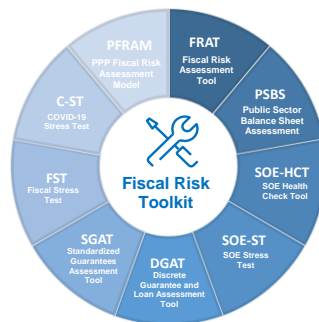




FISCAL AFFAIRS

FISCAL RISK TOOLKIT

State-Owned Enterprises Stress Test Tool: User Guide



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May 2022

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I. OBJECTIVES AND STRUCTURE OF THE TOOL

I.1. INTRODUCTION

1. This manual describes the steps necessary to run and interpret the analytical results of the SOEs Benchmarking and Stress Test Tool (hereinafter ‘the tool’). The tool aims to assess the relative financial soundness of SOEs against a set of comparators, and project in different scenarios the financial performance of the company and its impact on government’s accounts. Projections are based on a combination of accounting and simple economic relations. The fiscal impact of SOEs’ performance relates to their net inflows into the budget (i.e., taxes, dividends, and interest payments less subsidies and transfers) and their net worth, including their outstanding debt and the publicly guaranteed share. Moreover, the tool can be interfaced with other fiscal risk assessment tools, such as Debt Sustainability Analyses, Public Sector Balance Sheets and Fiscal Stress Tests. To facilitate the use of the tool, the manual provides guidance on: (i) the financial information of the company that the user has to enter; (ii) the calibration of the economic, financial and policy parameters necessary to conduct the projections; (iii) the meaning of the tool’s outputs and the economic rationale underlying them¹.

I.2. STRUCTURE OF THE TOOL

2. The tool combines backward- and forward-looking analysis by means of two modules:

- **A benchmarking module provides the backward-looking elements of the analysis.** It compares some key financial and economic ratios of the company with around a broad set of SOEs all over the world operating in the same sector. The rationale behind this approach is that financial ratios can greatly vary across productive sectors, reflecting different technologies, demand characteristics and commercial channels. Consequently, it can be useful to assess the financial soundness of SOEs in relative terms, taking into account the specificities of their own sectors, as well in absolute values as other FAD tools -such as the Health Check Tool or the Discrete Guarantee and Loan Assessment Tool- do.

¹ Additional information on the use of the template and examples can be found in Baum et al. (2021): *How to Assess Fiscal Risks from State-Owned Enterprises: Benchmarking and Stress Testing*, IMF How To Notes 21/09 (<https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2021/08/18/How-to-Assess-Fiscal-Risks-from-State-Owned-Enterprises-463616>) and Baum et. al (2020): *Managing Fiscal Risks from State-Owned Enterprises*, IMF WP 2020/213 (<https://www.imf.org/en/Publications/WP/Issues/2020/09/25/Managing-Fiscal-Risks-from-State-Owned-Enterprises-49773>)

- **The stress testing module is the forward-looking component of the template.** It projects the SOE's three main financial statements: income statement (IS), balance sheet (BSS) and cash flow statement (CFS)- over a 6-year horizon, synthesizes them in a set of financial and economic ratios (measuring profitability, liquidity, solvency, and productivity) and quantifies the consequences of this performance on the fiscal accounts. Financial projections are done in two scenarios: baseline (BAS) and stress scenario (SS). Projections in the BAS are done based on a set of central assumptions, which can be considered the most likely given the available information. The SS captures a number of negative shocks on the fundamentals of the economy and the SOE's market, which cause deviations of these variables from the baseline. In this context, the tool seeks to determine the resilience of the company to more adverse shocks, and its differential contribution to the fiscal outcomes in the SS.

3. The tool is divided into a set of input, output and intermediate calculations spreadsheets:

- **Input spreadsheets (1, 2 and 3, Assumptions and Stress)** need to be populated by the user. The three first ones contain the basic coordinates of the SOE's activity and country where it is headquartered, as well as past income and balance sheet statements as the basis of financial projections. Assumptions and stress host the macroeconomic and market-specific fundamentals of the company, the parametric assumptions for the calculations and the sales projections in the BAS and SS respectively.
- **Output spreadsheets (Benchmarking, PERF, RG and CHARTS)** condense the key results of the tool. The first one shows the results of the benchmarking exercise, based on the financials of the company before the start of the projection. The three latter summarize the results of the stress-testing module and display, respectively, the projected financial ratios of the SOE and its contribution to public worth, the government's budget inflows and outflows generated by the SOE, and several charts that distil the key variables in Performance (PERF) and Relations with the Government (RG). Within the stress testing module, there are distinct output spreadsheets for each scenario (i.e., one PERF sheet for the BAS and another one for the SS, etc.), their format being essentially the same. Output in the stress testing module is drawn from intermediate calculations spreadsheets.
- **Intermediate calculations spreadsheets of the stress testing module** display detailed projections of the financial statements (IS, BSS and CFS), debt-related variables (Debt) and the Statement of Operations in GFS terms (GFS). Their ultimate goal is to facilitate the understanding and analysis of the results displayed in the output spreadsheets. There are distinct intermediate calculations spreadsheets for each scenario, but their format is the same. The spreadsheets in both scenarios are fed by Input 1, 2 and 3 - since these contain data which are not affected by projections - but the BAS spreadsheets import data from Assumptions while the SS ones import them from Stress.

4. Intermediate calculations spreadsheets are interlinked to allow for the simultaneous determination of stock and flow variables. An economically sound determination of the SOE's

financials requires to consider the main interrelations between stock and flow projections. On the one hand, revenues and expenses in accrual terms are an essential input for the determination of cash balances, and non-distributed after-tax profits for equity. Conversely, the SOE's position in assets and liabilities is relevant for computing its non-operating balance, and year-to-year changes in these positions often generate cash flows. These and other cross-linkages are embedded in the Excel formulas used to project the financial statements. Table 1 below describes the most relevant data imported and exported by each spreadsheet.

Table 1: Summary of the structure and interlinkages between the tool's spreadsheets

Spreadsheet name	Abbreviation in user manual	Imports from other spreadsheets/User inputs	Output	Exports to other spreadsheets
Input 1- Basics	Input 1	User enters country and sector of operation and last year of financial observations	NACE codes, first year of projections, income level	NACE codes and income level (to Benchmarking), first year of projections (to all spreadsheets containing projections)
Input 2 - Income Statement	Input 2	User enters past observations	None	Past observations to IS (baseline and stress)
Input 3 - Balance Sheet	Input 3	User enters past observations	None	Past observations to BASS (baseline and stress)
Input 4 - Assumptions	Assumptions	None. User enters assumptions. Some variables imported from WEO database by default	Baseline projections of sales in volume and sale prices, shares in domestic and export markets	Macroeconomic and market-specific projections, and parametric assumptions are exported to all spreadsheets containing baseline projections. Parametric assumptions are exported to Stress
Stress Tests	Stress	User enters shocks. Parametric assumptions are imported from Assumptions by default	Macroeconomic and market-specific projections in the stress scenario. Projections of sales in volume, sale prices and shares in domestic and export markets in the stress scenario	Macroeconomic and market-specific projections, and parametric assumptions are exported to all spreadsheets containing stress projections
Benchmarking	Benchmarking	Imports SOE's financial ratios from performance, and ratios from peer companies from ORBIS database. Income level and NACE sector imported from Input 1	Tables and charts comparing SOE's financial performance with peers	None

Projections Income Statement	IS	Past financial observations from Input 2. Baseline assumptions and sale projections (volumes, prices and shares), parametric assumptions and subsidies from Assumptions. Capital transfers from CFS. Position in financial assets from BASS and interest payments from Debt	Baseline projections of operating and non-operating revenues and expenses and balance, pre-tax profit and after tax-profit	After-tax profit to BASS and RG. Operating and non-operating revenues and expenses to CFS and GFS. Operating and non-operating revenues and expenses and profits to PERF
Projections Income Statement ST	IS-Stress	Analogous to IS		
Projections Balance Sheet	BASS	Past financial observations from Input 3. Baseline parametric assumptions from Assumptions. Cash balances from CFS. Operating items and after-tax profit from IS. Debt stocks from Debt. Distributed dividends from RG	Baseline asset and liability projections, in IFRS and GFS format	Positions in asset and liabilities to IS, CFS and PERF. Contribution to public wealth (in GFS terms) to PERF
Projections Balance Sheet ST	BASS-stress	Analogous to BASS		
Projections Cash Flows	CFS	Baseline parametric assumptions from Assumptions. Operating and non-operating revenues and expenses from IS. Changes in assets and liability positions (other than debt) from BASS. Amortizations from Debt	Cash balances and new borrowing when capital injections are possible. Cash balances and new borrowing when capital injections are ruled out (counterfactual)	Cash balances to BASS. Capital injections to IS, BASS and GFS. New borrowing to Debt. Differential cash balances and new borrowing in the baseline counterfactual to PERF
Projections Cash Flows ST	CFS-stress	Analogous to CFS		
SOE Debt	Debt	Baseline interest rates and parametric assumptions from Assumptions. Initial stocks of debt from BASS. New borrowing from CFS.	Outstanding debt, interest payments and amortizations	Outstanding debt to BASS, interest payments to IS, amortizations to CFS
Debt ST	Debt-stress	Analogous to Debt		

GFS	GFS	Operating and non-operating revenue and expense items from IS. Transactions in non-financial assets from Assumptions. Transactions in financial assets from BASS. Debt amortizations from Debt	SOE's statement of operations in GFSM 2014 and gross financing needs	None
GFS-stress	GFS-stress	Analogous to GFS		
Raw Charts	RC	Financial ratios and contribution to public net worth from PERF. Contribution to budget from RG	Charts on financial ratios, contributions to budget and public sector balance sheet	All charts to Charts
Raw Charts ST	RC-stress	Analogous to RC		
Output 1 - Performance	PERF	Operating and non-operating revenues and expenses and profits from IS. Cash balances (with capital injections and in the counterfactual) from CFS. Positions in assets and liabilities and contribution to public net worth from BASS.	Financial and economic ratios	None
Output 1 - Performance ST	PERF-stress	Analogous to PERF		
Output 2 - Charts	CHARTS	Charts from RC	Charts on financial ratios, contributions to budget and public sector balance sheet	None
Output 2 - Charts ST	CHARTS-stress	Analogous to CHARTS		
Output 3 - Relations with the government	RG	Baseline parametric assumptions and subsidies from Assumptions. Taxes and after-tax profit from IS. Interest payments to the government from Debt. Capital injections from CFS. Government's guaranteed debt from Debt	SOE's net inflows to the budget (by period and NPV)	None
Output 3 - Relations with the government ST	RG-stress	Analogous to RG		

5. The rest of this manual discusses at length the structure, outputs, and interrelations of each one of the tool's spreadsheets. For those ones with an identical structure in the BAS and SS, explanations will focus on the BAS. Together with the explanations on the structure and functioning of the spreadsheets, the user will find in Boxes more detailed notes on the interpretation of very specific elements of the tool, and some recommendations on how to expand its use by

adapting its formulas to analyze additional aspects of the SOE's performance. These notes are classified in "Basic", denoting that they relate to essential aspects of the use of the tool, and "Optional" when they describe more advanced possibilities of use.

II. BASIC INFORMATION ON THE SOE

II.1. STRUCTURE

Table 2. Structure of Input 1

Country and SOE information	
Please fill out the yellow cells	
Blue cells are populated automatically	
Country	Peru
Country code	293
Is your country an advanced economy?	No
Currency	Sol
Unit	Million
SOE name	Airlines X
SOE sector	Air transport
NACE	51
Current year (last of of financial statement)	2018
First year of projections	2019

6. Input 1 contains essential information about the country and sector of operation of the SOE, as well as the first year of projections. As in the rest of the tool, the user is invited to populate the cells highlighted in yellow, while the cells in blue are provided automatically. Data to enter comprise the following information:

- **The country where the SOE carries out its main activities**, to be selected from a dropdown menu. For non-financial SOEs this is also usually the country where the company has its headquarters. Once this is done, the tool assigns automatically a code to the country, which is used to import its macroeconomic projections from the WEO in Assumptions. The tool also identifies automatically whether the country is an advanced economy for benchmarking purposes.
- **The currency of this country**, as well as the units in which the variables denominated in local currency are expressed in the tool. If nominal GDP projections are drawn from the WEO, as the tool allows to do by default, it is recommendable to select the same units to avoid re-scaling the formulas of those variables expressed as a share of GDP.

- **The name of the company and its sector of operation**, from a dropdown menu. The tool assigns a NACE code to the sector input by the user, and this code is used by Benchmarking to identify its sectoral peers across the world.

Note 1. (Optional) Sometimes SOEs are holdings of public companies that operate in the same or different sectors. In the first case, the user can select the sector where its activities are mostly concentrated. This would be the case of an airline company with subsidiaries in air transportation, handling, air catering, etc. Revenues from secondary activities can be captured by Other Operating revenues (IS, row 11) and follow more simplified calculation rules. However, when highly diversified holdings of public companies are analyzed it is recommended to study separately the main non-financial companies that are part of the holding, data permitting. Otherwise the aggregation of revenues from the relevant activities can become cumbersome and considerably less accurate.

- **The last year of observed financial data** (i.e. for which financial statements -preferably audited- exist). If this is the year T, the tool will produce projections from year T+1. By default, the tool assumes that natural years are equal to accounting years, but if those are different the entered years can be understood as the natural years when accounting years start to run. For example, if the accounting year in a country runs from July through June, 2018 denotes the 2018/2019 accounting year.

III. INPUTS: income statement and balance sheets statement

III.1. INTRODUCTION

7. The use of the tool requires the availability of the financial statements of the SOE at 2 years prior to the start of projections, although adding more years can improve the quality of the analysis. The user has to enter financial statements data, in a simplified IFRS format, of at least the last 2 years prior to the first year of projections. This is a key input for two reasons. First, because the analysis and understanding of recent trends is the basis for the production of coherent projections, particularly in the baseline scenario. Second, because in many cases recent observed data are integrated in forecasting process, as we will see later in this section. The tool's projections are presented in the same type of financial statements, where past observations and forecasted values can be clearly distinguished.

III.2. INPUT 2- INCOME STATEMENT

8. Input 2 broadly mirrors the structure of the IS, to which it exports its content. The structure of the statement reflects a simplified IFRS format and it replicates that of the IS, except for the memorandum items in rows 46-52 of the IS, which are drawn from Assumptions. The definition

of the main items in the IS will be explained later in this section. In IS, past data imported from Input 2 can be found in columns C-F.

