account for this project (for more information, see Section III.D). The user will respond to both questions by *Yes* or *No*, using the drop-down menus in the “General Information” window. If the user answers *Yes* to both questions, the PPP-related asset is considered to be under public sector control and is accounted for in its balance sheet. Finally, the user will be able to determine whether the PPP asset is controlled by the private partner, the central government, a subnational entity, or a state-owned enterprise. If the user chooses the private partner, then a pop-up window will indicate that this project is outside of the scope of the accounting standard used in the spreadsheet and encouraging the user to review the response, as needed, for consistency. Once all of the data have been entered in this form, the user will click **CONTINUE**.

¹² Maintenance and operation spending are provided in nominal terms and vary, based on expected inflation throughout the life of the contract. Data are provided in the Excel file in the annex to this manual.

FIGURE 45. INPUTTING PROJECT FUNDING

PFRAM 2.0 - Hospital

THE WORLD BANK
IBRD - IDA

INTERNATIONAL MONETARY FUND

General
 Type of project: (e.g. DBOT, BOT, etc.) How the project is funded?

Accounting drivers
 1. Does the public sector control or regulate what services the private company must provide with the asset, to whom it must provide them, and at what price?
 2. Does the public sector maintain any significant residual interest in the asset at the end of the contract?
 Who is in control of the PPP related assets?

General criteria
 Corporate income tax rate: Imported component of assets:

Financing:
 Share of investment costs financed by debt: Share of debt in foreign currency (%):
 Interest rate on loans: Government shareholding (if any):
In case that the government is a shareholder of the PPP company, enter share (%) here.

MAIN MENU PROJECT DATA MENU CONTINUE >>

Second, the user will input information on the PPP-related asset. In this example, the only asset is the hospital building. The user will (1) select the number of assets in the drop-down menu, (2) click UPDATE, and (3) input the data provided in the table with Contract Assets & Characteristics (Figure 46).

FIGURE 46. INPUTTING PROJECT ASSETS

PFRAM 2.0 - Hospital

THE WORLD BANK
IBRD - IDA

INTERNATIONAL MONETARY FUND

Asset parameters
 Number of assets: UPDATE

Asset
ASSET 1
 Name of asset:
 Construction period (total number of years):
 Year construction begins (e.g. year «3» of contract):
 Useful life (total number of years):
 Total construction cost (million DOM):
 Land cost paid by the private partner (million DOM):

MAIN MENU PROJECT DATA MENU << BACK CONTINUE >>

Third, to estimate project revenues, the user will input data related to the two services— basic services and medical imaging—agreed to in the contract and link them to adjustment parameters. The government has decided to fund the project through an availability payment, which reflects two services.

- The first service is for the construction and maintenance of the hospital building. It is set at DOM 60,000 per patient at the beginning of operation and is adjusted in line with inflation on a yearly basis. The demand for hospital services is estimated at 100,000 patients per year.
- The second service consists of medical imaging. It is set at DOM 45,000 per service initially and is adjusted in line with the nominal exchange rate, as the imaging equipment and repair parts need to be imported. The demand for medical imaging is estimated at 70,000 services per year.

Overall, demand is fixed during the contract for both services, because the government payment is not linked to the number of patients. A fixed payment reduces the risks associated with projecting demand for medical services over the long term and reduces the incentives for the private partner to inflate the number of patients. However, with a fixed demand, the government provides an implicit MRG in the event that demand is continuously lower than projected; it faces operational and/or renegotiation risks if demand is significantly higher than anticipated. Other medical services are provided by the government directly and are not part of the PPP contract.

Inputting project revenues into PFRAM 2.0 requires two steps. To start, in the “Project Data” menu, the user will click in the *Project revenue* box and fill the “Services” window.

- In the first step, the user will define the number of services (2 in this example); provide the relevant unit for each service (patient for service 1 and medical imaging for service 2); add the start year (3, corresponding to the last year of construction); and enter the initial price and demand for each service (Figure 47).

FIGURE 47. INPUTTING SERVICES AND INITIAL VALUES

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

THE WORLD BANK
IBRD · ICA

INTERNATIONAL
MONETARY FUND

Services

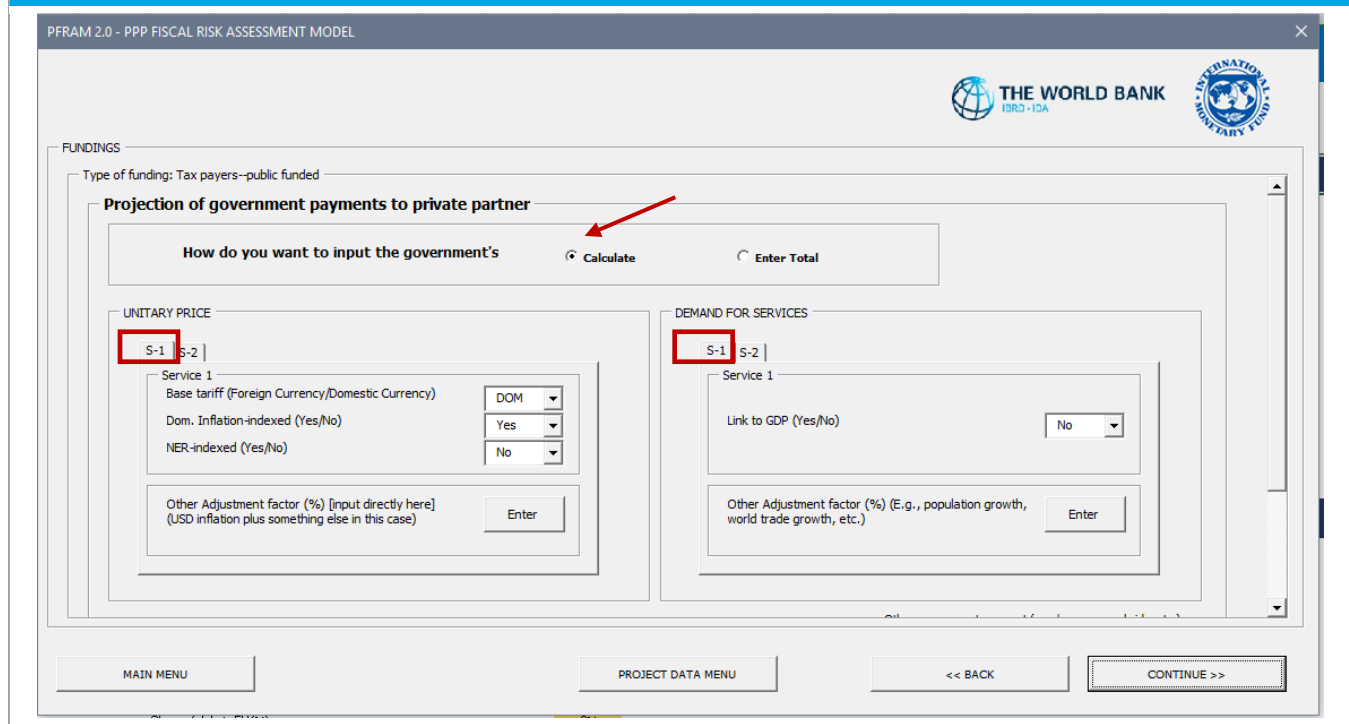
Number of services: 2

Service details	Unit (e.g. cars, pax, TEU, etc)	Start year	Government funded Initial Price Thousand	Initial Demand Thousand
Service 1	Patient	3	60	100
Service 2	Medical imaging	3	45	70

MAIN MENU PROJECT DATA MENU << BACK CONTINUE >>

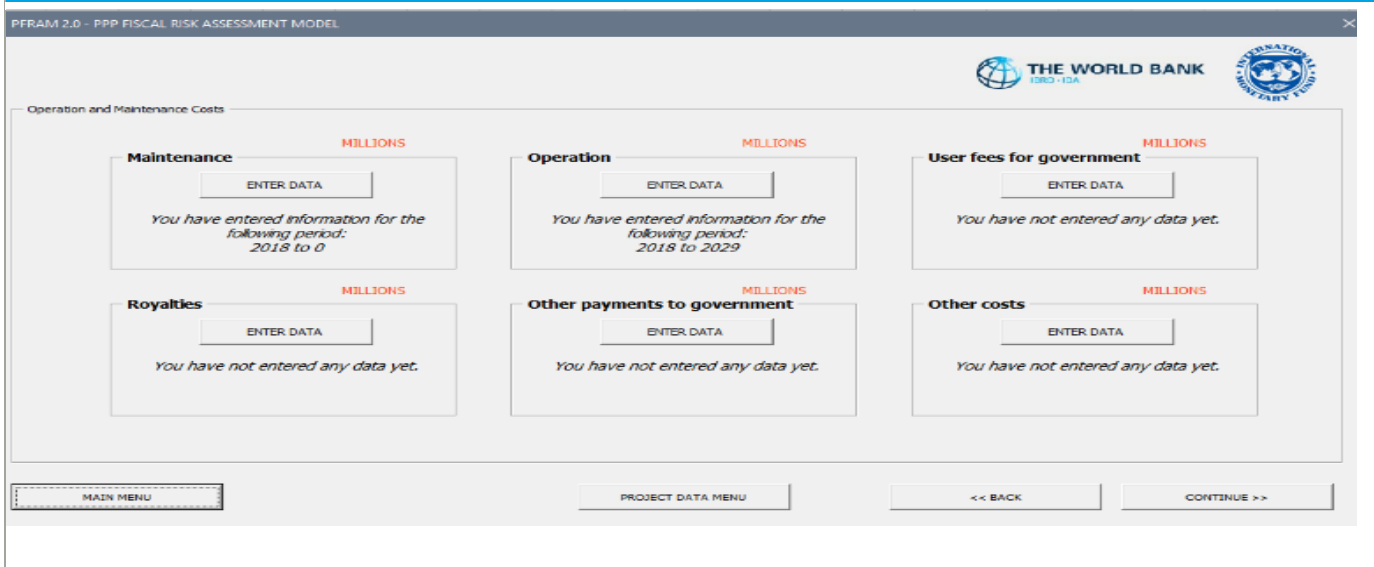
- In the second step, after clicking on Continue, the user will see a “**Funding**” window that asks whether the user will calculate the project revenues or whether the revenues will be input directly in nominal terms. To link payments to an adjustment parameter and use sensitivity shocks, the user will select Calculate. The user will next select the adjustment parameters for price and demand for each service (S-1 and S-2). Figure 48 shows the data input for the first service, with price linked to inflation, and fixed demand.