Table 3. Structure of Input 2- Income Statement

	First year of projections			
	2015	2016	2017	2018
Please fill out the yellow cells				
Blue cells are populated automatically				
	Currency Units		2019 Rand Million	
A. Operating revenue (a.1+a.2+a3)		30492.0	30716.0	30986.0
a.1 Net Sales (net of taxes and other deductions)		29160.0	29273.0	29517.0
a.2 Other operating revenue		1332.0	1443.0	1469.0
a.3 Subsidies from government		0.0	0.0	0.0
B. Operating expenses (b.1+b.2+b.3+b.4+b.5+b.6)		33407.0	30194.0	40048.0
b.1 Personnel (wages, salaries, benefits)		5698.0	5831.0	6131.0
b.2 Cost of sales of goods & services		22559.0	19984.0	22874.0
b.3 Depreciation & amortization		825.0	732.0	1033.0
b.4 Royalties		0.0	0.0	0.0
b.5 Fees		0.0	0.0	0.0
b.6 Other operating expenses		4325.0	3647.0	10010.0
C. Operating loss/income (A-B)		-2915.0	522.0	-9062.0
D. Non-operating revenue (d.1+d.2+d.3+d.4)		240.0	240.0	240.0
d.1 Capital transfers and others		0.0	0.0	0.0
d.2 Interest received		26.0	26.0	40.0
d.3 Dividends received		0.0	0.0	0.0
d.4 Other non-operating revenues		214.0	214.0	200.0
E. Non-operating expenses (e.1+e.2)		3455.0	2140.0	2830.0
e.1 Interest payments		634.0	1030.0	1630.0
of which to the government		0.0	0.0	0.0
e.2 Other non-operating expenses		2821.0	1110.0	1200.0
F. Non-operating loss/income (D-E)		-3215.0	-1900.0	-2590.0
H. Profit/loss before tax (C+F)		0.0	-6130.0	-1378.0
I. Corporate income tax/benefit		12.0	100.0	219.0
J. Profit for the year after tax (H-I)		-6142.0	-1478.0	-11871.0
Memorandum item:				
Number of employees			10071.0	10071.0

9. While the user is asked is populate the yellow cells in Input 2, some items are calculated residually. Since the IS has a stylized structure, some IFRS items have been aggregated within broader categories to simplify projections. This is the case of other operating revenue (row 11), other operating expenses (row 20), other non-operating revenues (row 28) and other non-operating expenses (row 33). To avoid inconsistencies in the mapping of IFRS statements into the tool's statements, these items are calculated automatically (and consequently shadowed in blue) as the difference between the headline item and the rest of the items under the same headline. For example, other operating revenues are calculated by subtracting net sales (row 10) and subsidies from the government

(row 12) from operating revenue (row 9). By the same token, balances are calculated automatically by combining their main components: the operating balance (row 22) is the difference between operating revenues (row 9) and operating expenses (row 14); the non-operating balance (row 35) is the difference between non-operating revenues (row 24) and non-operating expenses (row 30); profits before taxes (row 39) result from summing up the operating and non-operating balances, and profit after taxes (row 43) are obtained by subtracting income taxes (row 41) from profits before taxes.

10. The number of employees is also entered, as a memorandum item, in Input 2. This item can be found in row 47, and is used to determine the productivity ratios before the start of projections and, by taking into consideration the assumptions on net staff recruitment, also over the projection period.

III.2. INPUT 3 – BALANCE SHEET STATEMENT

Table 4. Input 3 – Balance Sheet

Please fill out the yellow cells Blue cells are populated automatically		First year of projections Currency Units	2019 Rand Million		
		2015	2016	2017	2018
Assets					
A. Current assets (a.1+a.2+a.3+a.4)					
a.1 Cash and cash equivalent		7207.0	10276.0	9163.0	
a.2 Receivables		1295.0	2701.0	2872.0	
a.3 Inventories		4998.0	6741.0	5349.0	
a.4 Other current assets		725.0	727.0	879.0	
		189.0	107.0	63.0	
B. Non-current assets (b.1+b.2+b.3)					
b.1 Property, plant and equipment		7459.0	6982.0	6753.0	
b.2 Investment property		4587.0	4474.0	4574.0	
b.3 Other non-current assets				0.0	
		2872.0	2508.0	2179.0	
C. Total assets (A+B)					
		14666.0	17258.0	15916.0	
Liabilities					
D. Current liabilities (d.1+d.2+d.3+d.4)					
d.1 Accounts payable		9000.0	11000.0	13000.0	
of which taxes		7148.0	6797.0	8285.0	
		0.0	0.0	0.0	
d.2 Employee benefit liabilities		0.0	0.0	0.0	
d.3 Loans and borrowings		984.0	3810.0	3804.0	
d.4 Other current liabilities		868.0	393.0	911.0	
E. Non-current liabilities (e.1+e.2+e.3)					
e.1 Loans and borrowings		16414.0	18622.0	20718.0	
e.2 Employee benefit liabilities		8984.0	11810.0	11804.0	
e.3 Other non-current liabilities		121.0	128.0	91.0	
		7309.0	6684.0	8823.0	
F. Stockholders' Equity (f.1+f.2)					
f.1 Share capital		-10748.0	-12364.0	-17802.0	
of which capital transfers		12892.0	12892.0	12892.0	
f.2 Accumulated other comprehensive income					
f.3 Retained earnings		-23640.0	-25256.0	-30694.0	
G. Total liabilities (D+E)					
		25414.0	29622.0	33718.0	
H. Total equity & liabilities (F+G)					
		14666.0	17258.0	15916.0	
Assets = Liabilities + Equity					
		Yes	Yes	Yes	

11. The structure of Input 3 resembles a simplified BSS in IFRS terms.

Input 3 represents a simplified IFRS statement of financial position (or balance sheet). Past observations can be found in the BSS, columns C-F, and they are imported from Input 3. The structure of Input 3 is essentially the same as BSS, except for some memorandum items which are only in BSS, namely the stock of written-down receivables, and net acquisition and revaluation of non-financial assets on the asset side, and asset/liability revaluations within equity. These are items used in the calculations during the projection horizon, but play no role before the first year of projections. In the case of the stock of written-down receivables, its value before the first year of projections is entered in Assumptions, row 79, since it is needed to calculate the increase in this stock in the first year of projections. If the information on this item is not available in the financial statements, it can be set equal to zero in Assumptions.

12. As in Input 2, some items in Item 3 are calculated residually to avoid consistency issues in the mapping of IFRS statements into the tool's format. Some IFRS items have been bundled into broader categories in the tool, to simplify BSS projections. Past observations within these categories are calculated automatically by the tool. These are: i) other current assets (row 14), as the difference between current assets (row 10) and cash (row 11), receivables (row 12) and inventories (row 13); ii) other non-current assets (row 19), as the difference between non-current assets (row 16) and property, plant and equipment (row 17) and investment property (row 18); iii) other current liabilities (row 30), as the difference between current liabilities (row 25) and accounts payable (row 26), employee benefit liabilities (row 28) and current long-term liabilities (row 29); iv) other non-current liabilities (row 35), as the difference between non-current liabilities (row 32), and

long-term loans and borrowings (row 33) and long-term employee benefit liabilities (row 34). Accordingly, the cells pertaining to these items calculated residually are shadowed in blue.

13. Input 3 also computes automatically total assets, total liabilities and equity, and conducts an accounting consistency check between these three categories. Total assets (row 21) are obtained as the sum of current and non-current assets. Total liabilities (row 43) is the sum of current and non-current liabilities. Total equity and liabilities is the sum of equity (row 37) and total liabilities. Further, row 48 of Input 3 verifies that assets are always equal to liabilities plus equity. If this accounting identity is not fulfilled, the user should look for possible inconsistencies in past

IV. Assumptions

IV.1. INTRODUCTION

14. The tool does not automatically provide values for fundamentals and structural parameters used in the projections, rather the user has to conjecture values for most of them. While this approach demands a previous analysis to understand the company's fundamentals (e.g., the nature of its demand, price-setting procedures and determinants, existence of non-commercial mandates, degree of market power, perception of the financial situation of the company in the markets, etc.), it also provides a good deal of flexibility to tailor the analysis to very different markets and business structures. Gathering the information to enter these assumptions will sometimes usually require an interaction with the SOE's management, main shareholding entity, regulators, and lenders. In most cases users will only be able to find plausible ranges of values for some assumptions, whereby it is recommendable to conduct sensitivity exercises to show the impact of alternative assumptions on the tool's output.

15. The spreadsheet Assumptions comprises three types of elements: projections, parameters, and its business plan.

- **Projections encompass the macroeconomic and market-specific fundamentals of the company.** The latter include drivers of the relative demand of the product sold by the company, as well as the prices of commodities. In general, all these projections are taken as external data in short-term operational and strategic decisions. Projections are entered over a 6-year period, over which they are in general different in the BAS and SS.
- **The parameters** can be of a structural nature (i.e., they synthesize the operating and financial -assets, liability and equity- structure of the company), behavioral (i.e., reflective of the sensitivity of the company's revenues and costs to external variables) or policy-related (descriptive of the tax, dividend and transfer policy of the government towards the company). They take a single value over the projection horizon, and by default they are assumed to be the same in the BAS and the SS.
- **Assumptions related to the SOE's business plans and other changes in assets.** Some of these assumptions sum-up the key aspects of the former, such as the intended

investment/divestment in all types of assets -including possible capital gains or losses incurred in these operations-, staff recruitment and subsidies pledged by the government. In addition, the tool allows to enter revaluation effects (positive or negative) on the value of some types of assets, as well as path for the stock of doubtful receivables. Again, this type of assumptions is entered over a 6-year period, as some of them may be significantly correlated with the business and/or the product cycle.

16. The tool differentiates those assumptions associated to a basic level of use, and those more advanced. Some assumptions can be considered basic, for being necessary to generate the key analytical output of the tool. These are the macroeconomic assumptions, the behavioral parameters and most of the structural ones. However, the use of the assumptions relative to the market-specific fundamentals, the business plan and some structural parameters can be gradually phased-in, or circumscribed to those users who have a good knowledge the market’s dynamics, the company’s asset portfolio and its investment and HR plans. Although the formulas of the tool are linked to optional assumptions as well, they can be set to zero or their values can be linked to other assumption cells, as indicated by Table 5 below.

Table 5. Optional assumptions

Optional assumptions	Type of assumption	How to populate them
Market-specific sales growth	Market-specific fundamentals	Can be set equal to zero
Price change of commodities other than oil	Market-specific fundamentals	Can be set equal to zero, except for producers of these commodities
Increase in doubtful receivables	Other changes in assets	Can be set equal to zero
Revaluation effects of fixed assets and investment property	Other changes in assets	Can be set equal to zero
Share of publicly guaranteed debt and government's loans in local currency and FX-denominated new borrowings	Structural parameters	Can be set equal to the same parameters relative to existing debt
Net investment in fixed assets and investment property	Business plan	Can be set equal to zero
Capital gains and losses from asset sales	Business plan	Can be set equal to zero
Staff recruitment	Business plan	Can be set equal to zero
Government's subsidies	Business plan	Can be set equal to zero

IV.2. ASSUMPTIONS ON THE SOE’S MACROECONOMIC AND MARKET-SPECIFIC FUNDAMENTALS

17. Operating revenue and costs of the SOE are modelled as driven by a set of macroeconomic and market-specific variables, the projections of which are entered in rows 6-26 of Assumptions (Table 6).

- Some of these variables are, by default, linked to the most recent IMF April World Economic Outlook (WEO) database -macroeconomic variables will be updated in the template every year, and the template posted in the Fund’s Fiscal Risk Portal -. These variables are: real domestic GDP growth (row 7), world real GDP growth (row 17), domestic GDP at current prices (row 8), domestic GDP

deflator (row 12), domestic and world inflation (rows 10 and 19), oil prices in US\$ (row 14), and average-of-period and end-of-period exchange rates (rows 15 and 16). However, the user can easily replace the WEO values by other projections (either official forecasts, from the Central Bank, consensus forecasts, MoF, etc.). As regards prices and exchange rates, the tool imports their indexes from the WEO, and thereafter calculates inflation as the rate of change of these indexes. Likewise, oil prices are imported from the WEO in US\$, and the tool calculates their rate of change. In countries where most external transactions are denominated in currencies other than the US\$, the tool automatically converts them into US\$².

- The user is also invited to enter values for short-term domestic interest rates, and long-term domestic and foreign interest rates. While the first ones would represent the remuneration to short-term deposits held by the company, the two latter categories are applicable to the company's new borrowings, and therefore should include risk premia. This means that the long-term interest rate projections should be made in view of the financial fundamentals of the company, but also of the growth prospects of the local and global economy and the forecasted inflation rates.
- For SOEs producing commodities other than oil, the user is also invited to enter its price projections in US\$ (row 26). These projections can also be taken by the WEO, although the tool does not link them given the multiple commodities within this category.
- For some companies, revenues can be driven by macroeconomic as well as market-specific factors. For that reason, the user can optionally enter an idiosyncratic growth component in row 25.

Note 2. (Optional) Examples of market-specific factors can be easily found in the context of the COVID-19 pandemic, in those sectors where revenues, due to the lockdown measures, have experienced breaks in their structural sensitivity to domestic GDP growth. This can be the case of public transport companies in some countries, whose operating revenues tend to be closely correlated to GDP (with sensitivities close to 1) but have fallen apart during the pandemic as a result of mobility restrictions. Another illustration can be given by SOEs operating in IT or telecommunication sectors, as these markets are characterized by their own product cycles and the development of rival technologies, more than by a clear correlation with the level of general activity.

Table 6. Macroeconomic and market-specific assumptions

² The user can also overwrite his/her own projections, if available and preferred to those of WEO.