FIGURE 48. INPUTTING SERVICES AND LINKING IT MACRO PARAMETERS



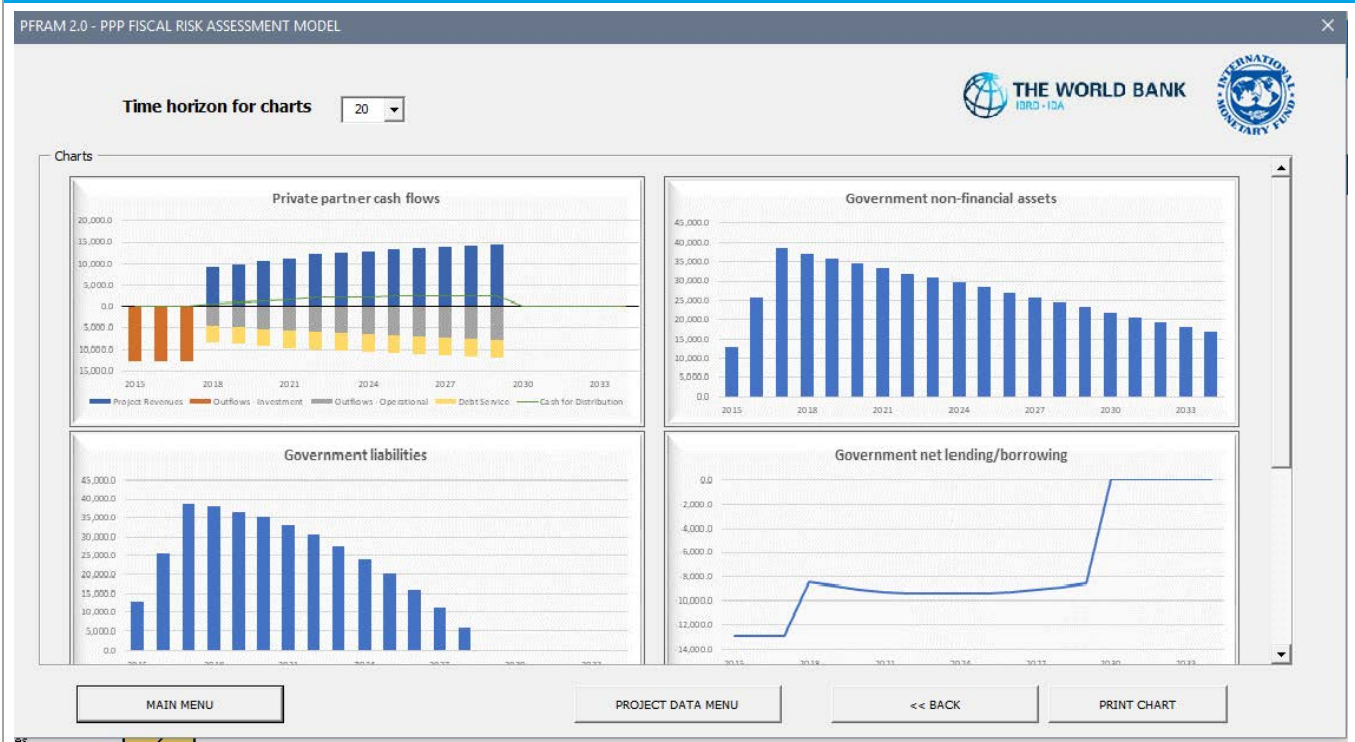
Fourth, maintenance and operation costs need to be input (Figure 49). Maintenance and operation costs increase with the projected change in the price level, estimated through the GDP deflator. The user will input the Maintenance and operation costs as follows: In the “Project Data” menu, the user will click in **Maintenance, Operation and Other Costs**; in the “Operation and Maintenance Costs” menu, the user will click in *Enter Data for Maintenance* and then *Operation*. PFRAM 2.0 directs the user to an Excel spreadsheet where the data will be pasted. For more details, see Section IV.C.

FIGURE 49. INPUTTING MAINTENANCE AND OPERATION SPENDING



In this example, the government does not provide any additional support to the private partner. Accordingly, the user will go directly to check the main results computed by PFRAM 2.0 and presented in the form of project charts (Figure 50). The user can change the **TIME HORIZON FOR CHARTS** to adjust it for a period relevant for the project under consideration by using the drop-down menu in the upper left corner. The user will then have the option to **PRINT** the charts or return to **MAIN MENU** to perform other tasks.

FIGURE 50. PROJECT CHARTS



The user will be able to generate the fiscal risks matrix for the project. To prepare a fiscal risk matrix, the user will need to identify and assess detailed fiscal risks across the 11 main categories. For each project, PFRAM 2.0 automatically generates a worksheet that contains an empty fiscal risk matrix; each matrix will be numbered in the order in which the projects are entered (for example, worksheet Risk_P1 for the first project input in the portfolio). The user will be able to assess the option to generate the fiscal risks matrix by going to **MAIN MENU** and selecting **PROJECT RISK**.

Figure 51 presents the assessment of the first two subcategories in the governance risk. The user can opt to fill the fiscal risks matrix using the **subcategories of risks** (52 in total) or to fill only the **Main Categories of Risks** (11 in total). Only the assessment of the main 11 risks will be reflected in the fiscal risk matrix (summary output). However, there are several advantages of assessing the 52 subcategories of risk; they provide a better understanding of the sources of a project's fiscal risks, particularly for such complex fiscal risks as "construction risk" comprising up to 12 subcategories (including land availability and geological risks). It also allows the user to better document project information for subsequent discussions with the authorities and/or to support the assessment. In PFRAM 2.0 forms, the assessment of the risk subcategories is presented at the top part of the box. The user needs to scroll down to assess all of the risk subcategories; the assessment of the overall main risks is presented at the bottom part of the form.

For each risk, the user will determine the **likelihood** of this risk, its potential **fiscal impact**, and whether risk **mitigation measures** exist. The user will also provide an explanation for these ratings in the white box below each drop-down menu. After filling in the information for all risks, the user will determine the overall likelihood, fiscal impact, and existing mitigation measures at the broader risk category level. In this example, the likelihood of risks materialization is assessed as medium, given weak planning, budgeting, and reporting practices. The fiscal impact could be high if a nonpriority and costly project is undertaken, and the government has no significant mitigation measures in place. Accordingly, PFRAM 2.0 automatically considers the rating for governance risks to be high, and the government should consider them to be a high priority.

FIGURE 51. INPUTTING DETAILED RISKS IN THE RISK MATRIX

The screenshot displays the 'Subcategories' section of the PFRAM 2.0 software. It features two risk assessment questions under the 'Governance Risk Class' category. Each question has a 'Yes' or 'No' radio button, a 'Likelihood' dropdown (set to 'Medium'), a 'Fiscal Impact' dropdown (set to 'High'), and a 'Mitigation Strategy' dropdown (set to 'No'). Below each question, there are three boxes providing detailed information: 'LIKELIHOOD', 'FISCAL IMPACT', and 'MITIGATION STRATEGY'. A red 'RISK' message is displayed for each question. At the bottom, a summary bar shows 'GOVERNANCE RISKS' as 'Medium', 'RISK RATING' as 'HIGH', and 'PRIORITY ACTION' as 'HIGH PRIORITY'. Buttons for 'SAVE FOR LATER', 'MAIN MENU', 'DETAILED REPORT', and 'NEXT RISK >>' are also visible.

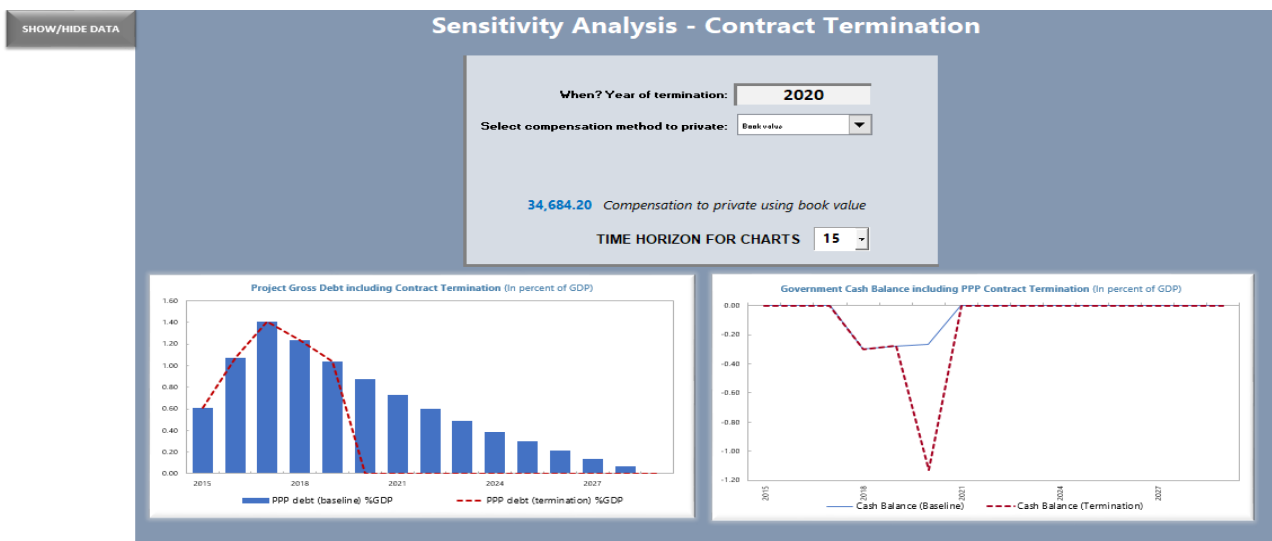
In this example, the fiscal risk matrix highlights four main risks. Once all of the risks across the 11 categories have been input, PFRAM 2.0 produces a fiscal risk matrix (Figure 52), which is presented in worksheet Risk_P1. The risk rating is high for (1) governance risks, as the public investment planning is weak and may lead to the selection of projects that are not a priority; (2) construction risks, as the government retains archeological risks that frequently materialize during construction in country X; (3) demand risks, as demand projections have not been evaluated carefully during project preparation; and (4) financial risks, as the government is exposed to volatility in the nominal exchange rate as medical imaging payments are denominated in dollars. As there are no mitigation strategies for these risks, the government should give priority to addressing those risks.

FIGURE 52. RISK MATRIX FOR THE HOSPITAL PROJECT

Project Fiscal Risk Matrix					
RISK IDENTIFICATION	LIKELIHOOD	FISCAL IMPACT	RISK RATING Likelihood*Impact	MITIGATION STRATEGY Is it in place?	PRIORITY ACTIONS
GOVERNANCE RISKS	MEDIUM	HIGH	HIGH	NO	HIGH PRIORITY
CONSTRUCTION RISKS	MEDIUM	MEDIUM	MEDIUM	NO	HIGH PRIORITY
DEMAND RISKS	MEDIUM	HIGH	HIGH	NO	HIGH PRIORITY
OPERATIONAL AND PERFORMANCE RISKS	LOW	LOW	IRRELEVANT	NO	NO ACTION REQUIRED
FINANCIAL RISKS	MEDIUM	MEDIUM	MEDIUM	NO	HIGH PRIORITY
FORCE MAJEURE	LOW	LOW	IRRELEVANT	YES	NO ACTION REQUIRED
MATERIAL ADVERSE GOVERNMENT ACTIONS	LOW	MEDIUM	LOW	YES	LOW PRIORITY
CHANGE IN LAW	LOW	LOW	IRRELEVANT	YES	NO ACTION REQUIRED
REBALANCING OF FINANCIAL EQUILIBRIUM	LOW	LOW	IRRELEVANT	NO	NO ACTION REQUIRED
RENEGOTIATION	LOW	MEDIUM	LOW	NO	MEDIUM PRIORITY
CONTRACT TERMINATION	LOW	LOW	IRRELEVANT	NO	NO ACTION REQUIRED

In this example, the government would like to estimate the impact of buying back the project after five years of operation, which would trigger the early termination of the contract. The number of patients is significantly lower than projected due to limited public transportation and high traffic congestion. After a careful cost-benefit analysis, the government ends the PPP contract and manages the hospital building and medical imaging services directly. To estimate the fiscal impact of an early termination, a sensitivity analysis module is presented in each project sheet (from line 649), as shown in Figure 53. The private partner can be compensated based on (1) the book value, that is, the remaining value of the asset at the time of termination or (2) on the net present value of the future profit/loss forecast over the remaining years of the contract. In this project, government compensates its private partner at book value. Figure 53 shows that project gross debt becomes nil on early termination (see the red dotted line in the left-hand chart), but the government cash balance deteriorates sharply in 2020 (see the red line in the right-hand chart) due to government compensation to the private partner.

FIGURE 53. SIMULATING A CONTRACT EARLY TERMINATION

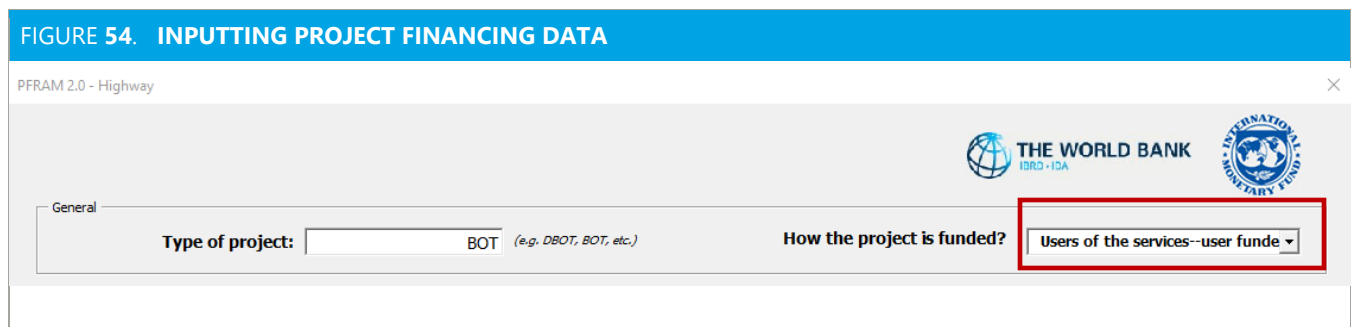


C. User-Funded Road Project

The second project is a user-funded highway. Country X signs its first PPP in the road sector at the beginning of 2014. Using a user-funded approach for the first time in the country, a 20-year contract is awarded for building, operating, and finally transferring the highway (BOT). This project is expected to be funded by users, but the government had to provide an MRG to its private partner because there were significant uncertainties about the user’s willingness to pay. Demand risk is therefore borne by the government, which is exposed to an explicit contingent liability in the event that traffic levels are lower than anticipated. The following table summarizes the main parameters for this project:

Contract & Asset Characteristics		Project Revenues	
Year of PPP Start	2014	Fee per user (DOM, thousands)	11.5
Type of Contract	BOT	Annual adjustment	Inflation
Length of contract (years):	20	Road demand (cars, thousands)	1,000
Construction Cost		Demand adjustment	GDP growth
Construction cost (DOM, millions)	115,000	Project Costs	
Road base (DOM million)	104,000	Maintenance (DOM, millions)	Fixed ¹³
Construction start (contract year)	1	Operation cost (DOM, millions)	
Construction period (years)	3		Fixed
Useful life	25		
Asphalt (DOM million)	11,000	Financing	
Construction start (contract year)	3	Leverage (debt to equity)	70%–30%
Construction period (years)	1	Interest rate on debt	8.97%
Useful life	6		

This is a user-funded project. The government allows the private partner to charge user fees (Figure 54).¹⁴



This project comprises two assets that need to be input separately. The construction of the road is broken down into two different assets because of their different useful lives. The first asset is the main road

¹³ Maintenance and operation spending are provided in nominal terms and vary based on expected inflation throughout the lifetime of the contract. Data are provided in the Excel file and can be downloaded at <https://www.imf.org/external/np/fad/publicinvestment>.

¹⁴ This example focuses on using PFRAM 2.0 functionalities that have not been explained during the previous example. All other data can be inputted following the same guidance provided in the previous example.

base, which has a useful life of 25 years, would take 3 years to build, and has a total construction cost of DOM 104 billion. The construction of this asset started immediately after the contract was signed. The second asset was the asphalt layer, which has a useful life of only 6 years, has a cost DOM 11 billion, and has to be built in the third year of construction of the first asset. Figure 55 shows how the information should be input in the “Asset Parameters” window.

FIGURE 55. INPUTTING DIFFERENT ASSETS IN A PROJECT

PFRAM 2.0 - Highway

THE WORLD BANK
IBRD - IDA

INTERNATIONAL MONETARY FUND

Asset parameters

Number of assets: 2 UPDATE

Asset	ASSET 1	ASSET 2
Name of asset	Road	Surface
Construction period (total number of years):	3	1
Year construction begins (e.g. year «3» of contract):	1	3
Useful life (total number of years):	25	6
Construction cost (million DOM):	104000	11000
Land cost paid by the private partner (million DOM):	0	0

MAIN MENU PROJECT DATA MENU << BACK CONTINUE >>

In addition, the government has provided an MRG to the private partner. The Ministry of Transportation initially estimated an annual demand of 1 million cars, which would increase in line with GDP growth. The toll agreed to with the private partner to cover the construction, maintenance, and operation of the road, following international standards, was DOM 11,500 per car and is indexed to inflation. The government provided an MRG equivalent to 96 percent of the projected revenue in the first year (DOM 11,040 bn), which gradually declines to 74 percent of projected revenues in 2028 before ending in 2029. The price of services and demand should be calculated outside of PFRAM 2.0 and input in the “Projection of Guarantees” window separately, as shown in Figure 56. The user will click in the guaranteed price/tariff box and then paste price data in the dedicated spreadsheet that will open automatically (Figure 57). The user will then follow the same logic by (1) selecting the *Demand Guaranteed* button and (2) using the copy and paste option to input demand data (Figure 57).

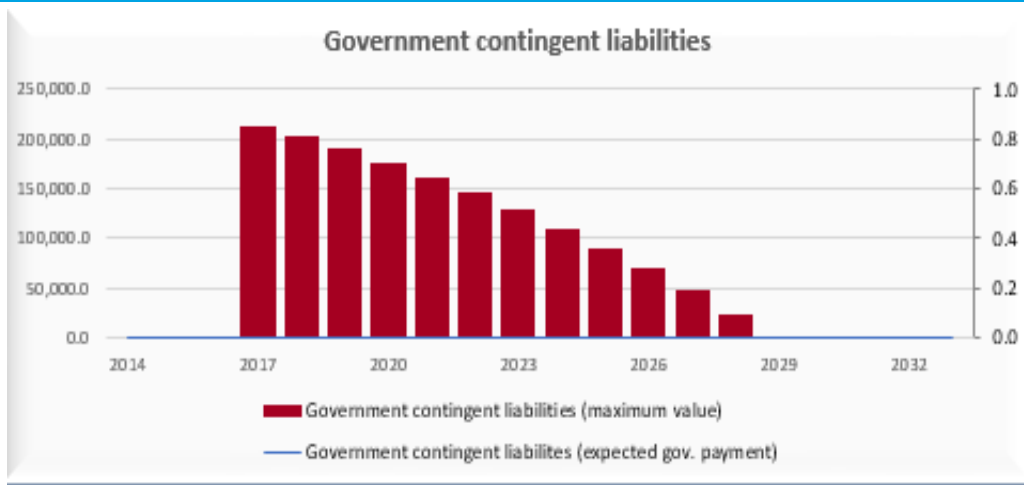
FIGURE 56. ENTERING A MINIMUM REVENUE GUARANTEE

FIGURE 57. ENTERING A MINIMUM REVENUE GUARANTEE –COPY AND PASTE

Year	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Guaranteed price/tariff (in domestic currency)				11.50	12.50	13.70	14.79	15.89	16.87	17.80	18.63	19.47	20.32	21.20	21.98		

In this example, PFRAM 2.0 generates the standard outputs, as well as a chart with the estimation of the government’s contingent liabilities. PFRAM 2.0 estimates the maximum exposure of the government, that is, the stock of government guarantees if no user fees are collected throughout the life of the project (red columns in Figure 58). This chart can also show the actual value of government payments when the guarantee is called. There is no actual payment for the guarantee (the blue line), because the revenues are greater than the guarantee.

FIGURE 58. GOVERNMENT CONTINGENT LIABILITIES-MINIMUM REVENUE GUARANTEES



D. Combined Funding Recycling Center project

The third project is a solid waste recycling center funded by a combination of user fees and government payments. The private partner builds, operates, and transfers (BOT) a solid waste recycling facility over 15 years, with a total investment cost of DOM 28,000 million. The contract includes the rehabilitation of an existing land field and the creation of a new landfill, which will take 3 years, and treatment of solid waste over 12 years. To reduce costs to users and incentivize recycling behaviors, the government has agreed to fund 70 percent of the project through an availability payment, in which the users will pay the remaining 30 percent; the government guarantees 30 percent of the private partner’s debt. To enter a combined funding arrangement for a project, the user will go to the “General Information” window and select “combined funding” in response to the question about project funding (Figure 59). The following table summarizes the main parameters for this project:

Contract & Asset Characteristics		Project Revenues	
Year of PPP Start	2013	Fee per thousand per ton (DOM thousand) User & govt funded	5
Type of Contract	BOT		
Length of contract (years):	15	Annual adjustment	Inflation
Construction Cost		Demand user funded (tons)	390
Construction cost (DOM million)	28,000	Demand govt funded	910
Construction start (contract year)	1	Demand Adjustment	None
Construction period (years)	3	Project Costs	
Asset useful life	20	Maintenance (DOM million)	Fixed ¹⁵
Financing	70%-30%	Operation (DOM million)	Fixed
Leverage (debt to equity)			
Interest rate on debt	8.96%		

¹⁵ Maintenance and operation spending are provided in nominal terms and vary, based on expected inflation throughout the life of the contract. Data are provided in the Excel file in annex to this manual.