Macroeconomic assumptions - automatically filled in

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Real GDP growth	1.2	0.4	1.4	0.8	-7.5	-5.4	2.5	4.8	4.7	4.2
Nominal GDP in national currency (Billions)	4049.9	4359.1	4653.6	4873.9	4817.3	4829.2	5149.8	5668.0	6205.5	6793.5
Inflation (period average)	1.0	6.3	5.3	4.6	6.4	5.7	4.1	5.3	4.8	5.3
CPI	92.0	97.8	103.0	107.8	114.6	121.1	126.1	132.8	139.1	146.5
GDP deflator (period average)	132.2	141.7	149.2	155.0	164.9	174.2	181.4	191.0	200.2	210.8
Oil price (based on WEO projections)	50.8	42.8	52.8	68.3	50.4	47.2	47.4	51.5	52.1	52.9
Oil price growth (in USD)		-15.7	23.3	29.4	-26.3	-6.3	0.3	8.7	1.1	1.5
Exchange rate (LC per US dollar, average)	12.8	14.7	13.3	13.2	16.4	17.2	16.7	16.7	17.0	17.3
Exchange rate (end of period)	15.6	13.7	12.3	14.4	16.4	17.2	16.7	16.7	17.0	17.3
World GDP growth (based on WEO projections)	3.5	3.4	3.8	3.6	-4.0	-2.6	4.6	6.1	5.9	5.1
World price index (based on WEO projections)	147.9	152.0	156.8	162.5	163.2	164.9	172.3	180.8	187.9	194.3
World inflation		2.8	3.2	3.6	0.4	1.1	4.5	5.0	3.9	3.4

Macroeconomic assumptions (to be filled-in)

Short-term nominal interest rate (domestic)	0.0	0.0	1.5	2.3	2.8	2.8	2.5	2.3	2.3	2.3
Long-term nominal interest rate (domestic)	0.0	0.0	9.5	10.3	21.3	17.3	14.8	12.3	12.0	11.0
Long-term nominal interest rate (FX)	0.0	0.0	7.5	7.2	9.4	9.9	9.4	8.9	8.4	7.4
Market-specific sales volume growth (optional)					0.0	0.0	0.0	0.0	0.0	0.0
Price growth of commodities other than oil in USD (only if the SOE is a commodity producer)					0.0	0.0	0.0	0.0	0.0	0.0

18. The cells pertaining to macroeconomic projections linked to the WEO are shadowed in blue, denoting that by default they are calculated automatically by the tool once the user populates Basics. When the first year of projections is modified in Input 1, WEO projections -when existing- are automatically assigned to the new projection horizon. *For example, if the user enters $t+2$ as the first year of projections instead of $t+1$, WEO projections for $t+2$ will be automatically displayed in the column of that year, and the table will show WEO projections until $t+7$ (if they exist).* By contrast, the cells for macroeconomic projections not provided by the WEO and market-specific projections are highlighted in yellow, denoting that it is the user who should provide these values from his/her own projections or other sources.

19. The user is asked to populate all macroeconomic projections (rows 7-24), irrespective of whether they are imported from the WEO or not. Otherwise, the tool will show messages of error (VALUE and DIV0) in several worksheets, as these variables are ingrained in several formulas and they are a key determinant of the basic output. The market-specific component of sales in volume is optional, as it may not be relevant for all types of products, and the price of commodities other than oil is only necessary for their producers.

Note 3. (Basic) Depending on the first year of projections selected, WEO projections may not cover the whole time horizon. In these cases, the user has to populate the remaining years with projections from a different source, or just close the business cycle that the WEO describes. For example, if the last year of projections depicts an unfinished recession, the remaining assumptions could picture real GDP growing above its trend for some years to eliminate slack, and afterwards converging to its trend. An educated guess in the absence of more specific information would be

to assume inflation, oil prices and interest rates positively correlated with the relevant GDP growth, and exchange rates constant.

IV.3. PARAMETERS RELATIVE TO THE OPERATING BEHAVIOR AND STRUCTURE OF THE SOE

20. Macroeconomic and market-specific fundamentals are linked to revenues and cost projections of the company by means of structural elasticities or behavioral parameters (Table 7). In particular:

Table 7. Behavioral operating parameters

Sales volume elasticity to domestic GDP growth	0.5
Sales volume elasticity to world GDP growth	0.5
Purchases of goods (volume) elasticity to sales volume	0.4
Indexation of wages to inflation	1
Indexation of domestic sale prices to domestic inflation	0.2
Indexation of export prices to international inflation	0.8

- **Real domestic and world real GDP growth are linked to the growth in the volume of sales** via their respective elasticities (Assumptions, rows 29 and 30). The tool assigns by default a unitary elasticity to market-specific revenue fundamentals.

Note 4. (Basic) An elasticity is defined as the x percent that a variable grows (or falls, depending on its sign) when its driver increases 1 percent. *For example, if the elasticity of sales in volume to domestic real GDP growth is 0.5, this means that if real GDP growth is projected to be 3 percent, sales in volume will increase by 1.5 percent.*

Note 5. (Basic) Sales elasticities often cannot be derived from econometric relations, for long time-series of revenues and costs are seldom available to estimate models. The most practical approach is to try to understand the quantitative importance of each driver through a dialogue with the technical staff of the company, or from sectoral research conducted in the past. In most cases, it will only be possible at best to define a range of plausible values for these elasticities, whereby some sensitivity analysis for alternative values within this range is recommended. *For instance, if sales in a sector are relatively correlated with the general economic activity, an elasticity between 0.7 and 1 could be a reasonable range for a sensitivity analysis. In the opposite case, a low correlation could be represented by an interval between 0.1 and 0.4.*

Note 6. (Optional) The user can follow different strategies to combine GDP and market-specific drivers of sales in volume. Just to illustrate some of them: i) if market-specific factors are not

considered relevant, entering a value for the elasticity to GDP, and leaving blank market-specific growth (row 25); ii) if GDP is not considered an appropriate predictor at all, setting the elasticity to GDP equal to zero and entering values for market-specific growth; iii) if the user has some reliable projections from external sources (e.g. the SOE), and does not find it necessary to disentangle the macroeconomic and market-specific components of them, he/she can set an elasticity to GDP equal to zero, leave row 25 blank, and enter these external projections in Assumptions, rows 98 (total volume of sales growth) and 100 (total volume of sales growth).

- **Domestic and world inflation are linked to local and export prices via their respective sensitivities, defined in rows 36 and 37.** These elasticities do not only capture market-determined prices, but only the indexation to inflation of regulated prices (e.g. typically in public utilities, or more in general in SOEs with non-commercial mandates) or even the market-power of some SOEs in unregulated sectors. In using two elasticities, the tool assumes that SOEs are able to discriminate prices between local and foreign markets, which is plausible for those goods or services where international arbitrage is limited or some product differentiation by market exists. As for commodity producers, their domestic and foreign prices are directly linked to international prices of oil or other commodities and, unlike for non-commodity outputs, it is assumed that no price discrimination between foreign and domestic markets is practiced. Oil or gas producers are recognized by means of a dummy parameter set to 1 (row 34), and an analogous parameter exists to identify producers of other commodities (row 35).

Note 7. (Optional) If the user thinks headline inflation is not a suitable predictor for the SOE's prices, there are different possible strategies, such as: i) Adding a sub-component of inflation - e.g. core inflation- to the macroeconomic projections, enter values for it and link sale prices, domestic and foreign (Assumptions, rows 102 and 103 respectively) to that variable, rather than to rows 7 and 16 as the tool does by default; ii) If sales prices are thought of being driven by market-specific variables, analogously to sales in volume, the user may want to add one row and set values for this component; additionally, this component should also be added to the formulas for domestic and foreign price growth (rows 102 and 103); iii) If the user wishes to use external projections for sales price growth, he can replace formulas in rows 102 and 103 by these values.

- **On the cost side, wages are indexed to contemporary domestic inflation** through a parameter defined in row 33. In principle this parameter should range between 0 and 1, though in exceptional circumstances it would be possible to find values larger than 1 -overreaction to inflation, if for instances wages have been frozen for a long time- of even negative -the opposite case, strong wage restraint after a period of high indexation-. International oil prices also apply to 1 to 1 the imported inputs bill. All this implies that the SOE does not exert market power in the markets of inputs.

- **Purchases of goods and services other than labor are linked to sales in volume through a fixed technical coefficient (row 32).** This elasticity refers only to variable costs, but the existence of indivisibilities or other factors can lower it in some sectors. For example, the demand of airline companies can be expected to present a relative low elasticity to the number of passengers: while some costs, such as catering or luggage handling depend positively of passengers, others (fuel, maintenance) will respond more to the number of flying planes than to the utilization of the capacity within each of them.

- **Purchases of goods and services other than labor are assumed to be indexed 1 to 1 to domestic and foreign inflation, respectively.** There is no specific assumptions about the pass-through of domestic or imported costs into prices, but this effect should be embedded in the elasticities of domestic and foreign prices to the inflation rates.

- **Average-of-period exchange rates apply 1 to 1 to convert the value of exports or imports of inputs, and amortization of FX-denominated debt, to local currency.** Similarly, end-of-period exchange rates apply to 1 to 1 to the value of outstanding FX-denominated debt expressed in local currency.

- **Short-term interest rates are applied without any transformation on cash balances, but long-term interest rates only apply to interest payments on debt** through an indexation mechanism that reflect the nature of debt contracts (see Assumptions relative to debt in section IV.5).

21. The user is also invited to enter several structural parameters regarding revenues and costs in Assumptions (Table 8). These parameters are important to the extent that they interact with the behavioral elasticities and the projections of fundamentals. The best information source for this type of parameters are usually the notes accompanying the financial statements of SOEs, or company prospectus in those SOEs active in debt markets. These parameters are:

Table 8. Assumptions on structural operating parameters

Share of sales (volume) in domestic markets in the last observed year	0.8
Share of oil/gas in sales	0
Share of non-oil commodities in sales	0
Share of imports in purchases of goods and services (volumes)	0.7
Share of oil in imports of goods and services	0.4

- **Initial share of sales in volume in domestic market to total sales in volume (row 31).** This share will be endogenous over the projection horizon, given different growth rates of markets in domestic and foreign markets, but an initial value is necessary for IS calculations. The share refers to the primary activity of the company, in case it produces more than one type of good or service.

- **Share of oil/gas and sales (row 34).** This parameter will be usually 0 or 1. When it takes the value=1, the price of sales will be linked to the projections of oil prices.

- **Share or non-oil commodities in sales (row 35).** When this parameter is equal to 1, prices will be linked to the projections for these other commodity prices, to be entered by the user (row 26).
- **Share of imports in the purchases of goods and services (row 38).** Given the heterogeneity of the goods and services purchased, this coefficient has to be defined in nominal terms, but it will be held constant over the whole projection horizon and treated as a coefficient at constant prices. For that reason and to minimize its sensitivity to input prices in one specific year, it is recommended to use a historical average of this share rather than the share observed in the last year before the start of projections, subject to data availability.
- **Share of oil in imports of goods and services (row 39).**

22. **Table 9 below summarizes the effects of macroeconomic and market-specific variables on the SOE's revenues and expenses:**

Table 9: Signs of the effects macroeconomic and market-specific assumptions on revenues and expenses

Variable	Effect on revenues	Effect on expenses
Domestic and foreign GDP real GDP growth	Positive (higher sales)	Positive (higher demand for inputs)
Market-specific growth	Positive (higher sales)	Positive (higher demand for inputs)
Domestic and foreign inflation	Positive (higher prices)	Positive (higher personnel expenses and costs of inputs)
Higher oil prices	Positive only for oil producers	Positive if oil is an input
Higher commodity prices other than oil	Positive only for producers of these commodities	Null, unless these prices are reflected in higher foreign inflation
Exchange rate depreciation	Positive (higher value of exports in local currency, higher incomes from FX-denominated assets)	Positive (higher cost of imported inputs in local currency, higher interest payments on FX-denominated debt expressed in local currency)
Higher interest rates	Positive (higher asset income)	Positive (higher interest payments to the extent they are variable)

All in all, the net signs of these effects are ambiguous, and depend on the starting relative level of revenues and expenses, and the size of the structural and behavioral parameters. In this vein:

- The more robust GDP growth, the more probable is that the operating income improves, although a high elasticity of input demands to sales growth can dampen these gains considerably.

- The higher expenses relative to revenue, the more probable is that an acceleration of inflation worsens the operating income of the company, particularly if the indexation of personnel expenses to domestic inflation is high.
- The more the company exports, and the less it imports, the more probable is that a depreciation of the exchange rate benefits its operating income. However, the higher the interest payments in FX and the lower income from FX-denominated assets is, the more probable is that non-operating income is adversely affected by an exchange rate depreciation.

IV.4. POLICY PARAMETERS

Table 10. Policy parameters

Corporate income tax (CIT) rate	0.25
Sale tax rate/VAT	0.15
Dividend Payout Ratio	0.1
Royalty rate (for oil producers)	0
Fees rates on sales	0
<i>Debt-equity ratio threshold for new borrowing</i>	1.5
<i>Liquidity target</i>	0.6
Commercial component of capital injections	0

23. Some parameters in Assumptions (rows 42-49) link the performance of the SOE to the net inflows it generates into the budget, namely:

- **Tax rates (CIT row 42, sales row 43, royalties row 45 and fees row 46).** In countries with an schedular tax system, it is recommended to use effective tax rates paid by the company in the last year before the start of projections. This information can usually be found in the company's financial statements.
- **Dividend pay-out ratio (row 44),** as the share of after-tax profits distributed to the shareholders of the company. In the absence of a policy framework, the user may want to use an average of past ratios. This information is commonly found in financial statements as well.

Note 8.(Optional) Where the government is the sole shareholder of the SOE, high dividend pay-out ratios can significantly extract their liquidity and aggravate their financing gaps. If this is the case, it is recommended to make sensitivity exercises for different values of this ratio and assess the consequences of abnormally high distributions of profits.

- **Liquidity floor (row 48) and leverage ceiling (row 47).** Government's bail outs are assumed to be triggered when, in the absence of new borrowing, cash balances are below a given

floor and the leverage is too high (or negative) to allow to entirely meet the minimum liquidity target by means of new borrowing. The liquidity floor is defined in terms of the quick ratio, and the leverage cap in terms of the debt-to-equity ratio (see section XI for a definition of these ratios).

Note 9. (Basic) The liquidity floor and leverage cap will be in general different in each SOE. To set them, the user may weigh the following considerations:

- The mean values of the quick and debt-to-equity ratios are different across sectors. However, setting aside intersectoral differences it is generally understood that quick ratios below 1 present significant risks for the company. By the same token, debt-to-equity ratios above 2 are considered a serious threat for the company's solvency in most sectors, and between 1.5 and 2 they tend to be considered from high to very high.
- How the government behaved during past financial distress episodes of the company, whether government's bail outs were prompted by a loss of access to market financing and what were the values of these ratios when these events occurred.
- The fiscal space available for conducting bail-outs, especially if they increase government's deficit. The narrower the fiscal space, the lower the liquidity floor and/or higher the leverage ceiling. However, this strategy may prove unsustainable beyond certain leverage levels. From the broader perspective of the public sector, net worth will be equally impaired and implicit contingent liabilities for the government may grow significantly.
- The perception of markets about the financial fundamentals of the company and its rating, if it exists. The better the perception, the higher the leverage ceiling could be. On the contrary, whether access to the markets is only underpinned by the prospect of a government's bail out in case of difficulties, it would not be realistic to set a demanding leverage ceiling.
- The strategic role of the company within the government's portfolio, its trend profitability, its linkages with other units in the public and private sector and the economic consequences of its liquidation for the national economy.
- The significance of adverse incentives nurtured by bail-outs. In particular, whether the company transparently and regularly discloses its financial statements, management's effort is monitorable through a system of performance targets and adequate incentives for compliance exist. Also importantly, whether bail-outs can be conditioned to structural reforms in the company, either in terms of its governance structure or a rationalization of its business plans.