FIGURE 59. CREATING A COMBINED-FUNDED PROJECT

The screenshot displays the 'PFRAM 2.0 - Recycling Center' application window. At the top right, there are logos for 'THE WORLD BANK IDRO · IDA' and the 'INTERNATIONAL MONETARY FUND'. The interface is divided into several sections:



- General:** 'Type of project:' is set to 'BOT' (with a note '(e.g. DBOT, BOT, etc.)'). 'How the project is funded?' is set to 'Combined' (highlighted with a red box).
- Accounting drivers:** Two questions are asked: '1. Does the public sector control or regulate what services the private company must provide with the asset, to whom it must provide them, and at what price?' and '2. Does the public sector maintain any significant residual interest in the asset at the end of the contract?'. Both are answered 'YES'. 'Who is in control of the PPP related assets?' is set to 'Central Government'.
- General criteria:** 'Corporate income tax rate:' is 0.00% and 'Imported component of assets:' is 0.00%.
- Financing:** 'Share of investment costs financed by debt:' is 70.00%, 'Share of debt in foreign currency (%)' is 0.00%, 'Interest rate on loans:' is 8.96%, and 'Government shareholding (if any):' is 0.00%. A note below states: 'In case that the government is a shareholder of the PPP company, enter share (%) here.'

At the bottom, there are three buttons: 'MAIN MENU', 'PROJECT DATA MENU', and 'CONTINUE >>'.

All of the project information should be input in a similar way to that shown in previous examples. The only difference is that the user needs to (1) input project revenues from government payments and from user fees and (2) link them to adjustment parameters. In the Services window, the user will input the initial price and demand for services for user fees and government payment separately (Figure 60). The tariff was set at DOM 5,000 per ton of recycled waste. Demand is estimated at 1,300 tons (or 1,300 thousand kilograms) per year; of this amount, 910 will be paid by the government, and 390 will be paid by the users. In addition, user fees and government payments are automatically adjusted. For both user fees (Figure 61) and government payment (Figure 62), the price of service increases with the change in the price level (inflation), estimated through the GDP deflator, and demand is linked to GDP growth.

FIGURE 60. INPUTTING PRICE AND DEMAND FOR SERVICES IN A COMBINED-FUNDED PROJECT

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

Services



Number of services:

Service details

Service	Unit (e.g. cars, pax, TEU, etc)	Start year	User-funded Initial Price Thousand	Initial Demand Thousand	Government funded Initial Price Thousand	Initial Demand Thousand
Service 1	Solid Waste	3	5	390	5	910

FIGURE 61. PROJECTING REVENUES FROM USER FEES IN A COMBINED-FUNDED PROJECT

PFRAM 2.0 - PPP FISCAL RISK ASSESSMENT MODEL

FUNDINGS

Type of funding: Combined

Projection of user fees

How do you want to input the tariffs? Calculate Enter Total

UNITARY PRICE	DEMAND FOR SERVICES
S-1 Service 1 Base tariff (Foreign Currency/Domestic Currency) <input type="text" value="DOM"/> Dom. Inflation-indexed (Yes/No) <input type="text" value="Yes"/> NER-indexed (Yes/No) <input type="text" value="No"/> Other Adjustment factor (%) [input directly here] (USD inflation plus something else in this case) <input type="text"/> Enter	S-1 Service 1 Link to GDP (Yes/No) <input type="text" value="Yes"/> Other Adjustment factor (%) (E.g., population growth, world trade growth, etc.) <input type="text"/> Enter

FIGURE 62. PROJECTING REVENUES FROM GOVERNMENT PAYMENTS IN A COMBINED-FUNDED PROJECT

The screenshot shows the 'FUNDINGS' section of the PFRAM 2.0 software. A red box highlights the title 'Projection of government payments to private partner'. Below this, there are two radio buttons: 'Calculate' (selected) and 'Enter Total'. The interface is divided into two main columns: 'UNITARY PRICE' and 'DEMAND FOR SERVICES'. The 'UNITARY PRICE' column contains a 'Service 1' section with dropdown menus for 'Base tariff (Foreign Currency/Domestic Currency)' (set to 'DOM'), 'Dom. Inflation-indexed (Yes/No)' (set to 'Yes'), and 'NER-indexed (Yes/No)' (set to 'No'). There is also an 'Other Adjustment factor (%)' input field. The 'DEMAND FOR SERVICES' column contains a 'Service 1' section with a 'Link to GDP (Yes/No)' dropdown menu (set to 'Yes') and another 'Other Adjustment factor (%)' input field. At the bottom, there are navigation buttons: 'MAIN MENU', 'PROJECT DATA MENU', '<< BACK', and 'CONTINUE >>'. Logos for 'THE WORLD BANK' and 'INTERNATIONAL MONETARY FUND' are visible in the top right corner.

In this example the government provides a debt guarantee of 30 percent. The private company requested a debt guarantee from the government to cover the debt financing part of the project. Users should input the debt guarantee in the Projection of guarantees box, and select the percentage of private debt guarantees in the dropdown menu (Figure 63).

FIGURE 63. INPUTTING A DEBT GUARANTEE

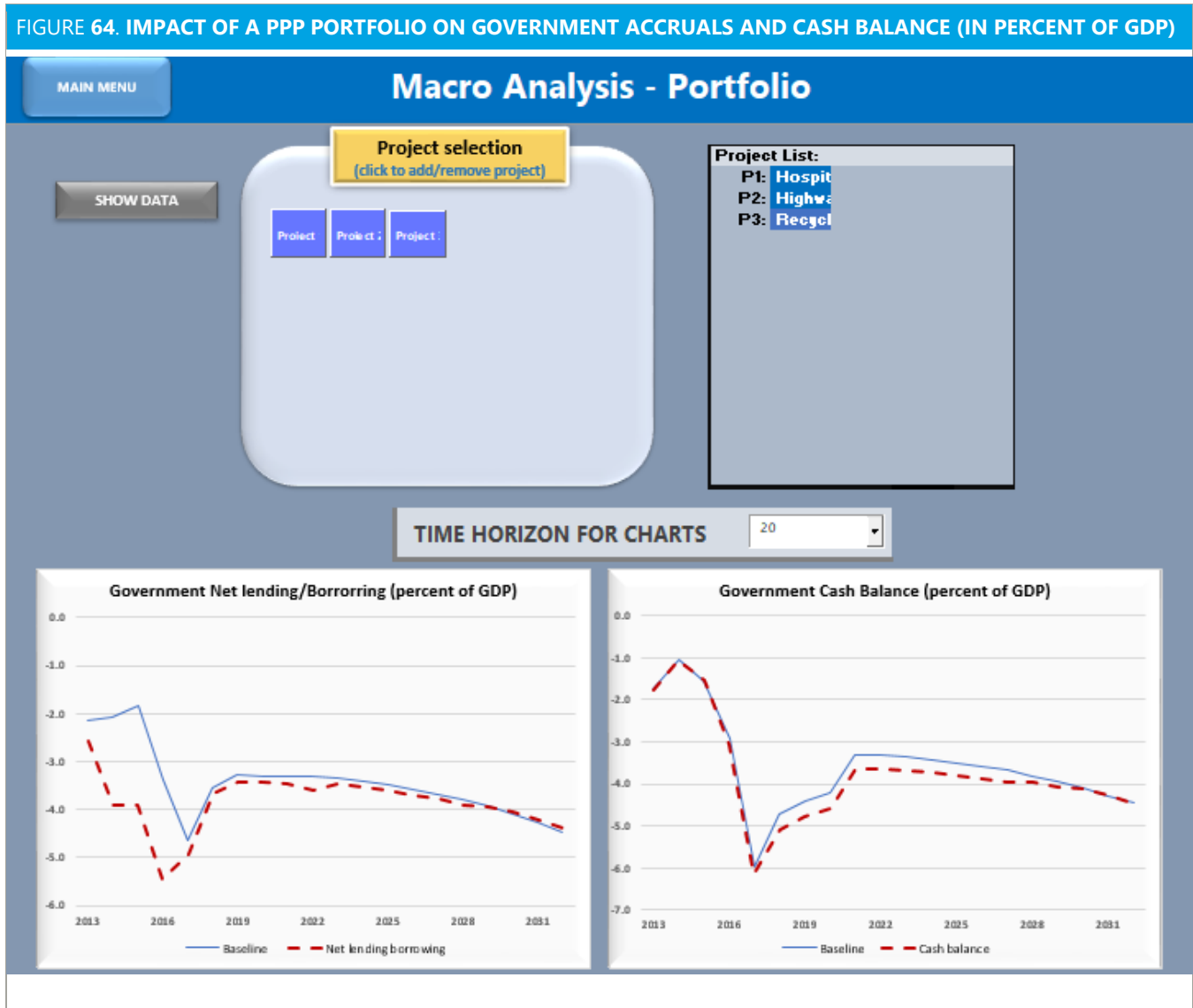
The screenshot shows the 'PROJECTION OF GUARANTEES' section of the PFRAM 2.0 software. A red box highlights the '30%' dropdown menu in the 'Debt guarantees' section. The 'Debt guarantees' section includes a label 'Percentage of private debt guaranteed by government' and the dropdown menu. Below this is the 'Minimum revenue guarantees (MRG)' section, which has two input fields: 'Guaranteed price/tariff (In domestic currency)' and 'Demand guaranteed (units)', both with 'Enter' buttons. To the right of these fields, it says 'You have not entered any data yet.' At the bottom, there are navigation buttons: 'MAIN MENU', 'PROJECT DATA MENU', '<< BACK', and 'CONTINUE >>'. Logos for 'THE WORLD BANK' and 'INTERNATIONAL MONETARY FUND' are visible in the top right corner.

E. Aggregating a Project in a PPP Portfolio and Simulating a Macroeconomic Shock

AGGREGATING A PPP PORTFOLIO

PFRAM 2.0 allows the user to quantify the overall fiscal impact of a PPP portfolio. The Macro-Charts worksheet shows the impact of the PPP portfolio on government net lending/borrowing and cash balance. The user can choose to include one, some, or all of the projects by clicking on Projects in the Project selection box. Figure 64 presents the aggregated fiscal impact of the three projects on the government deficit.