Note 10 (Optional). By default, policy parameters are constant over the projection horizon. However, the tool allows for their variability reflecting changing policies, or different stages in the SOEs' restructuring process. Likewise, the values of the policy parameters in each year

could be differentiated in the BS and the SS. A typical example could be given by the quick ratio, which constitutes the reference for the liquidity floor. The ratio could be set closer to zero in the initial years if the SOE starts in a precarious financial situation, and be gradually raised as its capacity to generate cash flows increases.

There are several ways to incorporate these evolving parameters in the tool. For instance, the user can use a row in Assumptions to enter annual differences of the parameter from its initial value (in the first year of projections, the difference would be zero). Additionally, the values of the parameter should be linked in all the formulas it is part of and every year with its initial value plus the annual differences entered in Assumptions.

- **The share of capital injections that can be expected to be commercially remunerated (row 49).** According to GFSM 2014, when the rate of return of equity purchases is not realistic (or, in practical terms, is significantly worse than other investments with a comparable degree of risk) these should be accounted as capital transfers, and included in deficit computation. Otherwise, equity purchases can be accounted below the line in the government’s Statement of Operation as the acquisition of a financial asset and do not generate deficit. Unless the company is clearly profitable in the baseline scenario and the shock is short-lived, it is recommended to consider set a value of this parameter equal to zero for the sake of prudence.

IV.5. ASSUMPTIONS RELATIVE TO THE DEBT AND ASSET STRUCTURE

Table 11. Assumptions relative to the debt structure

Debt Profile	
Average maturity of new FX-denominated debt (years)	5
Average maturity of new domestic debt (years)	5
Average maturity of existing FX-denominated debt (years)	4
Average maturity of existing domestic debt (years)	4
Grace period of new domestic debt (years)	1
Grace period of new FX-denominated debt (years)	1
Share of new borrowing in domestic currency to total new borrowing	0.5
Share of existing domestic debt that is publicly guaranteed	0
Share of new domestic borrowing that is publicly guaranteed	0
Share of domestic government loans in existing domestic debt	0
Share of FX-denominated government loans in existing FX-denominated debt	0
Share of new domestic government loans in domestic new borrowing	1
Share of new FX-denominated government loans in FX-denominated new borrowing	0
Variability of interest rates on domestic debt	1
Variability of interest rates on FX-denominated debt	0.5

24. Debt assumptions provide key inputs for income, cash and fiscal projections. To calculate a path of outstanding debt, it is necessary to set the parameters that shape its amortization

schedule. Additionally, interest payments on existing debt are an integral part of the IS, and they can only be determined on the basis of the stock of outstanding debt. In turn, debt stock and its service are key elements to assess the liquidity and solvency of the company, two variables that are closely related to the size of capital injections.

25. The tool considers local currency and FX-denominated debt, and the user can enter different assumptions regarding the characteristics of each type. The share of borrowing in domestic currency is entered in row 59, and is applied both to the stock of debt outstanding before the first year of projections, and to new borrowing. If the stress scenario involves a loss of access of the company to international markets, the user may wish to manually modify this parameter for new borrowing during the shock years in Debt ST (see Section VI).

Note 11. (Basic) SOEs often have multiples types of debt, either in domestic or foreign currency. The tool proposes to synthesize all these instruments in two representative types, each one denominated in a different currency, for the sake of analytical tractability. One possible way of condensing the characteristics of the several existing instruments into two is calculating a weighted average of their grace and maturity periods, the weights being the share of each type of debt in the existing stock. But, this may come at the cost of some accuracy. Other ad-hoc adjustments of the amortization profile of existing debt can be easily done in Debt (see section VI).

26. Assumptions on debt maturity and grace periods serve to determine the amortization profile. Grace periods (rows 57 and 58) refer only to new borrowing, while existing debt is assumed to be paid from the first year of projections. *A one-year grace period, like in the example, means that if new debt is borrowed in period T, payments start in period T+2.* During grace periods, the company keeps paying interests on the whole outstanding stock. The template requires grace periods of at least one year (otherwise, borrowing would imply a worsening of liquidity conditions, as borrowing would simultaneously increase payments due in the next period). The amortization years of existing debt (rows 55 and 56) refer to the number of years (including the first year of projections) until it is completely repaid. *For instance, a 4 year period for debt outstanding in 2018, the first year of projections being 2019, means that the last capital payment will be done in 2022.* The amortization years of new borrowing (rows 53 and 54) refer to the number of years, counting from the end of the grace period, until that debt is completely repaid. *For instance, if a new instrument is issued in 2021, with a grace period of 1 year, and amortization of 5 years, payments will start in 2023 and finalize in 2027.* Bullet bonds to be amortized within N years can be modelled as debt with an N-1 year grace period, and one-year amortization period.

27. For an accurate representation of government's accounts, it is also important to identify the amounts lent by the government to the company, and the debt issued by the

company guaranteed by the government. Government's loans to the SOE can be denominated in any currency, but guarantees for the sake of simplicity guarantees apply by default to local currency-denominated debt; this assumption can be relaxed easily though (see Note 12). However, repayments of government's loans in foreign currency are always effected in local currency, which means that the company is assumed to bear the exchange rate risk. Government's loans and guaranteed debt are entered in Assumptions as shares in existing debt stocks and new borrowing, which the tool allows to differentiate. The share of government's loans in existing debt is entered in rows 63 and 64 (in local and FX-denominated debt, respectively), and the share in new borrowing in rows 65 and 66. The share of existing domestic debt that is publicly guaranteed is entered in row 61, and the share of new borrowing in local currency that is guaranteed in row 62.

Note 12. (Basic) Applying different coefficients for guaranteed debt and government's loans to existing debt and new borrowing may be relevant, as some distressed companies may only be able to borrow but from the government (and absent this, new borrowing would be precluded). Likewise, distressed companies benefitting from government guarantees can leverage higher private financing. Therefore, the debt-to-equity ratio caps can sometimes be sensitive to the government's lending and guarantees policy, although the resulting trade-offs between higher risk exposure for the government and lower capital injections must also be taken into consideration when entering these coefficients.

That being said, those users aiming to use the tool at a basic level can enter the same coefficients for existing debt and new borrowing.

Note 13. (Basic) Sometimes governments can also guarantee FX-denominated borrowing. In that case, the user should add two parameters to Assumptions (share of publicly guaranteed FX-denominated debt, existing and new). In Debt Projections, total debt guaranteed by the government (in terms of the outstanding stock, amortizations, new borrowing and interest) now would be generated by the sum of two elements, the first on local-currency denominated debt (already computed in the tool) and the second, to be entered, on FX-denominated debt. The 4 formulas for FX-denominated guaranteed debt would be analogous to those used for local currency-denominated debt, but reflecting also the effects of end-of-the year and average exchange rate movements on stocks and flows, respectively, and therefore using the amortization profile of FX-denominated debt. Importantly, note that the total amount of debt would not be affected by the introduction of this type of guarantees, as guarantee debt is presented as a memorandum item in Debt projections, and its amortizations, interest payments and new borrowing are computed as percentages of the grand totals in each category.

28. The user can also select the degree of variability of the interest rates on debt (rows 67 and 68). This variability is can range within an interval between 0 (fixed rates) and 1 (fully variable rates). Any intermediate value implies that interest rates are a linear combination between past

effective rates and new prevailing rates, which may apply when a company services debt both at variable and fixed interest rates. The degree of interest rate variability is assumed to be the same for existing debt and new borrowing, and can be different for local currency- and FX-denominated debt.

Table 12. Assumptions on the structure of assets

Share of non-disbursed taxes to accrued taxes	0
Share of investment property in domestic currency	1

29. In most countries, some taxes are accrued but not fully paid during the accounting year. While accrued taxes are relevant for the fiscal accounts, accrued but not paid taxes are payables for the company, and they do not generate cash outflows. This possibility is captured in Assumptions, row 40, where the user can enter this fraction of accrued taxes.

30. The share of investment property in domestic currency (row 41) is relevant for the determination of asset income, since the returns of FX-denominated assets are affected both by the asset prices in foreign currency and the exchange rates. This parameter is also important when it comes to the computation of asset revaluation effects and capital gains (see section VII.3).

IV.6. ASSUMPTIONS RELATIVE TO THE CONSOLIDATION OF THE SOE'S ASSETS AND LIABILITIES IN THE PUBLIC SECTOR BALANCE SHEET

Table 13. Assumptions relative to the consolidation of assets and liabilities in the PSBS

Parameters for Public Sector Balance Sheet (PSBS) consolidation

Share of financial assets in other public sector units (e.g. government's debt to the SOE)	0
Share of equity owned by other public sector units in the last observed year	1
Share of liabilities -other than equity and debt- in other public sector units (e.g. tax liabilities)	0
Share of non-financial assets in other non-current assets	0.5

31. The tool requires some additional assumptions to calculate the contribution of the SOE to public net worth and net financial worth, namely the key elements to identify the share of assets of liabilities to consolidate within the public sector balance sheet. These parameters, all of which are assumed to remain constant over the projection horizon, are:

- The share of the company's financial assets in other public sector's units (row 84). Common examples are government's debt securities, or receivables from other SOEs. This fraction of assets will be consolidated in the calculation of the SOE's contribution to public net worth and net financial worth.
- The share of equity owned by public sector units before the start of projections (row 85). This fraction will be variable over the projection horizon, and when it is lower than 1 it can be increased by means of government's capital injections registered as financial assets. New private contributions to the company's equity after the start of projections are ruled out for the sake of simplicity.

- Share of liabilities -other than government's loans and equity- in other public sector units (row 86). Typical examples are payables to other SOEs or the government (there including accrued but not paid taxes). Therefore, for calculating the contribution of the SOE to public net worth in GFSM 2014 terms the tool consolidates this fraction of liabilities, plus outstanding government's loans plus the public share of the company's equity.
- Share of non-financial assets in non-current assets (row 87). GFSM 2014 differentiates on the asset side between financial and non-financial assets. In general mapping IFRS categories into these two broad items is relatively straightforward (see section VII.3), but other non-current assets is a heterogeneous group that may contain both financial (e.g. tax assets) and non-financial assets (e.g. patents). To facilitate this mapping and ultimately help calculate the company's contribution to the public net financial worth, it is necessary to make some assumption about how to split other non-current assets. This is done by means of this coefficient that may be set by a looking in detail at the composition of the BSS. In case this information is not available, it is recommended to set this coefficient at zero.

IV.7. ASSUMPTIONS ON THE BUSINESS PLAN AND OTHER CHANGES IN ASSETS

Table 14. Assumptions on the business plan and other changes in assets

Memorandum Items (optional)

Default values are set below. Change if detailed SOE information is available.

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Net acquisition of investment property (in LC)	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0
Investment property revaluation rate (in LC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Acquisition of fixed assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Divestment of fixed assets	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0
Revaluation rate of fixed assets	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Realized capital gains/losses from fixed assets	0.0	0.0	0.0	0.0	-5.0	0.0	0.0	0.0	0.0	0.0
Realized capital gains/losses from investment property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Employment growth rate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Government subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

32. The tool can factor the purchase and disposal of fixed assets and investment property, as part of the business plan of the company. These operations can be entered in row 74 for acquisition of fixed assets, row 75 for divestment of fixed assets, and row 72 for net acquisitions - i.e. purchases minus disposals- of investment property). Purchases and disposals are valued at current prices -in local or foreign currency- and exchange rates, and expressed in local currency. Both purchases and disposals should be entered in with a positive sign.

33. The market prices of some fixed assets and investment property can change from year to year, giving rise to a revaluation/devaluation in the stocks of these assets. These effects will have a bearing on the value of the asset stocks at the end of each period and will be treated in the BSS as unrealized capital gains/losses, until the time they materialize through the disposal of the assets. The user can enter valuation effects in Assumptions, either for fixed assets (row 76) or

investment property (row 73) as price change rates in local currency, with a positive sign to indicate a revaluation or a negative sign to denote a devaluation. Price change rates are defined as the net rate of the asset price variation between two consecutive periods:

$$\text{Re } v_t = \frac{P_t^A}{P_{t-1}^A} - 1$$

Note 14. (Optional) When it comes to the revaluation of the share of investments denominated in local currency (row 41), their prices tend to be correlated with the business cycle. As for revaluation of investments denominated in foreign currency (1-share denominated in domestic currency), both the developments in the asset prices in foreign currency and exchange rates will be relevant.

In this vein, revaluation effects in each of these groups of assets may operate in opposite directions. For instance, a negative macroeconomic shock may translate into a depreciation of domestic assets. However, to the extent that this shock is asymmetric and does not affect the world economy, revaluation effects of FX-denominated assets can be positive, all the more if the domestic growth slowdown is accompanied by a depreciation of the exchange rate.

34. The variability of fixed asset and investment property prices can give rise to realized capital gains/losses at the time of their disposal. Capital gains/losses can be proxied as the product of the number of units of the asset sold, multiplied by the difference between its unitary purchase price and its unitary sale price. Capital gains/losses can be entered in row 77 and 78, respectively, in units of local currency. Positive amounts represent capital gains, whereas a negative sign denotes capital losses. The accounting treatment of realized capital gains and losses is different from unrealized ones, as the former will be part of profits before taxes, while the latter are incorporated in the comprehensive income and do not affect profits.

Note 15. (Optional) Capital gains are embedded in the value of asset sales. *For instance: if the SOE sells land by LC 100 million, out of which LC 20 million are capital gains, the user should enter these two amounts in Assumptions, the first on the row of divestment in fixed assets, and the second one as capital gains from fixed assets.*

Note 16. (Optional) When entering realized capital gains/losses in Assumptions, the user can take into consideration the following variables: i) the number of years the asset has been sitting on the balance sheet; ii) cumulative revaluations/depreciations experienced by this asset over these years, before and after the first year of projections; iii) the liquidity of the market of the disposed asset:

the less liquid, the higher the probability that fire sales generate losses; iv) the size of the SOEs liquidity needs at the time the asset is sold: the larger the needs, the more pressing its need to sell even incurring some losses.