FIGURE 64. IMPACT OF A PPP PORTFOLIO ON GOVERNMENT ACCRUALS AND CASH BALANCE (IN PERCENT OF GDP)



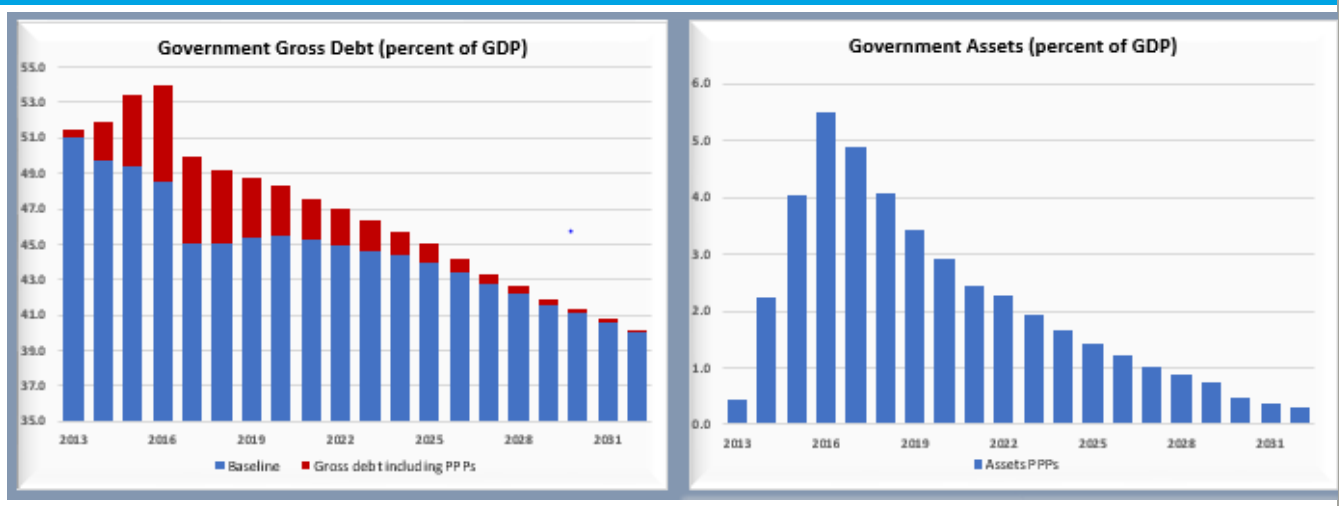
On an accrual basis, government net borrowing deteriorates significantly during construction (by up to more than 2 percentage points of GDP in 2016), as construction costs—including those for the highway

project, which is exclusively user-funded—are recorded as if they were on budget, in line with *GFSM 2014*. During operation, government payments from government-funded projects increase net lending/borrowing, whereas imputed revenues linked to user-funded projects reduce net lending/borrowing.

On a cash basis, the government cash deficit is unchanged during construction because construction is financed by the private partners but increases during operation, due to government payments to the private partner. These government payments should cover the construction, operation, and maintenance of the asset by the private partner, as well as the profit margin. In practice, the government may not be aware of how its payment or users’ fees may be distributed across these categories. In user-funded projects, the government’s cash deficit would normally be unaffected, unless there is some form of lump-sum payment from the private partner to the government or revenue-sharing agreements.

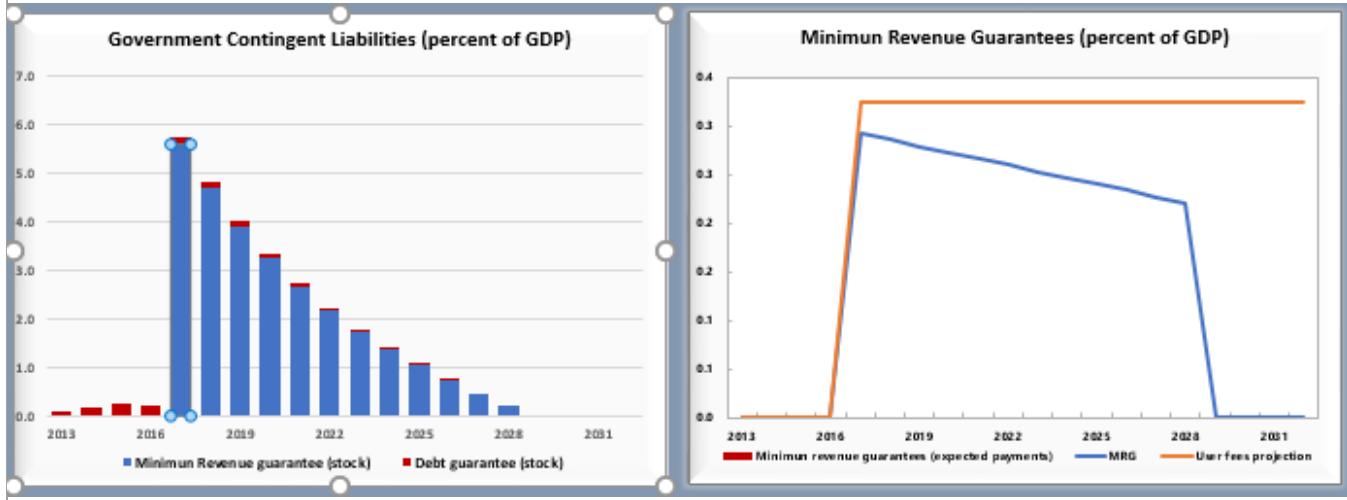
The PPP portfolio has a significant impact on government gross debt and balance sheet. In these examples, government gross debt increases by up to more than 5 percentage point of GDP by 2016, before gradually declining as liabilities are fully amortized over the life of the contract (Figure 65). At the end of the PPP contract, the government receives the PPP-related assets at the remaining value, given that assets are depreciated throughout their life cycle, which is longer than the length of the contract.

FIGURE 65. IMPACT ON GOVERNMENT GROSS DEBT AND ASSETS (IN PERCENT OF GDP)



PFRAM 2.0 also quantifies government contingent liabilities. On the left-hand side, Figure 66 shows the stock of debt guarantees (red bars) and MRGs (blue bars), which peak to almost 6 percent of GDP in 2017. It represents the government’s maximum exposure, as if the debt guarantee were called and no tolls were collected by the highway project each year. The right-hand chart represents the MRGs granted for the highway project, in percent of GDP for each year, compared to projections of user fees in the contract.

FIGURE 66. GOVERNMENT CONTINGENT LIABILITIES (IN PERCENT OF GDP)



SIMULATING A MACROECONOMIC SHOCK

PFRAM 2.0 allows the user to simulate a macroeconomic shock and quantify the fiscal impact of the PPP portfolio. In the “Sensitivity Analysis” worksheet, the user will be able to define the nature of the shock and select which projects would be impacted by it.

The user can select the projects on the left-hand side of the worksheet (boxes will turn blue when selected). The user will have the option of selecting all of the projects to shock the whole portfolio (Figure 67) or a subset of them. Once the projects have been selected, the user will specify the shock in the right-hand side of the worksheet, in “Select shock and timing.”

In this example, the user will simulate a combined macroeconomic shock that includes: (1) a GDP shock of -7 annual percentage points from 2018–019, reducing real GDP growth from +3.5 percent to -3.5 percent of GDP during that period; (2) to help absorb this shock, the central bank lets the nominal exchange rate depreciate annually +10 percentage points during the same period, and (3) inflation increases +2 percentage points, given limited exchange rate pass-through to consumer prices.

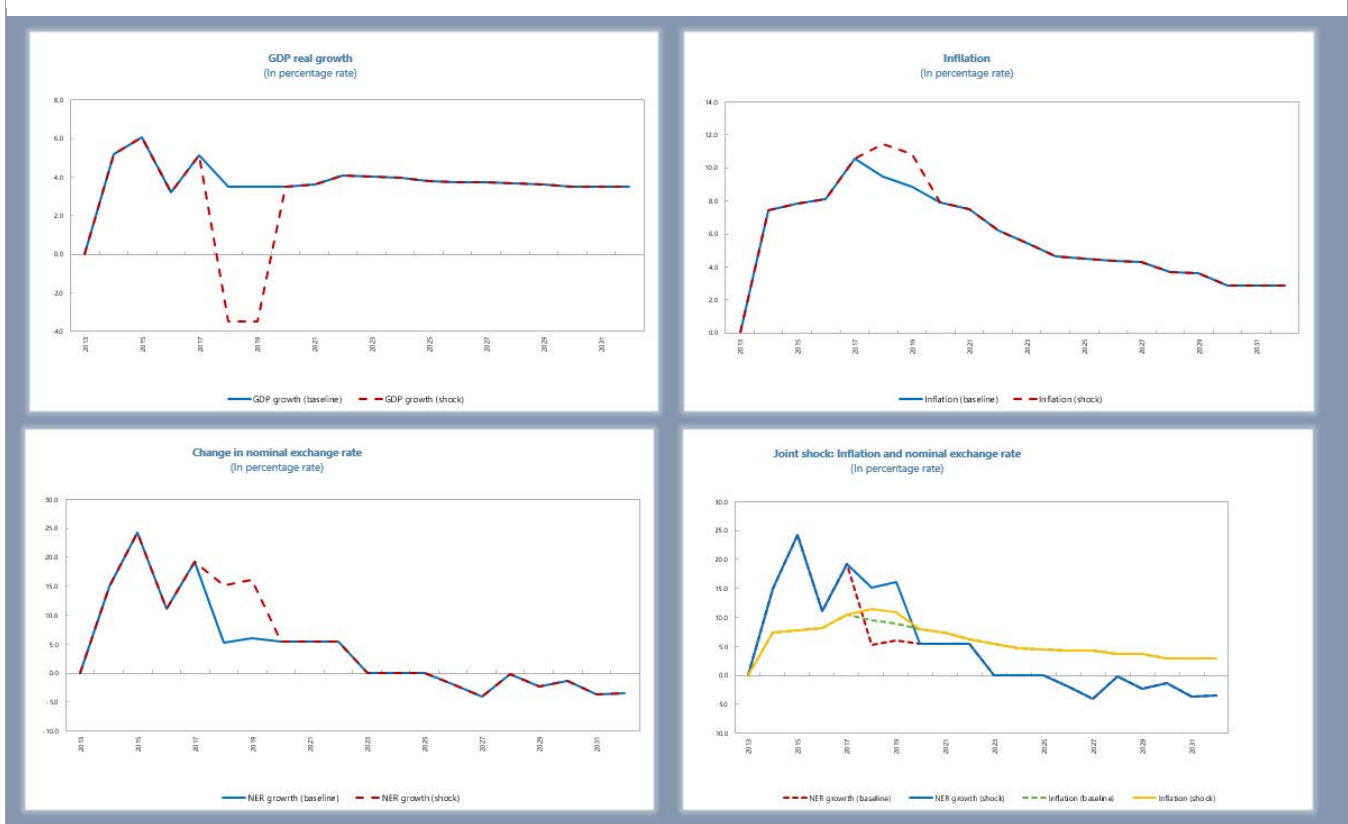
Once the shocks have been specified, the user will click in the *Run Shock* box in the third part of the worksheet on the left-hand side.