35. The clients of the SOE may experience liquidity or solvency problems that prevent them from servicing their commercial debt. This may happen either in the BAS or in the SS although with higher probabilities in the latter. Moreover, the tool assumes when receivables are classified as doubtful, the probability of default is sufficiently high to write-down these assets, notwithstanding the fact that if they are subsequently the losses associated with their write-down can be reversed. The user can determine the stock of doubtful receivables in row 79 for the baseline scenario, while for the SS this stock is calculated by applying an specific shock on the stock of receivables (see section VII.3). Prior to the first year of projections, the stock of doubtful receivables is the same in the BAS and the SS.

36. The user can also enter the expected rate of net employment growth (row 80), which should be consistent with the forecasted growth of activity and sectoral productivity. Note that this rate reflects both recruitment and dismissals, so it can be either positive or negative. In fact, the user may want to analyze the effect of a staff downsizing in the context of severe liquidity shortages for the SOE.

37. Government's operating subsidies are commonly provided in the context of multi-annual programs, and entered in row 81. These subsidies are often approved in exchange for reforms in the governance or productive structure of the company, and when this is the case it should be reflected consistently in the assumptions. For instance, it may not make sense that a loss-making SOE receives recurrent operating subsidies and, at the same time, undertakes an ambitious plan of staff recruitment or investment in fixed assets.

IV.8. STRESS SCENARIO

38. The stress scenario can be flexibly designed by entering values for a number of macroeconomic and company-specific shocks in cells P7-U23 of Stress. These shocks, which can be combined by the user, are classified in two categories:

- **Macroeconomic shocks on:** Domestic and world real GDP growth, domestic and world inflation, GDP deflator, exchange rate variation, short-term domestic interest rates, long-term domestic and foreign interest rates. All shocks impact the y-o-y rate of change of these variables, except for the shocks on interest rates which affect their nominal levels.

Note 17. (Basic) The tool allows for shocks on the GDP deflator to determine more accurately the GDP at current prices in the SS. In some countries, shocks on the domestic inflation rate and

the GDP deflator may have very different sizes and even signs. For example, shocks on international oil prices may have a much greater negative impact on the GDP deflator (through the export deflator) than on domestic inflation. But, if this is not the case and shocks on the GDP deflator can be proxied by the private consumption deflator (which tends to be line with the domestic inflation rate), the same shock can be applied to the former and the latter.

Note 18. (Basic) Shocks on the real GDP growth and GDP deflator translate into nominal GDP shocks. Thus, the nominal GDP level in the SS (Stress, row 6) is derived by applying to last year's level a growth rate equal to that projected in the baseline, plus the shocks on real GDP growth and the GDP deflator y-o-y change.

Note 19. (Optional) Shocks on interest rates -domestic or foreign- usually capture changes in macroeconomic conditions, such as changes in the monetary policy stance, inflationary expectations or country-risk perceptions. Moreover, it is conceivable that changes in the aggregate solvency conditions of the consolidated public sector spill over into the risk premium of its SOEs, even the fundamentals of some of them are relatively sounder. This is particularly relevant for those users who wish to interface the tool with a fiscal stress test tool, which studies the interactions between the financial position of the general government and other agents of the public sector.

Note 20. (Optional) Shocks on long-term interest rates can also reflect company-specific developments. For example, if the company experiences a market-specific shock risk-free interest rates may remain unchanged, but the risk premium that the company pays can sharply increase. Likewise, if government's credibly announces its intentions to stop bailing-out the SOE and its low risk premia were underpinned by the expectation of further bail-outs, this situation can change abruptly especially if the SOE's indebtedness is high.

- **Among the market-specific variables:**
 - Market-specific shock: it affects the growth rate of that fraction of sales in volume which is uncorrelated to GDP. *For instance, if a competitor enters the SOE's market and offers a competitive product, it can threat its sales and dispute a part of its market share. The same effect is possible if a key client of the SOE undergoes financial stress and the company is not able to replace its demand.*
 - Shock on the y-o-y change price of oil or other commodities, applicable for producers of these goods. They normally reflect changes in international markets, either in demand or supply conditions.
 - Shock on the liquidity of the company's clients, that affects the level of receivables of the company. The higher the shock, the higher the share of the company's revenues that will materialize in receivables rather than cash. This shock in itself does not imply an increase in the share of delinquent receivables.

- Shock on the share of receivables to materialize, that affects the level of receivables. This is a shock on the solvency of the company's clients. When it materializes, it indicates a very high probability that a fraction of the company's receivables will never be recovered. Accordingly, this fraction of receivables will be written-off (see section VII.3). The higher the shock, the larger the fraction of receivables that will be written-off.
- A shock on the degree of indexation of domestic prices to inflation, induced by the government. The shock is defined as an x percent that prices will grow below the product of their elasticity to domestic inflation by the domestic inflation rate in the SS. *For instance, the government may sever the links between tariffs and consumer prices during a recession, as a way of stimulating aggregate demand. In a context of high inflation, this may severely squeeze the margins of an SOE. A similar effect could be observed in an environment of unregulated prices if a competitor aggressively reduces its prices to capture part of the SOE's demand, and product differentiation is low.*
- A shock on the sales tax rate of the products traded by the SOE. The shock affects the sales tax rate and therefore is expressed in times one. The shock affects at least two variables: the sales tax rate in itself, and the sale prices of the company as it is assumed that the SOE will be able to pass a share of this increase onto the consumers.

Note 21. (Optional) Sale prices increase as a result of a shock in the sales tax rate by the following factor:

$$\frac{(1-t)}{[1-(t+0.6*shock)]} \quad (1)$$

Where t is the sales tax rate in the BAS, and shock is the size of the shock on the tax rate. The formula assumes that there is an intermediate degree of pass-through (0.6) on consumer prices. However, the user can modify this coefficient to reflect different situations. For example, if the demand is completely inelastic, the coefficient could be set equal to 1, while values closer to 0 would reflect increasing values of the price-elasticity of demand. It could also be expected that this shock is matched by a negative shock on the market-specific growth of sales, this effect being larger the higher the elasticity of demand to prices. Anyhow, this third effect is not embedded in the formula of the market-specific growth of sales in volume, and its consideration is left to the discretion of the user.

39. **Most shocks operate additively, but a few of them are of a multiplicative nature.**

- **When a shock is additive**, this means that the growth rate (or the level) of a variable in the SS is obtained as its value in the BAS, plus the shock. *For instance, if domestic real GDP growth in the*

BAS equals 5 percent for a given year and the shock is set at -6, this means that the growth rate in the SS will be -1 percent. All macroeconomic projections in the SS are derived as deviations from the baseline through this additive adjustment, which is operative from the first year of projections. The projections of the variables potentially affected by additive shocks can be found in Stress, rows 5-27. In the case of sales tax rate, it is cell D51 in Stress which is adjusted by the size of the shock, as well as the calculation of y-o-y changes in domestic prices in row 102. The values of these variables before the first year of projections are linked by formula to Assumptions. Y-o-y changes of stressed variables in the SS will feed into the projected levels of other related variables, such as the CPI, the exchange rate and the prices in US\$ of oil and other commodities.

- **When a shock is multiplicative**, the value of the concerned variable in the SS is derived as the product of the pre-shock variable in the SS by the shock. In other words, if the shock takes the value of 1 this means that the variable is not altered by this shock, while a shock lower (higher) than 1 implies that the after-shock value of the variable is lower (higher) than its pre-shock value. There are only two multiplicative shocks: the liquidity shock that impacts the share of sales received in cash, and the shock on the share of delinquent receivables. In the former case, a value of the shock above 1 means that the share of sales received in cash decreases (and the level of receivables increases). As regards the shock on delinquent receivables, a value below 1 means that the share of delinquent receivables is greater than zero, while a value above means that some receivables that were written-off in the past have been unexpectedly recovered. Receivables adjusted for both shocks can be found in BSS-Stress, row 10, and the formula adopted to make this adjustment is set out in section VII.3 .

Note 22. (Basic) When designing the SS, the size of the shocks is commonly set in view of the standard deviation (i.e. the historical volatility) of each variable, and the probability the user wants to attach to the SS. If the user wishes to analyze risk events with a likelihood around 30-40 percent, one standard deviation may be a suitable size. If the objective is to study the resilience of the company to extreme events -though by no means impossible, as the Great Financial Crisis and the COVID-19 pandemic have shown-, then 2-3 standard deviations would be an adequate size. If the tool is interfaced with a full-fledged FST, then the size of the shocks can be imported from the FST worksheets developed by the user. This technique is especially relevant for macroeconomic shocks, since in most countries available time series of these variables are relatively long and an unbiased analysis of historical volatilities and outliers is possible. For market specific shocks, deviation of levels by more than 10-15 percent of their baseline values can usually be considered very large shocks.

Note 23. (Basic) To enhance the meaningfulness of the analysis, it is important to design the SS according to an overarching narrative. This requires the sign of the correlation between variables to be consistent with the characteristics of the shock. For example, a country-specific demand shock can be expected to feature a domestic GDP growth and inflation slowdown. The probability

of an exchange rate depreciation would be higher if the Central bank reacts to the shock by lowering its policy rates, or a confidence crisis in capital markets ensues. Debt interest rates should reflect inflation and exchange rate developments, all the more when a significant share of debt denominated in local currency is held by non-residents. Large shocks on domestic GDP with implications on credit growth may translate into increases in delinquent receivables and market-specific shocks, reflecting cross-linkages between companies and the spill-overs from the main clients of the SOE.

Note 24 (Optional). When the tool is interfaced with a FST, the causality of the shocks can run in both directions. It may be the case, for example, that a worsening in the government's solvency ultimately affects the risk premium that the SOE faces. Conversely, if the SOE is systematically important, a deterioration in its rating can also affect other SOEs or even the general government perception of solvency, all the more when is explicit or implicit contingent liabilities are perceived to be large by the markets.

40. By default, all parameters and exogenous variables in Stress are tied to their levels in Assumptions to facilitate the comparability between both scenarios. But, the user can modify them if this is deemed to increase the realism of the SS. If this is the case, the user should just replace the formulas in the relevant cells by numerical values, which will feed automatically into the financials projections in the SS.

Note 25. (Optional) The following examples illustrate some situations where asymmetric values for some parameters or exogenous variables in the SS could enhance the analysis:

- An SOE that faces capacity constraints in the BAS would be characterized by a low sensitivity of its sales to real GDP growth. However, in the SS this may not be the case anymore, since existing capacity may be underutilized.
- A company that is heavily reliant on imports of inputs may replace them by domestic products (to the extent that domestic and foreign inputs are substitutable) if the exchange rate heavily depreciates or the prices of inputs in foreign currency sharply increase.
- Investment and/or recruitment plans of an SOE may be drastically cut in the SS if the company undergoes liquidity tensions. Moreover, the company may wish to divest assets in financial distress, and by doing this it may incur capital losses if asset markets are hit by the shock.
- Valuation effects in the SS can be different from the BAS if asset prices, which tend to depend on expected returns, move in line with activity prospects.

- The government may want to cut the pay-out ratio of dividends if its baseline value proves onerous for the company and compounds liquidity problems in the SS.
- The maturity of new borrowing may be shorter in the SS if the solvency perception of the company deteriorates, or there is no evidence that the government will bail it out.
- The share of government's loans in new borrowing may increase if the company is likely to lose its access to debt markets, despite the leverage ratio not being excessively high. By the same token, the share of guaranteed debt in new borrowing may be higher in the SS if that facilitates access to debt markets and the SOE can be expected to recover its profitability after the shock.

V. BENCHMARKING MODULE

41. The benchmarking module is automatic and provides a comparison with those SOEs available in the ORBIS database operating in the same sector. Starting from a potential dataset of 22,000 comparators, the company automatically selects the productive sector of operations and the year of the comparison on the basis of the information entered by the user. This process requires to the user to carefully chose in "Input 1 – Basics" sheet the sector or sub-sector in which her SOE operates. Line 12 of the "Input 1 – Basics" sheet asks the name of the SOE. This information is optional but is used to provide a polished output table in the sheet "Benchmarking". Line 13 of the "Input 1 – Basics" sheet request the user to provide the sector of the SOE. It offers about 83 sectors or sub-sectors. The template automatically determines the NACE classification of the SOEs. Once line 13 is populated, the template automatically benchmark the financial performance of your SOE with respect to many other SOEs in the same sector around the world. Likewise, the year immediately before the first year of projections selected in Input 1-Basics is used to anchor the comparison with ORBIS data.

42. The template provides a benchmarking with respect to many financial indicators. The financial indicators used are grouped according to the following categories: Profitability (return on equity and return on assets); Liquidity (current ratio and interest cover); Capital structure (the ratio of non-current liabilities to total assets) and Operating efficiency (operating revenue per employee and labor cost per operating revenue). The template provides standardized charts for all these financial indicators. But the user is free to use the data that are in the sheet "Benchmarking" to draw her own charts.

43. The template also provides a benchmarking by income level. Given that the performance of an SOE not only depends to the sectors in which it operates but also to the level of development of the country, the template offers a benchmarking by income level. This is automatically done once the user provides the name of the country in which the SOE operates in the sheet "Input 1 – Basics" line The template automatically determines the income level (advanced or not-advanced economy) of the country in which the SOE operates (row 8).