FIGURE 67. SIMULATING A MACROECONOMIC SHOCK



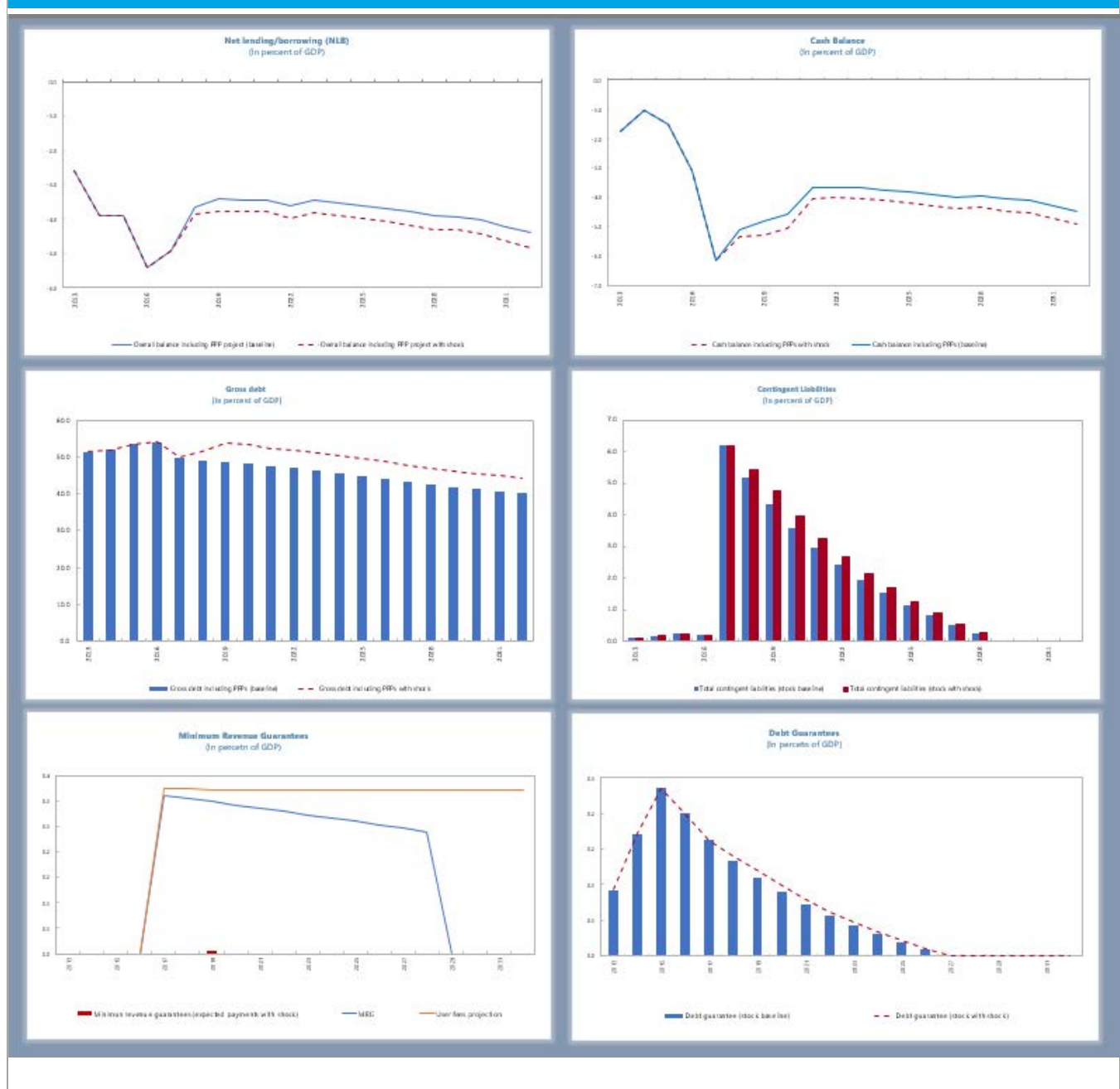
The shocks to the macroeconomic variables are presented in a panel, as shown in Figure 68.

FIGURE 68. SHOCKS TO MAIN MACROECONOMIC VARIABLES



The results of the main fiscal aggregates are also presented in a panel, as shown in Figure 69.

FIGURE 69. IMPACT ON MAIN FISCAL AGGREGATES

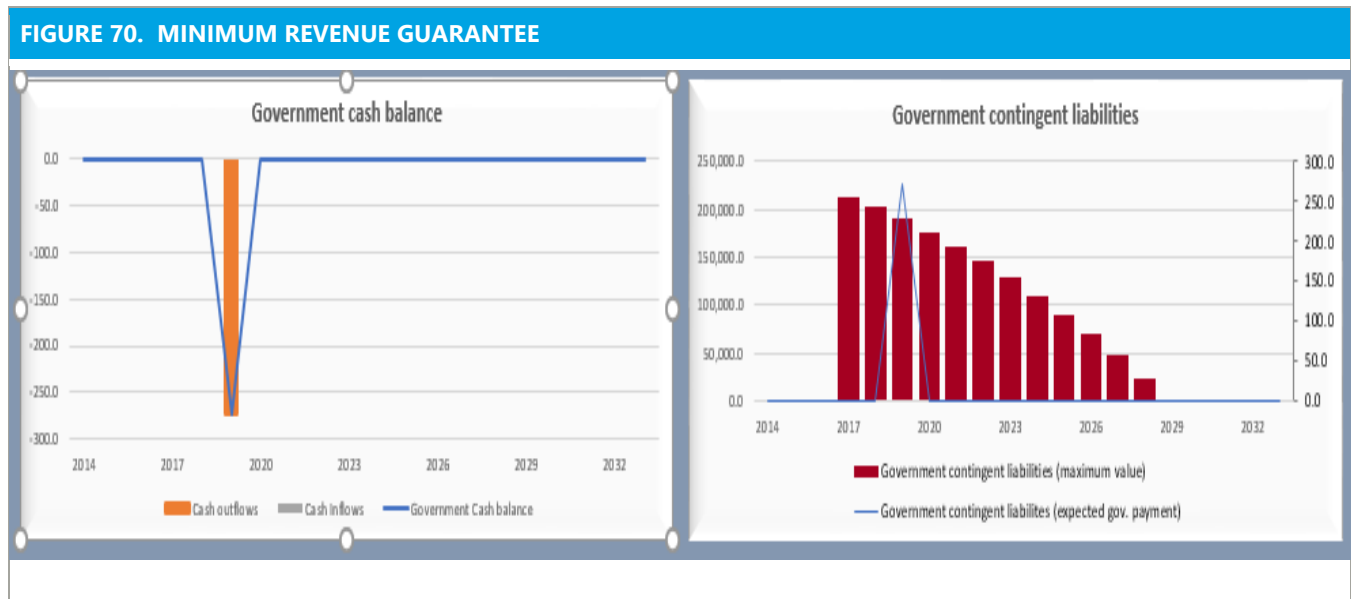


The GDP shock has a large impact on government deficit, gross debt, and stock of contingent liabilities. GDP shock has only a direct impact on project 2 (road), given that demand for the road is linked to GDP growth. It also has an indirect impact on all projects, since the results are presented as a percentage of GDP (affecting the denominator), but it does not affect the other project results in nominal terms.

The nominal exchange rate shock impacts only project 1 (hospital), given that imaging services are linked to nominal exchange rate. The **inflation shock** impacts all projects through their revenues that are linked to

inflation: project 1, through basic patient services; project 2, through road tolls; and project 3, through government payments and user fees.

In this case, the MRG is called in 2019. Although it shows as small in terms of percent of GDP in Figure 69 (red bar in the bottom left-hand chart), the government payment is significant at the project level. Looking at project 2, the government cash balance deteriorates due to government payment of the guarantee (Figure 70, left-hand chart), while the contingent liabilities are cancelled.



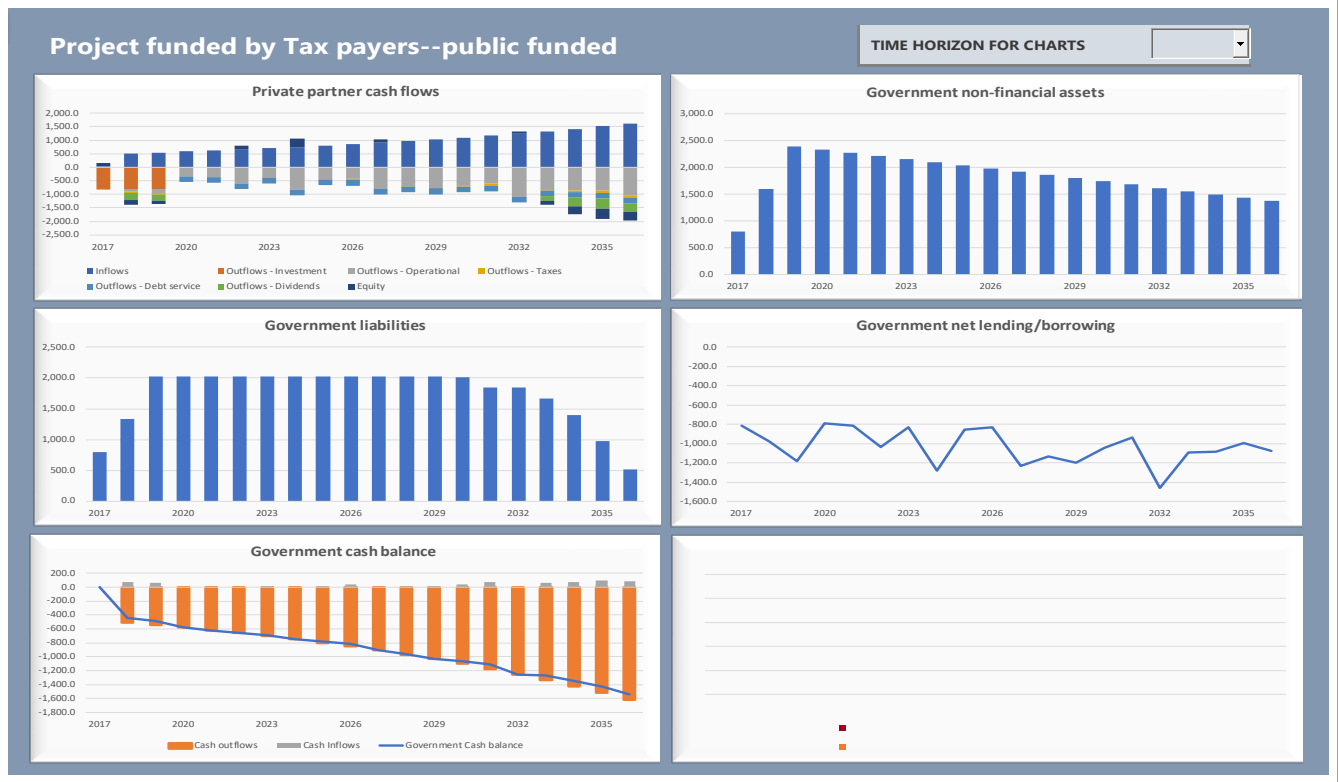
F. Assessing One Project under Different Funding Mechanisms

The following set of examples illustrates the use of PFRAM 2.0 to assess one PPP project under different funding mechanisms. The project is to rehabilitate, operate, and transfer (ROT) a highway of 170 kilometers for a period of 24 years, starting in 2017. The total construction cost is estimated at DOM 2,395 million, with an estimated asset life of 40 years. The government controls the asset (both price and outputs) and provides the funding through government availability payments set at DOM 3 million per kilometer of highway per year. The debt-to-equity ratio is set at 85 percent. The private partner pays income tax to the government at a rate of 12%.¹⁶

Assuming that the project is funded through government payments, PFRAM 2.0 estimates the potential impact of the project on main fiscal variables, as presented in Figure 71. Since the project is a ROT, availability payments start immediately, requiring cash disbursements from the government, as shown in the government cash balance.

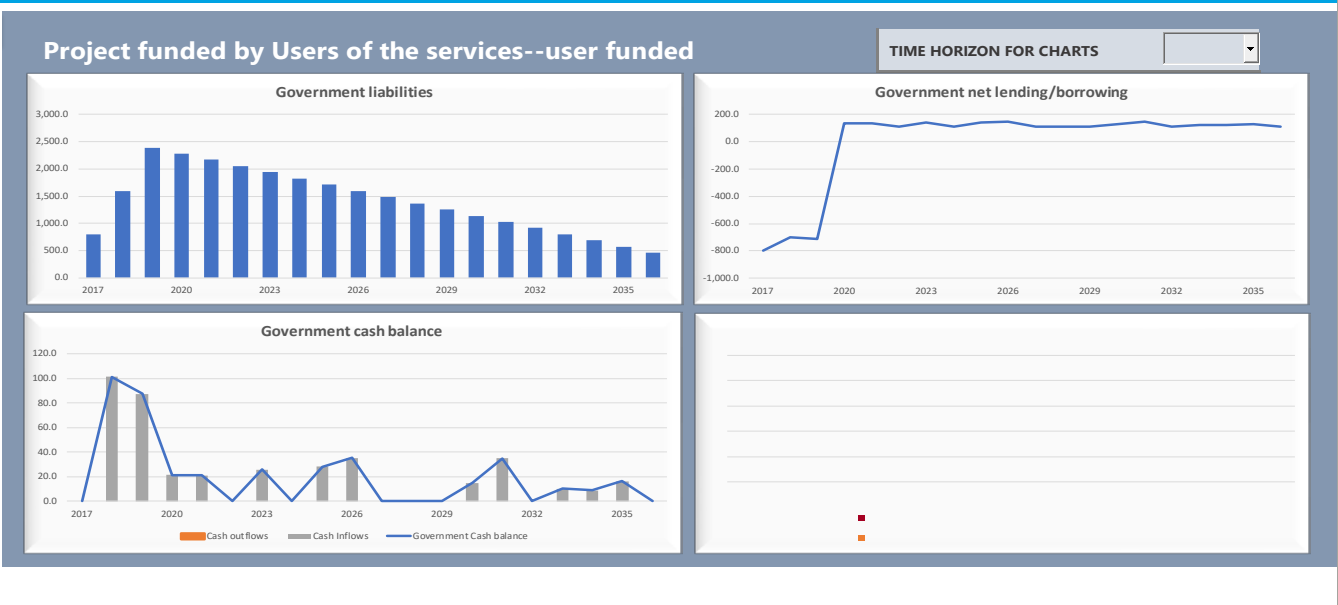
¹⁶ The Excel files supporting the result presented in this section can be downloaded at <https://www.imf.org/external/np/fad/publicinvestment>.

FIGURE 71. PROJECT PUBLIC FUNDED



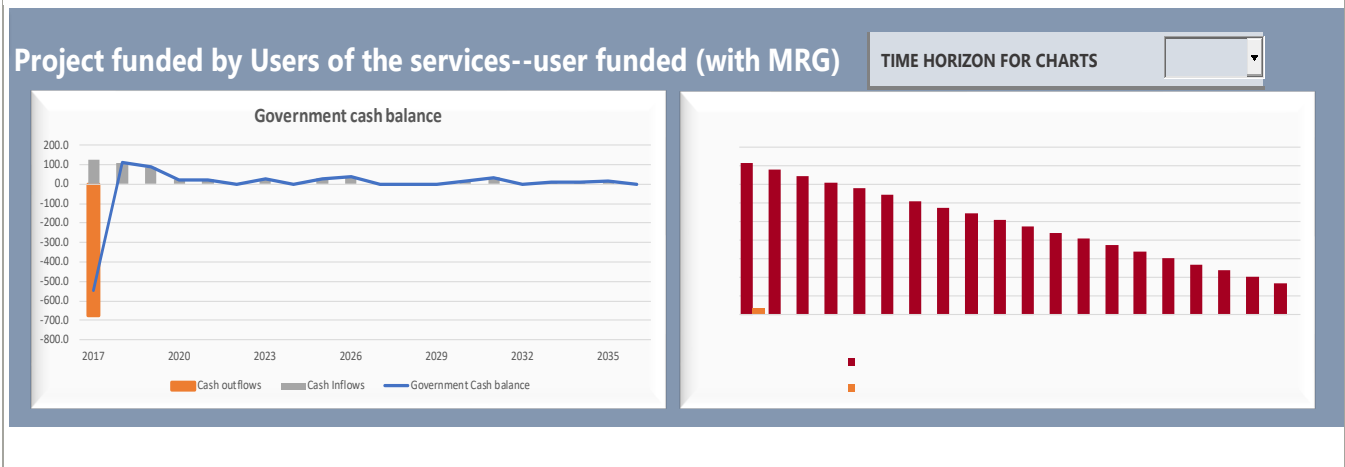
Keeping the same main parameters, but **assuming that the project is funded by user fees** generates a completely different output (Figure 72) with different fiscal implications. In this case, it is assumed an initial demand of 450,000 vehicles per year each and a toll of DOM 1,500. The project is funded by user fees, and so there is no cash disbursement by the government; the Government cash balance chart only reflects the inflows from tax payments from the private partner.

FIGURE 72. PROJECT USER-FUNDED



Finally, an MRG is introduced for the initial demand. The maximum value of government contingent liabilities is reflected in the government's contingent liabilities chart (Figure 73). The government cash balance chart also reflects the potential expected payment in the first year if the initial expected demand is not achieved.

FIGURE 73. PROJECT USER FUNDED PLUS A MINIMUM REVENUE GUARANTEE



ANNEX I. Risks in the Project Fiscal Risk Matrix

PFRAM 2.0 includes a Project Fiscal Risk Matrix to systematically assess the main fiscal risks on a project-by-project basis. The risks included in the matrix areas as follows:

-
- 1. Governance Risk**
- **R1.** If the PIM is not strong enough to guarantee that only priority projects are selected, a non-priority project might be implemented and absorb public resources, crowding out priority projects and leading to efficiency losses. To mitigate this risk, the public investment management framework should be reinforced.
 - **R2.** If the Ministry of Finance (MOF) is not able to effectively manage fiscal risks arising from this project, the risks might be amplified, and the probability and impact of other fiscal risks may be higher than they would be with adequate experience and capacity. To mitigate this risk, capacity in the fiscal risk management team in the MOF/Budgetary authority should be strengthened.
 - **R3.** If project and contract information is not disclosed adequately, public concerns regarding the governance of the project/contract may arise, preventing users from acting as independent auditors of the project and/or exerting pressure to change the project. To mitigate this risk, the government should put in place a strong communication strategy engaging stake holders and creating ownership of the project, together with clear and standardized disclosure procedures for project information and, ultimately, contract disclosure.

-
- 2. Construction**
- R4. Risks related to land availability**
- If the land is not already available, the government might face additional fiscal costs arising from possible compensation for construction delays. To mitigate this risk, (1) a complete assessment of land needs should be undertaken prior to contract closure; (2) the land acquisition process should be prepared; and (3) buffers and flexibility clauses should be included in the contract.
 - If the project might be canceled due to lack of land, the government might face costs due to compensation to the private partner and the project redesign. To mitigate this risk, the government should ensure land availability at an early stage of the project cycle.
 - If the private partner has to pay for the land acquisition, the private partner might not be able to cope with the cost; the government would be confronted with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. To mitigate this risk, the government should ensure land availability at an early stage of the project cycle or provide sufficient information regarding the need and value of the land to ensure that the private partner is able to cope with the cost.
 - If the government has to pay for land acquisition, it may face additional fiscal costs arising from the acquisition and possible delays due to unavailability of land, which might lead to compensation payments for possible delays. To mitigate this risk, the government should (1) complete the assessment of land availability and cost prior to contract closure; and (2) build in buffers and flexibility clauses in procurement and contracts.
- R5. Risks related to relocation of people and activities**
- If people and/or activities are subject to relocation due to project implementation:
 - If the government is paying for the relocation of people and/or activities and possible project delays, it will face the cost of relocation and compensation. To mitigate this risk, the government should undertake a timely assessment of relocation needs and engage in effective stakeholder management.
 - If the private partner is paying for the relocation of people and/or activities and is unable to cope with cost, the government will be faced with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. To mitigate this risk, the government should
-

ensure timely assessment of relocation needs and provide sufficient information on relocation needs and costs.

R6. Risks related to land decontamination

- If the government has to pay for land decontamination and the need for decontamination arises, this will result in fiscal costs. To mitigate this risk, the government should undertake a timely assessment of the need and cost of decontamination.
- If the private partner has to pay for land decontamination and is not able to cope with the cost, the government may face the cost of project cancellation and retender, or renegotiation at higher fiscal cost. To mitigate this risk, the government should (1) ensure a timely assessment of decontamination needs; and (2) should provide sufficient information on land condition.

R7. Risks related to environmental and archeological issues

- If there is a possibility of facing environmental/archeological issues and the government has to pay for them, the government may face costs (1) for environmental and archeological issues; and (2) for compensation payments it might have to make to the private partner due to project delays. To mitigate this risk, the government should (1) specify environmental constraints prior to tender (including permits and licenses); and (2) develop a plan to deal with archeological findings.
- If there is a possibility of environmental/archeological issues and the private partner has to pay for them, the private partner might not be able to cope with the associated costs; the government may be faced with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. To mitigate this risk, the government should (1) specify environmental constraints prior to tender (including permits and licenses); and (2) develop a plan to deal with archeological findings.

R8. Risks related to geological issues

- If there is a possibility of geological issues and the government has to pay for them, it may face compensation payments. To mitigate this risk, the government should (1) ensure a timely assessment of the geological conditions and their implications for the project; and (2) develop a plan to deal with these issues.
- If there is a possibility of geological issues and the private partner must pay for them, the private partner might not be able to cope with the costs related to these issues; the government may be faced with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. To mitigate this risk, the government should (1) ensure a timely assessment of the geological conditions and their implications for the project; and (2) provide sufficient information regarding geological conditions.

R9. Risks related to licensing

- If the project is subject to licensing and the government pays compensation for project delays due to delayed licensing, the government may face the costs of compensation for project delays. To mitigate this risk, the government should ensure that subnational governments are fully supportive of the project and that project deadlines are consistent with subnational regulations.

R10. Risks related to failures/errors/omissions in project design

- If the government can be held responsible for design failures, errors, or omissions, it may have to pay compensation for failures in designs presented to the private partner if the cost of design risks is not fully transferred to the private partner. To mitigate this risk, the tender process and the contract should ensure that the private partner takes full responsibility for the design.

R11. Risks related to inherent defects in assets transferred to the private partner

- If the government can be held responsible for any inherent defect in assets transferred to the private partner, it may have to pay compensation to the private partner for inherent defects and the costs of defect remediation. To mitigate this risk, the government should ensure a prior assessment of the quality of the assets to be transferred to the private partner, allowing for full pricing of identifiable defects.