VI. DEBT PROJECTIONS

VI.1. STRUCTURE

Table 15. Structure of debt projections

Please fill out the yellow cells		Debt Profile									
Blue cells are populated automatically		<div style="display: flex; justify-content: center; align-items: center;"> <div style="border: 1px solid black; padding: 2px; margin-right: 5px;">First Year of Projection</div> </div>									
		2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Existing debt stock		9968.0	15620.0	15608.0	11835.4	8441.1	4178.6	0.0	0.0	0.0	
Of which in foreign currency (in LC)		4984.0	7810.0	7804.0	5933.4	4506.4	2211.2	0.0	0.0	0.0	
Of which loans from the government (in LC)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Of which in foreign currency (in USD)		364.3	634.0	542.9	410.6	273.7	136.9	0.0	0.0	0.0	
Of which loans from the government (in USD)		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Of which in domestic currency		4984.0	7810.0	7804.0	5902.0	3934.7	1967.3	0.0	0.0	0.0	
Of which loans from the government		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Of which debt guaranteed by the government		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total interest payments		634.0	1030.0	1630.0	1451.4	1118.8	724.0	360.6	0.0	0.0	
Interest paid on foreign debt (in LC)				815.0	651.5	513.9	320.7	158.9	0.0	0.0	
Of which interest paid to the government (in LC)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Interest paid in foreign debt (in USD)				61.6	45.1	31.2	19.8	9.7	0.0	0.0	
Of which interest paid to the government (in USD)				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Effective interest rate foreign debt (in USD)				9.7	8.3	7.6	7.3	7.1	7.0	6.9	
Interest paid on domestic debt				815.0	799.9	605.0	403.3	201.7	0.0	0.0	
Of which interest paid to the government				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Of which interest for debt guaranteed by the government				0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Effective interest rate domestic debt				10.4	10.3	10.3	10.3	10.3	10.3	10.3	
Total amortization		984.0	984.0	3810.0	3814.1	4220.6	4178.6	4213.7	0.0	0.0	0.0
Amortization of foreign debt (in LC)					1912.1	2253.2	2211.2	2246.4	0.0	0.0	0.0
Amortization of debt to the government (in LC)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization of foreign debt (in USD)					132.3	136.9	136.9	136.9	0.0	0.0	0.0
Amortization of debt to the government (in USD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization of domestic debt					1902.0	1967.3	1967.3	1967.3	0.0	0.0	0.0
Amortization of debt to the government					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amortization of debt guaranteed by the government					0.0	0.0	0.0	0.0	0.0	0.0	0.0
New borrowing					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which in foreign currency (in LC)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which debt owned to the government (in LC)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which in foreign currency (in USD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which debt owned by the government (in USD)					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which in domestic currency					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which debt owned by the government					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Of which debt guaranteed by the government					0.0	0.0	0.0	0.0	0.0	0.0	0.0
Debt stock in percent of GDP		0.2	0.3	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0

44. Debt stocks in domestic and foreign currency (Debt, rows 8 and 10) are obtained over the projection period as the stock of the previous year, minus amortizations plus new borrowings. The stock of debt in foreign currency is also expressed in local currency (row 6) to facilitate aggregation, by applying the end-of period exchange rate (Assumptions, row 16). Projections of government's loans (either in domestic or foreign currency, rows 11 and 9) and debt guaranteed by the government (row 12) are constructed in the same way.

45. Before the first year of projections (P), the breakdown of the stock of debt by currency of denomination is made by applying the ratio of debt denominated in domestic currency to the total debt stock (Assumptions, row 59). This coefficient is applied by default not only to year P-1, but also to the previous years for which data are available. In case this ratio is known and different for the years previous to P-1, the user may change it manually in the rows 10 and 8 of Debt to get more accurate results. Note that this breakdown of debt is necessary at least until year P-2, since it constitutes the basis for the calculation of effective interest rates in year P-1.

46. The stock of government's loans to the company and debt guaranteed by the government before year P are determined by their own coefficients (Assumptions, rows 61, 63 and 64), applied to debt denominated in domestic and foreign currency.

47. The amortization of debt outstanding before the first year of projections is calculated following two rules:

- **During the first year of projections**, total amortization is based on current loans and borrowings of year P-1 (BSS, cell F31). In particular, the amortization of debt in denominated in domestic currency is obtained by applying the share of this type of debt in total debt in P-1 (Assumptions, row 59) to current loans and borrowings in P-1. Then, the residual amount of current liabilities in P-1 is assumed to represent amortizations of debt in denominated in foreign currency in P. This second type of amortizations is first expressed in US\$ by converting its amount in local currency at the end-of-the period exchange rate in P-1, and subsequently converted into local currency at the average-of-period exchange rate in year P. Consequently, only when a different exchange rate holds in years P-1 and P, can total amortizations expressed in local currency differ from current loans and borrowings in P-1.

- **After the first year of projections**, a constant amortization profile is applied to the remaining stock at the end of this year. No grace period is applied to existing debt, but if a grace period exists for some types of existing debt this can be proxied by entering a longer amortization period in Assumptions.

48. The amortization of debt borrowed during or after the first year of projections follows a constant profile, i.e. the outstanding stock at the end of the grace period is repaid in equal installments over the amortization period. This type of profile is quite typical of loans, but bonds can also be replicated by setting in Assumptions the number of maturity years equal to 1, and a grace period equal to the number of years until the only payment takes place.

Table 16. Amortization table for debt denominated in domestic currency

Amortization of debt								
Long-term debt	Year	Maturity	2020	2021	2022	2023	2024	2025
Denominated in local currency	2020	4	1967.3	1967.3	1967.3	0.0	0.0	0
	2021	5	0.0	0.0	0.0	0.0	0.0	0
	2022	5		0.0	0.0	0.0	0.0	0
	2023	5			0.0	0.0	0.0	0
	2024	5				0.0	0.0	0
	2025	5					0.0	0

49. Amortizations of existing and new debt are summarized in rows 51 and below of Debt, with possibly different profiles for debt denominated in domestic and foreign currency.

Table 16 shows an illustration for debt denominated in local currency, and P=2019. The table is structured as follows:

- Rows are numbered from P+1 (in this case 2020) to the last year of projections plus one (2025). The first row captures the amortization of outstanding debt at the end of P-1 (i.e. 2018), and the next ones new debt borrowed in subsequent years (second row for P=2019, third for P+1=2020, etc.). The labels attached to each row (first column) denote the first year in which the constant amortization schedule can start. For instance, for existing debt this schedule will start in P+1, since in P the amortization is estimated on the basis of P-1 current loans and borrowings. For new debt borrowed in 2019, the constant amortization cannot start before 2021, since the minimum grace period is one year, and so forth.
- In the second column, the table displays the years to maturity of each type of debt, drawn from Assumptions, rows 53 to 56. For existing debt, this value has been set to 4, indicating that this stock will be entirely repaid by 2022=2018+4, given that grace period is zero. In the specific case of this company, new borrowings are zero from P onwards, but if they were positive, they would be fully repaid in the fifth year (maturity=5) after the end of the grace period (e.g. new debt borrowed in 2019, for a grace period of one year, would be fully repaid in 2025).
- The third and successive columns contain the amortizations of each type of debt by year, under the assumption of a constant schedule. Note that amortizations must also be computed for the first year after the end of the projection horizon; otherwise it would be impossible to determine current loans and borrowings in the BSS for the last year of projections. The first year of projections is not included in this table, since amortizations are computed differently in this period as explained before.

Note 26. (Basic) Sometimes the weighting method proposed in section IV for entering the maturity of existing debt may not be accurate enough. This may happen, for instance, in those SOEs with several types of debt subject to very different amortization schedules, or one single loan which does not follow a constant amortization profile. If the user understands that an

average of these maturities can distort the cash flow analysis, it is recommended to replace the formulas in Debt, H53-M53 and H60-M60 by the actual values of maturing debt denominated in local currency and FX, respectively.

50. Total amortization projections, which rely on the table of amortizations shown above, can be found in row 25, and their breakdown between debt denominated in local and foreign currency are displayed in rows 30 and 28 respectively. Row 26 shows amortizations of FX-denominated debt, expressed in local currency, the conversion being done at the current average-of-period exchange rate (Assumptions, row 15). These projections are generated in the following way:

- **For the first year of projections P**, only existing debt is amortized. This means that the procedure described in the first bullet of paragraph 45 applies.
- **From P+1 onwards**, amortizations are drawn from Table 16 and the twin-table for FX-denominated debt. Total amortizations of each type of debt will be the sum of the third column of the table for year P+1, the fourth column for year P+2, and so forth. This procedure ensures that amortizations of both existing debt in P-1 and new debt are computed.

51. Amortization of government's loans and debt guaranteed by the government (Debt, rows 29, 31 and 32) follows a very similar pattern, with a few specificities:

- **In the first year of projections P**, amortizations of these types of debt are calculated by applying coefficients to total amortizations of debt in local and foreign currency. These coefficients are equal to the shares of these types of debt in P-1 debt (Assumptions, rows 61, 63 and 64).
- **From P+1 onwards**, the amortization of these types of debt is the sum of two elements: i) their share in P-1 debt, multiplied by the amortizations of this debt as computed by the first row of Table 16 (and the equivalent table for FX-denominated debt); ii) their share in new borrowing (Assumptions, rows 62, 65 and 66) multiplied by total amortizations of new debt as computed by Table 16 and its equivalent table for FX-denominated debt (i.e. for each year the sum of all rows of these tables, but the first one).

52. New borrowings (Debt, row 34) are determined consistently with the financing policy of the company, derived in CFS, row 40. In a second step, total borrowings are split between those denominated in domestic currency (as per the coefficient in Assumptions, row 59) and foreign currency (1 minus the same coefficient). New borrowings in each type of currency can be found in rows 39 and 37. It is noteworthy that new borrowings are calculated in terms of domestic currency, including those denominated in foreign currency (Debt, row 35); subsequently, these are converted to foreign currency by applying the current average-of-period exchange rate (Assumptions, row 15).

53. New borrowings guaranteed by the government are obtained by applying the coefficient in Assumptions, row 62 to total new borrowing in domestic currency. Likewise, new

borrowings from the government are obtained by applying the coefficients in Assumptions, rows 65 and 66 to total new borrowing in domestic and foreign currency, respectively.

54. Interest payments, expressed in local currency (row 14), are calculated separately for debt denominated in local (row 20) and foreign currency (row 15). Interest payments in period T are determined as the product of the effective interest rate in T by the stock of debt at the end of the T-1. The effective interest rate in T is obtained by means of the following formula:

$$ERI_t = \alpha MIR_t + (1 - \alpha) ERI_{t-1} \quad (2)$$

That is, the effective interest rate in each period is a linear combination of the market interest rate at which the company can borrow in that period (Assumptions, row 23 for debt in domestic currency, and row 24 for debt in foreign currency) and the effective interest rate of the last period. The parameter α measures the degree of variability of interest rates and is also entered in Assumptions (rows 67 and 68). Being P the first year of projections, the effective interest rate in P-1 is defined the ratio of interest payments in P-1 to the outstanding debt at the end of P-2. Thus, when debt is issued at fixed interest rates this means that the effective interest rate in P-1 will be applicable during the whole projection horizon. The effective interest rates obtained in this fashion can be found in rows 23, for debt in domestic currency, and row 19, for debt in foreign currency, and are applied to get interest payments in their respective currencies every period. The conversion of interest payments in foreign currency to local currency is made at the current average-of-period exchange rates (Assumptions, row 15).

55. Government's loans to the company and debt guaranteed by the government are assumed to bear the same interest rate as debt in domestic and foreign currency. The interest payments on these types of debt, calculated by the same procedure described in the paragraph above, can be found in rows 16, 18, 21 and 22 as memorandum items.

VII. FINANCIAL STATEMENTS

VII.1. INTRODUCTION

56. The tool projections, summarized in the financial statements, aim to represent the stylized commercial and financial behavior of SOEs:

- **In commercial terms**, each SOE is assumed to sell one type of non-financial good or service in the countries where they are based and/or the rest of the world. To produce their output, SOEs purchase labor services and other inputs also in domestic and foreign markets. Prices can be freely determined by the company or regulated. Domestic revenues and costs are affected by local conditions (e.g., the local level of economic activity and inflation), while foreign revenues and costs are impacted by analogous variables at a global-wide level, as well as by exchange rates.

- **SOES' financing needs are primarily met through four channels:** i) divestment of financial and non-financial assets; ii) depletion of cash balances; iii) borrowing; iv) government's subsidies and capital injections. Borrowing is materialized in loans (eventually government's loans as well) or debt securities and can be denominated in local or foreign currency. Government's financial support is assumed to be subsidiary to other financing sources, even if sometimes the former can be quantitatively significant. The tool is not designed to model the behavior of government agencies, where commercial activities play a residual role, and usually classified within the general government in GFSM 2014.

57. Projections are not based on econometric estimates, but on a combination of accounting relations and basic economic modelling. Accounting relations are identities, and are used for i) combining flow items to get the main aggregates of the company (i.e. profit after taxes, changes in cash flows and net contributions to the budget); ii) linking stocks and flows to quantify changes in the former (as the value of last year's stocks plus net purchases of assets or incurrence of liabilities); iii) combining stocks of assets and liabilities to obtain the net financial worth of the company and its contribution to the public sector balance sheet. Economic equations quantify future revenues and expenses of the company (or in other words, its income), by using parameters that summarize its operating and financial structure and the set of parameters entered in Assumptions. The projections of income and its components are critical, as they are the main drivers of the changes in current assets (such as cash and cash equivalent, or receivables) and liabilities (such as payables and, indirectly, long-term debt).

58. The economic equations that project revenue and expenses have the following structure:

$$I_t^i = f(\alpha MEF_t^i, \beta MSF_t^i, FV_t^i, \gamma_t^i, I_{t-1}^i); i = R, E \quad (3)$$

Where I stands for the level revenues and expenses, MEF for the growth rate of their macroeconomic fundamentals (i.e. GDP growth, inflation and exchange rates), MSF for the growth rate of market fundamentals (product-specific developments, commodity price changes), and FV represents combinations of macroeconomic variables (interest and exchange rates) and company-specific financial variables (asset holdings and liabilities). While MEF and MSF are essential to calculate the operating income of the SOE, FV is used to compute its capital income. α and β are combinations of elasticities and structural parameters reflecting the operating structure of the company, and measure the contribution of macroeconomic and market-specific variables to revenue and expenses growth. *For instance, in the case of domestic GDP growth, a variable included in MEF , the coefficient α is equal to the product of the elasticity of sales to domestic GDP, by the share of local sales to total sales.* γ is an array of shocks that defines the stress scenario. F is a set of accounting aggregation rules of these projections. The lagged values of revenues and expenses in the formula denote that for most of these variables equations forecast their growth rates, and these rates are applied to the values observed prior to the start of projections. If the last observation of some variable is considered an outlier –(e.g. if it captures one-off transactions or

accounting adjustments), it is recommended to use an average of past observations or another observation prior to last year's.

59. Projections of financial variables. The tool also projects financial stocks, such as the outstanding debt, cash balances, receivables and payables. Given its fiscal relevance, some sub-components of the stock of debt are also projected as memorandum items, such as government's loans and debt guaranteed by the government. Changes in stocks follow accounting laws of motion, by which their values in each period are equal to their value in the last period, plus investments/borrowing undertaken in the current period, less disposals/amortizations. Net changes in assets and liabilities are fully consistent with flow projections. In some cases, this consistency is achieved by means of basic accounting relations; in other cases, linkages are based on basic economic models (e.g. receivables and payables are derived as constant shares of sales and operating expenses).