R12. Risks related to changes in project design and scope required by procuring agencies

- If the government is responsible for compensation due to changes in design and scope required by procuring agencies, it may have to compensate the private partner for net costs due to changes in the design and/or scope. To mitigate this risk, the contract should include provisions allowing for changes in the design/scope of the project, up to a predetermined limit. In addition, the accountability framework to monitor project cost overruns should be reviewed and improved, as necessary.

R13. Risks related to changes in input prices

- If the government is responsible for compensation in the event of excess volatility in input prices, it may have to pay compensation for significant changes in input prices. To mitigate this risk, the volume and prices of the relevant inputs should be monitored, and sufficient funds should be allocated for expected compensation payments.
- If the private partner faces any excess volatility of input prices, the private partner may not be able to cope with significant changes; the government may be faced with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. This risk can be mitigated by renegotiating the contract to reestablish financial equilibrium.

R14. Risks related to changes in nominal exchange rate

- If the government is responsible for compensation in the event of excess volatility in nominal exchange rate, it may have to pay compensation for significant increases. To mitigate this risk, the volume of foreign currency required and the exchange rate should be monitored, and sufficient funds should be allocated for expected compensation payments.
- If the private partner faces any excess volatility in the nominal exchange rate, the private partner may not be able to cope with significant changes; the government may be faced with the cost of project cancellation and retender, or renegotiation at higher fiscal cost. This risk can be mitigated by renegotiating the contract to reestablish financial equilibrium.

Demand

- If the PPP is **fully funded by the government**, and the **payments are linked to the volume** of service being provided:
 - **R15.** If a cap is in place, the project may be confronted with much higher demand than included in the contract, which might require a costly renegotiation of the cap or require the government to purchase services from other providers. This risk can be mitigated by managing demand and possibly diverting demand to less costly alternative services.
 - **R16.** If no cap is in place, the government may face higher than expected demand, leading to higher than expected costs. This risk can be mitigated by managing demand and possibly diverting demand to less costly alternative services.
 - **R17.** If the project is suffering from insufficient demand, this may lead to project failure; the government may face costs for early termination or renegotiation. This risk can be mitigated by managing the demand or by renegotiating the contract to reestablish financial equilibrium.
- If the PPP is **fully funded by the government**, and the **payments are not linked to the volume** of service being provided:
 - **R18.** If demand is much higher than expected, the project may collapse, and the government may face the cost of early termination or contract collapse. This risk can be mitigated by managing or diverting demand, which could have a fiscal cost.
 - **R19.** If demand is much lower than expected, the project might be challenged; the government would not face additional fiscal costs, but it would pay for a service that is not/fully being taken up by the user. This risk can be mitigated by managing demand by increasing demand or diverting it from other projects.
- If the project is either **totally user-funded or funded by a combination of government payments and user fees**:
 - **R20.** If users consider user fees—regulated or not—excessive relative to services received, this might have a bearing on the reputation of the government. This risk can be mitigated by effective communication.

- **R21.** If the project is suffering from insufficient demand, this might lead to project failure, presenting the government with additional fiscal costs for early termination or renegotiation. This risk can be mitigated by managing the demand or by renegotiating the contract to reestablish financial equilibrium.

Operation & Performance

- **R22.** If the PPP contract does not ensure that the government has full access to information on project performance, the government may be unable to effectively manage the contract. To mitigate this risk, the information-sharing requirements should be included in the contract and addressed in the legal framework.
- **R23.** If the contract does not clearly specify performance indicators, reference levels, and penalties or deductions, the government may face significant risks for not being able to address poor performance by the private partner. Failure to monitor project performance can lead to poor contract enforcement, which has administrative, efficiency, and political costs. It may also cause difficulties in applying project cancellation clauses and possibly in using step-in rights by financiers. To mitigate this risk, (1) key performance indicators should be included in the PPP contract, with reference levels, linked to penalty mechanism (preferably automatic deductions from periodic payments); and (2) the core contract management team should be involved in contract negotiation to guarantee that performance indicators/levels are fair, measurable, and contractible, that is, able to be presented as evidence in court.
- **R24.** If the government does not have the capacity and procedures in place to monitor performance, it faces significant risks for not monitoring performance, which has administrative, efficiency, and political costs. To mitigate this risk, contract monitoring procedures should be in place when contracts are signed; a core contract management team should be assigned before contract closure and should be involved in contract negotiation to guarantee that contract management procedures are feasible and efficient.
- **R25.** Depending on whether and how the contract addresses the introduction of new technologies, technical innovation may create explicit and implicit fiscal risks for the government. To mitigate this risk, the duration of PPP contracts should not exceed the expected life cycle of the technology used in the sectors, enabling the government to respond to technological innovation within a reasonable timeframe. For PPP contracts for projects including high and low innovation components, it can be appropriate to separate the two components—for example, a hospital building from the medical equipment—into separate contracts that might be of different duration or nature; the high-tech component might not be under a PPP contract but might be undertaken as traditional public procurement.
- **R26.** If there is a scarcity of specialized human resources, this could lead to performance issues. To mitigate this risk, the government should reallocate human resources from other activities or plan capacity-building activities in advance.
- **R27.** If there is a risk of significant increases in labor costs, this may lead to project failure. To mitigate this risk, the government should plan capacity building activities ahead of time.

Financial

- **R28.** If the private partner is unable to obtain finance for project implementation, the government may face project failure **before implementation starts**, being forced to take over the project, re-tender, or redesign and re-tender the project. To mitigate this risk, the government should (1) undertake a proper due diligence on private bidders' financial conditions and their ability (technical and managerial) to conduct the project; (2) establish adequate qualification requirements; (3) consider bid bonds and performance bonds to discourage not suitable candidates from bidding for PPPs; and (4) require some degree of commitment by financing parties during tender for very sensitive projects in less developed financial markets
- **R29.** If the private partner is unable to refinance short-term financing instruments, the government may face project failure **after implementation starts**. In such cases, the government could (1) be required to pay compensation for capital investment, (2) take over the project, or (3)

renegotiate an interim financial solution and then re-tender the project (possibly under worse cost conditions for government). To mitigate this risk, in addition to undertaking the measures listed under **R28**, the government may require bidders to obtain long-term financing for very sensitive projects.

- **R30.** If the private partner is unable to cope with excess volatility in interest rates, the government may face project failure **after implementation starts**. The government could (1) be required to pay compensation for capital investment, (2) assume the project, or (3) renegotiate an interim financial solution and then re-tender the project (possibly under worst cost conditions for government). To mitigate this risk, the government should undertake the measures listed under the **R28**.
- **R31.** If government contractually accepted some exchange rate risk, fiscal support may be needed in the form of compensation; it may have to paying compensation **for excessive** volatility of exchange rate. Also, if the private partner is unable to cope with excess volatility in the nominal exchange rate, the government may have to (1) renegotiate under stress or face project collapse and pay compensation for capital investment; or (2) assume the project and then re-tender under a different risk allocation scheme. To mitigate these risks, the government should ensure a proper consideration of exchange rate risk, which may lead to better risk sharing and proper use of hedging mechanisms.

Force Majeure

- **R32.** If there is no exact list of events to be considered force majeure tailored for the project, the government might have to pay compensation, adjust, or even terminate the contract due to force majeure events. Full or partial compensation by the government may even force the government to buy the assets or assume debt. To mitigate this risk, the scope of the force majeure events should be clearly stated in the contract, considering the legal requirements and specific project conditions. The contract should create incentives for the private partner to get insurance against some risks when insurance is available at a reasonable cost and to effectively manage risks by designing assets and managing services in ways that minimize the probability of occurrence and size of impact.

Material Adverse Government Actions (MAGA)

- **R33.** If no clear definition of events to be considered MAGA are included in the contract, the government might have to pay compensation, adjust, or even terminate the contract due to acts and omissions by public entities, potentially forcing the government to buy the assets or assume debt. To mitigate this risk, contract managers should monitor the channels through which government's actions and omissions can affect the project during the life of the contract. Executive government actions and policy changes should be carefully evaluated by the contract manager and the fiscal management team to assess any impact on the PPP contract.

Change in Law

- **R34.** If the PPP contract does not identify changes in law that do and do not require compensation by the government, the government might have to pay unforeseen compensation when adjusting or even terminating the contract due to changes in law. Changes in law might also benefit the private partner and, if not considered in the contract, increase the private partner's profit margin without benefitting the government. The cost of changes in law might include compensation payments, need to buy the asset or to assume debt, or loss of potential compensation paid by the private partner to the government. To mitigate this risk, the PPP contract should clearly identify changes in law that trigger a compensation or the right to terminate and should define the consequences. In addition, legislation and public policies should be in place to efficiently deal with this risk.

Rebalancing of financial equilibrium

- **R35.** The legal framework may prescribe that the government is paying compensation and/or terminating the contract due to requirement to reinstate financial equilibrium. The government may have to pay compensation or cancel the project. To mitigate the risk from this, the PPP
-

contract should restrict its application to the cases of force majeure, MAGA, avoiding its application to a wider range of situations.

- **R36.** The government might have to pay compensation and/or terminate the contract due to contract guaranteeing a rate of return for the private partner. To mitigate this risk, clauses and expectations on a guaranteed level of project rate of return or the shareholder's rate of return should be avoided.
- **R37.** The government might have to pay compensation and/or terminate the contract due to excessive protection against some hardships. To mitigate this risk, hardship clauses, if needed, should be precise and strict. Alternative methods to reduce excessive private sector risks should be considered, including insurance, future markets, and other hedging mechanisms.

Renegotiation

- **R38.** If the government opens an uncontrolled renegotiation process, under information asymmetry and no competitive pressure, it might jeopardize economic efficiency by allowing the private partner to transfer to the government costs and risk that had originally been accepted by the private partner, with the fiscal impact depending on the government's ability to manage the renegotiation process. To mitigate this risk, the government should have a strategic view of PPP contract management and create the capacity to renegotiate.

Contract Termination

- **R39.** If the government enters into an early termination process without clear knowledge of the consequences and procedures, the lack of clarity regarding consequences on early termination increases the private partner's bargaining power, leading to increases in the cost of termination; possibly preventing the government from cancelling non-performing contracts, or generating incentives for governments to nationalize a project or assets without proper assessment of the cost of that decision. To mitigate this risk, contracts should include a clear definition of the reasons for early termination (for example, underperformance of the private partner, public interest, or force majeure) and should present its consequences in terms of transfer of assets and responsibilities, namely, financial compensation for capital investment. Compensation should vary according to the party responsible for the early termination.
 - **R40.** If the government terminates the contract without a clear understanding of transfer processes, including financial consequences, then (1) it may need to pay for stock of inputs or outputs; (2) human resources issues may imply financial compensation or increased current expenditures; and (3) licenses needed to continued operation may create fiscal surprises. To mitigate this risk, contracts should include a clear definition of the termination process; all financial consequences and identified gaps in the contract should be resolved by having both parties sign transfer protocols detailing the rules.
-