VII.2. INCOME STATEMENT

Table 17. Structure of the Income Statement

SOE's Income Statement Projections

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Operating revenues (a.1+a.2+a.3)	0.0	30492.0	30716.0	30986.0	32167.4	32588.5	33516.2	34542.8	35575.9	36619.1
a.1 Net Sales (net of taxes)	0.0	29160.0	29273.0	29517.0	30637.7	31008.8	31869.0	32822.0	33777.7	34740.0
o/w Gross sales	0.0	33136.4	33264.8	33542.0	34698.1	34939.4	35892.0	36912.3	37922.0	38935.4
o/w Sales taxes	0.0	3976.4	3991.8	4025.0	4060.5	3930.6	4023.0	4090.3	4144.3	4195.4
a.2 Other operating revenues	0.0	1332.0	1443.0	1469.0	1529.7	1579.7	1647.2	1720.8	1798.2	1879.1
a.3 Subsidies from government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
B. Operating expenses (b.1+b.2+b.3+b.4+b.5+b.6)	0.0	33407.0	30194.0	40048.0	41765.6	41018.3	45755.5	46797.0	48311.0	50101.2
b.1 Personnel (wages, salaries, benefits)	0.0	5698.0	5831.0	6131.0	6384.2	6592.8	6874.7	7181.8	7504.9	7842.7
b.2 Costs of sales of goods & services	0.0	22559.0	19984.0	22874.0	23901.8	22872.2	27049.6	27422.8	28193.7	29177.7
b.3 Depreciation & amortization	0.0	825.0	732.0	1033.0	1056.1	789.2	607.0	466.8	359.0	276.1
b.4 Other operating expenses	0.0	4325.0	3647.0	10010.0	10423.5	10764.1	11224.3	11725.6	12253.3	12804.7
b.5 Royalties	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
b.6 Fees	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
C. Operating loss/income (A-B)	0.0	-2915.0	522.0	-9062.0	-9598.2	-8429.9	-12239.3	-12254.2	-12735.1	-13482.1
D. Non-operating revenues (d.1+d.2+d.3+d.4)	0.0	240.0	240.0	240.0	14728.7	14383.1	17287.2	15587.6	13776.5	14598.3
d.1 Capital transfers and others	0.0	0.0	0.0	0.0	14455.8	14126.0	17027.6	15302.6	13531.7	14342.4
d.2 Interest received	0.0	26.0	26.0	40.0	64.6	42.0	35.4	50.7	0.0	0.0
d.3 Dividends received	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
d.4 Other non-operating revenues	0.0	214.0	214.0	200.0	208.3	215.1	224.3	234.3	244.8	255.8
E. Non-operating expenses (e.1+e.2)	0.0	3455.0	2140.0	2830.0	2906.0	2209.2	2069.5	1766.3	1468.9	1535.0
e.1 Interest payments	0.0	634.0	1030.0	1630.0	1451.4	1118.8	724.0	360.6	0.0	0.0
e.2 Other non-operating expenses	0.0	2821.0	1110.0	1200.0	1454.6	1090.4	1345.6	1405.7	1468.9	1535.0
F. Non-operating loss/income (D-E)	0.0	-3215.0	-1900.0	-2590.0	11822.7	12173.8	15217.6	13821.3	12307.6	13063.2
H. Profit/loss before tax (C+F)	0.0	-6130.0	-1378.0	-11652.0	2224.4	3744.0	2978.4	1567.1	-427.5	-418.9
I. Corporate income tax/benefit	0.0	12.0	100.0	219.0	0.0	0.0	0.0	0.0	0.0	0.0
J. Profit for the year after tax (H-I)	0.0	-6142.0	-1478.0	-11871.0	2224.4	3744.0	2978.4	1567.1	-427.5	-418.9
Memorandum item:										
Number of employees	-	10071.0	10071.0	10071.0	10071.0	10071.0	10071.0	10071.0	10071.0	10071.0
Other non-operating revenues linked to inflation	0.0	214.0	214.0	200.0	208.3	215.1	224.3	234.3	244.8	255.8
Other non-operating costs linked to inflation	0.0	2821.0	1110.0	1200.0	1249.6	1290.4	1345.6	1405.7	1468.9	1535.0
Realized capital gains	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Realized capital losses	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
Other operating costs linked to inflation	0.0	4325.0	3647.0	10010.0	10423.5	10764.1	11224.3	11725.6	12253.3	12804.7
Write-down of receivables	0.0	0.0	0.0	0.0	200.0	-200.0	0.0	0.0	0.0	0.0

VII.2.A. OPERATING BALANCE

60. Gross sales (row 9) are the core of operating revenues. The growth rate of gross sales is modelled by taking into consideration the growth of sales in volume and output prices. In particular, the growth rate of gross sales is equal to the sum of the growth rate of these variables, plus their interaction³. In turn, sales in volume and prices depend on a number of macroeconomic and market specific assumptions, as reflected in Table 18.

³ Usually the increase of a product of variables can be proxied by the sum of the increase of each of them with a very small margin of error. However, when the increases are large (as can happen in some scenarios), results can be significantly more accurate if interactions (i.e. the product of their increases) is also computed as a third addend.

Table 18. Determinants of gross sales growth

Gross sales change	Sales volume growth	Domestic GDP growth World GDP growth Market-specific growth
	Price change	Domestic inflation World inflation Commodity price changes Exchange rate movements

61. The sales volume growth is computed as a memorandum item in Assumptions row 90. It is calculated as a weighted average of domestic and foreign sales volume growth rates. The three components of this formula are obtained as follows:

- **Domestic sales volume growth rates (Assumptions, row 92).** They are modelled as the sensitivity of local sales to domestic real GDP growth (Assumptions, row 29) multiplied by domestic real GDP growth (Assumptions, row 7), plus the share of market specific growth (Assumptions, row 25) that is attributable to domestic sales. This share is given by the weight of domestic sales in volume in total sales in volume in the previous period.
- **Foreign sales volume growth rates** are obtained as the sensitivity of these sales to the world real GDP growth (Assumptions, row 30) multiplied by the world real GDP growth (Assumptions, row 17), plus the share of market specific growth attributable to foreign sales. This share is given by 1 minus the weight of foreign sales in volume in total sales in volume in the previous period.
- **The weights of these two rates of growth in period T** are the ratio of domestic sales in volume to total sales in volume in T-1, and 1 minus this ratio. They are applied to the growth rates of domestic and foreign sales respectively.
- **To calculate the ratio of domestic sales in volume to total sales in volume,** the tool normalizes to 100 total sales in volume in the year before the start of projections, and makes this index grows every year in line with total sales in volume (Assumptions, row 91). Analogously, the initial index for domestic sales in volume is calculated as 100 multiplied by the initial share of domestic sales in volume to total sales in volume (this coefficient being entered in Assumptions, row 39). Then, this index grows every year in line with domestic sales in volume (Assumptions, row 93). The quotient between the index in row 93 by row 91 yields the weight of domestic sales in volume in total sales in volume over the projection horizon.

62. The domestic and foreign price growth rates are computed as memorandum items in Assumptions, rows 94 and 95:

- **The formula of domestic price growth** reflects 3 possible situations: i) the SOE is not a commodity producer (i.e. the dummy variables that capture the production of commodities in Assumptions, row 34 and 35 equal zero); ii) the SOE is an oil/gas producer (i.e. dummy of oil equals 1, and the dummy of other commodities equals 0); iii) the SOE produces a commodity other than oil or gas (i.e. dummy of oil equals zero, and the dummy for of other commodities equals 1). In the first case, prices are given by the sensitivity of prices to domestic inflation (Assumptions, row 36) multiplied by domestic inflation (Assumptions, row 10). In the second and third cases, the domestic prices of the commodities are assumed to be equal to the international ones (oil in Assumptions, row 14, other commodities in Assumptions, row 26) multiplied by the exchange rate of the period (Assumptions, row 15).
- **The formula of foreign price growth (in foreign currency)** also yields different outcomes in each one of the above mentioned situations. When the SOE is not a commodity producer, foreign prices are determined as their sensitivity to world inflation (Assumptions, row 37) multiplied by world inflation (Assumptions, row 19). When the SOE is a commodity producer, it is assumed to be a price taker of the international prices of those commodities.

63. For the purpose of gross sales computation, domestic and foreign price growth rates in period T are weighted by the ratio of domestic sales in volume to total sales in volume in T-1, and 1 minus the same ratio, respectively. Besides, foreign prices are converted in domestic currency by applying the average-of-period exchange rate.

Note 27. (Basic) To derive gross sales projections in year T, their growth rate -computed as explained in the previous paragraphs- is applied to gross sales in year T-1. Being P the first year of projections, this means that the base value for calculations from P+1 onwards is another projection, but in P it will be an observed value. If, for some reason, gross sales in year P-1 are considered an outlier, another observation considered more representative can be taken in the formula of cell G9 of IS. Alternatively, if gross sales are highly volatile and it is difficult to identify a representative year, an average of the available observations prior to P can be considered.

This is an approach that can be extrapolated to any other variable of financial statements obtained in an analogous way.

64. Sales taxes paid (row 10) are obtained in two steps:

- First, by identifying the share of domestic sales in nominal terms to total sales in nominal terms. This is shown as a memorandum item in Assumptions, row 101. This share is obtained as the quotient of two indexes, for domestic and foreign sales in nominal terms (Assumptions, rows 99 and 100), that combine growth rates of sales in volume and prices in the respective markets. Note that

the share of sales in pre-projection years has to be entered by the user, in Assumptions cells E101, F101 and G101.

- Applying the sales tax rate (Assumptions, row 43) to the tax base, i.e. domestic sales in nominal terms. This is done by means of the following formula:

$$DS = \beta FS = \beta(GS - DS) \Rightarrow DS = \frac{\beta GS}{1 + \beta} \quad (4)$$

Where DS, FS and GS denote domestic sales, foreign sales and total gross sales in nominal terms, respectively, and β is the relative weight of domestic to foreign sales in nominal terms, as calculated by the row 101 of Assumptions.

65. Gross sales prior to the first year of projections are retropolated. This is done because quite often SOEs report net rather than gross sales in their financial statements, so that gross sales in the sample period have to be inferred. The retropolation is done by means of the following formula:

$$NS = GS - \mu DS = GS - \mu \frac{\beta GS}{1 + \beta} \Rightarrow GS = \frac{NS(1 + \beta)}{1 + \beta(1 - \mu)} \quad (5)$$

Where NS represent net sales, and μ the tax rate on domestic sales. When the shock on the sales tax rate is different from zero, gross sales before the first year of projections in the SS are calculated by using the same rate as in the baseline scenario.

66. Other operating revenues (row 11) include revenues from secondary activities of the SOE. These may or not be correlated with its primary activity. By default, the template assumes that they are unrelated, and links their growth rate to inflation (Assumptions, row 10). For the sake of simplicity, it is also assumed that sales taxes are only paid on the primary activities of the company.

Note 28. (Optional) In some sectors, revenues from secondary activities of an SOE can be highly correlated with its revenues from primary activities. This could be the case of a flower shop in a hospital. If the user finds that this correlation is relevant, he/she can add the growth rate of gross revenues to the rate of inflation, thereby augmenting their growth rate.

67. Government's subsidies (row 12) usually represent structural financial support to those companies as a compensation for non-commercial mandates or quasi-fiscal activities. Subsidies tend to be linked to operational variables, such as the output sold in some markets or the difference

between prices and average costs of production, but for simplicity they are assumed to be lump-sum and drawn from Assumptions, row 81.

68. Personnel expenses (row 15) cover wages, salaries and benefits. Their growth rate is modelled as the sum of the inflation rate (Assumptions, row 10), adjusted by their degree of indexation to inflation (Assumptions, row 33) plus the planned rate of expansion of staff (Assumptions, row 80).

Table 19. Determinants of changes in the cost of goods and services sold

Costs of goods and services sold change	Purchase of inputs (volume) growth	Volume of sales
	Input price change	Domestic inflation World inflation Oil price change Exchange rate movements

69. Cost of sales (row 16) reflects variable costs other than personnel. Their growth rate is the sum of: i) the growth rate of the volume of inputs purchased by the company; ii) the rate of the change of their composite price; iii) the interaction of i) and ii). Regarding the two first addends:

- **The growth rate of purchased inputs** is linked to the growth rate of total sales in volume (Assumptions, row 90) adjusted by the elasticity of the demand of inputs to the volume of production (Assumptions, row 32).
- **The rate of change of the composite input price** is made up by weighing the changes in the prices of local and imported inputs.
 - Prices of local inputs are linked to domestic inflation (Assumptions, row 10). It is assumed that there is a 1 to 1 pass-through of domestic inflation to local inputs prices.
 - The tool considers two different prices of imported inputs: oil and other imported inputs. Annual changes in the price of oil in foreign currency are drawn from Assumptions, row 14. Other imported inputs are linked to the world inflation, again assuming a 1 to 1 relation. Both rates of change are weighed by the share of oil in imported inputs -in volume-, a technical coefficient entered in Assumptions, row 39, and converted into local currency at current average-of-period exchange rates (Assumptions, row 15).
 - The weights of these two terms are given by the share of imported inputs in total inputs purchased -in volume-, which is drawn from Assumptions, row 38.

70. Depreciation and amortization (row 17) in period T is calculated as a constant fraction of the stock of fixed assets at the end of year T-1. This fraction is assumed equal to the oBAServed

ratio of depreciation expenses to the stock of capital in the last year before the first year of projections.

Note 29. (Optional) For the sake of simplicity, the tool assumes that amortization is circumscribed to fixed assets. However, some companies may also have some intangible assets, included in other non-current assets in the BSS, that generate amortization expenses as well. If this is the case and these expenses are relevant, being P the first year of projections, amortization expenses in P-1 can be apportioned between different types of assets, and the observed ratio for each of them over the projection horizon. Under this approach, the user should also adjust the value of all concerned assets in the BSS by their depreciation.

71. Other operating expenses (row 18) mainly includes overhead costs other than personnel. Their growth rate is assumed to be driven by domestic inflation (Assumptions, row 10).

Note 30. (Optional) Other operating expenses may also include other components with their own dynamics, e.g. availability payments in PPP contracts. These are performance payments to private constructors, which are not linked to the level of demand of the infrastructure or the production of the SOE. These type of payments usually follow their own schedule, which may be linked to inflationary expectations by the time the contract was signed but also to other variables. If these payments are found to be relevant, the user can adjust the formula in row 18 to include them. This can be done by splitting the formula into two components, which may be calculated separately as a memorandum item in IS: one indexed to inflation, and the second one the availability payment. Total expenses according to the modified formula would be the sum of these two elements.

72. Royalties (row 19) are only applicable to some commodity producers. The total amounts paid are estimated as the royalty rate (Assumptions, row 45) multiplied by the production value of the commodity net of production costs (i.e. IS row 8 less rows 15 and 16).

73. Fees (row 20) comprise other possible indirect taxes paid by companies, often linked to the volume of sales. They are obtained as the product of the average fee rate (Assumptions, row 46) by gross sales (row 9).

74. The operating profit (i.e. operating revenues less operating expenses) is displayed in the row 22.

VII.2.B. IS – NON OPERATING PROFIT

75. **Non-operating revenues (row 24)** include the following elements:

- **The share of capital injections considered capital transfers**, in row 25 (i.e. 1 minus the coefficient in Assumptions, row 49) multiplied by total capital injections (CFS, row 42). This approach is followed to achieve consistency with the registration of these operations on the government's side.
- **Interest on investment property held by the company (row 26)** as the sum of three elements:
 - Income from deposits in T, equal to the short-term domestic interest rate (Assumptions, row 22) multiplied by cash balances at the end of T-1 (BASS, row 10).
 - Income from investment property denominated in local currency in T, equal to the long-term domestic interest rate (Assumptions, row 23) multiplied by the share of these assets denominated in local currency at the end of T-1. This share can be found in Assumptions, row 41.
 - Income from investment property denominated in foreign currency in T, equal to the long-term interest rate in foreign currency (Assumptions, row 24) multiplied by the share of these assets denominated in foreign currency at the end of T-1 (i.e. 1 minus Assumptions, row 41). Since the interest rate is applicable to balance in US\$, the stock of these assets in local currency is first converted into US\$ at the end-of-period exchange rate in T-1, and their income reconverted into local currency at the average-of-period exchange rate in T.

Note 31. (Basic) If the SOE is paid interests and dividends at the same time, the stock of investment property which generates interest payments should be reduced by the fraction that generates dividends to avoid double accounting. *For instance, assume that investment property worth local currency 100 million includes 60 million in debt securities, and 40 million in other company's equity. In that case, the total asset base used in the formula of interest receipts should be reduced by 40 million. If the position in investment property changes over time, the initial fraction of this item representing participations in other companies could be utilized over the whole projection period.*

If data on the composition of investment property are lacking, and both interest and dividend receipts are positive before the start of projections, one possible approach can be to assume that the return on equity equals the risk-free return on the rest of the assets. This will allow to estimate the stock of participated equity before the start of projections. *For example, assume that dividends received in the last year of observations were 5, and the market interest rate was 10 percent. This means that, applying this method, participated equity should be 50 million.*

Note 32. (Optional) The interest rates on debt entered in Assumptions (rows 23 and 24) may include the market rate plus a risk spread applicable to the SOE. If this the case and the spread is significant, the user may want to detract this spread from the rates applied to the calculation of asset incomes. Otherwise, these incomes may be overstated.

- **Dividends received (row 27)** are driven by nominal GDP, proxied as the sum of the real GDP growth rate (Assumptions, row 7) and domestic inflation (Assumptions, row 10). If the sale prices of participated companies are not only influenced by average domestic prices, but also by export and import prices, the user may replace domestic inflation in the formula by the growth of the GDP deflator (Assumptions, row 12).
- **Other non-operating revenues (row 28)** is the sum of two elements:
 - Realized capital gains, displayed as a memorandum item in row 48 and imported from Assumptions.
 - Other operations, indexed to domestic inflation. To determine the share of other non-operating revenues unrelated to capital gains, the formula looks at the capital gains recorded before the first year of projection, and their ratio to observed other non-operating revenues. Then, the tool links the share of observed non-operating revenues which is not explained by capital gains to domestic inflation. When a breakdown of this item is not available, it is recommended to assume that all past non-operating revenues were generated by capital gains, and therefore abstain from indexing any fraction of them to inflation.

76. Non-operating expenses (row 31) comprises two elements:

Interest payments on debt (row 32), drawn from Debt, row 14.

- **Other non-operating expenses (row 33)**, which mirror the composition of other non-operating revenues and mainly include capital losses generated by asset disposals and asset write-downs or impairment. In this vein, other non-operating expenses are obtained as the sum of three elements: i) capital losses, displayed as memorandum item in row 49 and drawn from Assumptions; ii) write-down of receivables, another memorandum item in row 51; iii) a residual component linked to domestic inflation. The procedure to obtain the inflation-linked component is analogous to the one followed for other non-operating revenues.

Note 33. (Optional) Non-operating expenses may also capture the realization of some contingent liabilities. This may be the case of legal claims, or the crystallization of guarantees when they do not involve debt assumption. When these items are relevant, they can be easily

factored by adding another row as a memorandum item in IS, and linking the formula of non-operating expenses to this row as well.

77. Non-operating profit, as the difference between non-operating revenues and expenses, is displayed in row 35.

VII.2.C. IS – PRE-TAX AND AFTER-TAX PROFIT

78. Pre-tax profit (row 37) is the sum of operating and non-operating profits.

79. Corporate income taxes paid (row 39) results from the application of the CIT rate (Assumptions, row 50) to the CIT base, i.e. pre-tax profit excluding subsidies and capital transfers from the government. The latter assumption is made to maximize the impact of government's bail-outs in the company's liquidity, but it can be relaxed by widening the tax base in the formula of row 39. Lastly, it is assumed that CIT is only paid when its tax base is positive and no loss carry-forward is contemplated.

80. After-tax profit (row 41) is the difference between pre-tax profits and CIT paid.

VII.3. BALANCE SHEET STATEMENT

Table 20. Balance Sheet Statement

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
IFRS										
Assets										
A. Current assets (a.1+a.2+a.3+a.4)	7207.0	10276.0	9163.0	8846.5	8800.7	9678.5	7634.3	7841.4	8049.3	
a.1 Cash and cash equivalent	1295.0	2701.0	2872.0	1867.3	1572.0	2254.4	1.0	1.0	1.0	
a.2 Receivables	4998.0	6741.0	5349.0	6082.4	6326.1	6498.6	6683.3	6866.1	7049.6	
<i>Pro memoria: Stock of written-down receivables</i>	0.0	0.0	0.0	200.0	0.0	0.0	0.0	0.0	0.0	
a.3 Inventories	725.0	727.0	879.0	833.8	839.6	862.5	887.0	911.3	935.6	
a.4 Other current assets	189.0	107.0	63.0	63.0	63.0	63.0	63.0	63.0	63.0	
B. Non-current assets (b.1+b.2+b.3)	7459.0	6982.0	6753.0	5596.9	4807.8	4200.8	3734.0	3375.0	3098.8	
b.1 Property, plant and equipment	4587.0	4474.0	4574.0	3417.9	2628.8	2021.8	1555.0	1196.0	919.8	
b.2 Investment property	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
<i>Net acquisition of financial assets</i>				0.0	0.0	0.0	0.0	0.0	0.0	
<i>Pro-memoria: revaluation of existing assets</i>				0.0	0.0	0.0	0.0	0.0	0.0	
b.3 Other non-current assets	2872.0	2508.0	2179.0	2179.0	2179.0	2179.0	2179.0	2179.0	2179.0	
C. Total assets (A+B)	14666.0	17258.0	15916.0	14443.5	13608.4	13879.3	11368.3	11216.4	11148.1	
Liabilities										
D. Current liabilities (d.1+d.2+d.3)	9000.0	11000.0	13000.0	13249.6	13163.4	14588.4	10540.8	10811.6	11157.1	
d.1 Accounts payable	7148.0	6797.0	8285.0	8393.4	8031.9	9498.8	9629.8	9900.6	10246.1	
of which taxes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
d.2 Employee benefit liabilities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
d.3 Loans and borrowings	984.0	3810.0	3804.0	3945.1	4220.6	4178.6	0.0	0.0	0.0	
d.4 Other current liabilities	868.0	393.0	911.0	911.0	911.0	911.0	911.0	911.0	911.0	
E. Non-current liabilities (e.1+e.2+e.3)	16414.0	18622.0	20718.0	16808.1	13141.4	8925.0	8929.6	8934.4	8939.4	
e.1 Loans and borrowings	8984.0	11810.0	11804.0	7890.3	4220.6	0.0	0.0	0.0	0.0	
e.2 Employee benefit liabilities	121.0	128.0	91.0	94.8	97.9	102.0	106.6	111.4	116.4	
e.3 Other non-current liabilities	7309.0	6684.0	8823.0	8823.0	8823.0	8823.0	8823.0	8823.0	8823.0	
G. Total liabilities (D+E)	25414.0	29622.0	33718.0	30057.6	26304.8	23513.4	19470.4	19746.0	20096.5	
F. Stockholders' Equity (f.1+f.2+f.3)	-10748.0	-12364.0	-17802.0	-15614.2	-12696.4	-9634.1	-8102.1	-8529.6	-8948.4	
f.1 Share capital	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	
of which capital injections				0.0	0.0	0.0	0.0	0.0	0.0	
f.2 Accumulated other comprehensive income	0.0	0.0	0.0	-36.6	-862.8	-778.8	-814.0	-814.0	-814.0	
Asset revaluation				5.0	0.0	0.0	0.0	0.0	0.0	
Liability revaluation	0.0	0.0	0.0	-41.6	-826.2	83.9	-35.2	0.0	0.0	
f.3 Retained earnings from net income	-23640.0	-25256.0	-30694.0	-28469.6	-24725.6	-21747.2	-20180.1	-20607.6	-21026.4	
<i>Check</i>		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
H. Total equity & liabilities (F+G)	14666.0	17258.0	15916.0	14443.5	13608.4	13879.3	11368.3	11216.4	11148.1	

VII.3.A. BSS - ASSETS

81. Cash and cash equivalent (BSS, row 10) is drawn from CFS row 33, and reflects cash balances at the end of each period, after new borrowing and capital injections.

82. Receivables (row 11) are recalculated every period, as the previous year's stock is assumed to fully materialize in cash receipts in the absence of write-downs. New receivables are modeled as a constant share of the current's year gross sales (IS, row 9). This share is constructed as the average ratio of receivables to gross sales over the two-year period previous to the first year of projections. In the SS, this ratio is augmented by the liquidity shock (ST, row 9), which during adverse economic conditions can be expected to be higher than 1. This means that the stock of receivables will increase, thus lowering cash flows during the current period.

83. Sometimes the company may expect that a share of current receivables will not be paid the next period, specially under dire economic conditions. This is important from the perspective of government's decisions, since receivables are part of the quick ratio, and as such they determine the liquidity of the company together with cash balances. If doubtful receivables were not computed in the calculation of the quick ratio, the liquidity needs of the company could be understated. For that reason, the tool adopts a conservative approach, and assumes that when there is a significant probability that receivables will not generate cash flows during the next period, they are written-down.

84. The stock of written-down receivables is displayed in row 12 as a memorandum item. In the BAS, this stock is entered in Assumptions, row 79. In the SS, the template calculates this stock by applying the shock on the share of receivables to materialize (ST, cells P19-U19) to the level of receivables in the absence of write-downs. This is done by means of the formula below:

$$WDR_t = WDR_{t-1} + (1 - shockrec_t) * new\ rec_t \quad (6)$$

To illustrate these dynamics with a numerical example, let us assume that written-down receivables (WDR) in the last period were zero. The shock on the receivables to materialize (shockrec in the formula) is set in year t to 0.8, which means that 20 percent of those receivables generated in t (new rec in the formula) will probably not be paid in the next period. If these were equal to 100, written-down receivables at the end of t will be 20 (=0.2 x 100). Note that, if the shock on receivables to materialize is higher than 1, the stock of written-down receivables can decrease -i.e. some companies will unexpectedly pay the receivables that were written-down in previous periods-. The stock of written down receivables can never be negative, no matter how large the size of the shock is.

85. Whenever there is an increase in the stock of written-down receivables, the stock of receivables is adjusted downwards by the same amount. When the stock of written-down receivables decreases, there is no adjustment in the stock of receivables, denoting the fact that the unexpectedly recovered receivables translate into cash payments during the same period.

86. Inventories (row 12) are determined as a constant coefficient multiplied by gross sales (IS, row 9) in each period. This coefficient is equal to the average ratio of inventories to gross sales over the two-year period previous to the first year of projections.

87. Other current assets (row 14) comprise a number of items with an intermediate degree of liquidity, such as advances paid to employees and suppliers, property that is being readied for immediate sale, restricted cash or investments (i.e. not immediately available, for example for being used as a collateral in some transaction) or the cash surrender value of life insurance policies. This heterogeneous composition makes this asset complex to forecast, whereby it is kept constant over the projection horizon. If user expects relevant changes in this item, the existing formula can be replaced to reflect these increases/decreases in the stock. Alternatively, the user can also index this

item to domestic inflation, if it can only be expected to remain constant in real terms. These comments can also be applied to other items of the BSS which are assumed to remain constant.

88. Property, plan and equipment (row 16) is presented net of depreciation, and it cannot be negative. The value of the stock at the end of each period is given by the formula below:

$$K_t = (K_{t-1} - D_t) * (1 + rev_t) + purch_t - disp_t \quad (7)$$

That is, the stock of the asset at the end of the previous period (valued at last period's prices) net of depreciation, revalued at current period's prices, plus acquisitions of the asset (Assumptions, row 75) less disposals of the asset (Assumptions, row 76). By using this dynamic equation, it is ensured that both stock and flows are valued in homogenous terms (i.e. at current prices).

89. Investment property (row 17) follows similar dynamics to property, plant and equipment, the only difference being that the depreciation rate of this type of asset is zero. Net purchases of these assets and their annual revaluation can be found as memorandum items in rows 19 and 20 respectively). This treatment represents a necessary simplification of IFRS criteria, which establishes different revaluation rules depending on the type of asset and purpose of investment (holding to maturity, short-term sales, etc.).

90. Other non-current assets (row 20) can include items such as deferred income taxes, goodwill, trademarks, a bond sinking fund established for future repayment of debt or prepaid assets (i.e. income from assets that is not expected to be received within one year). This category of assets is kept constant over the projection horizon, analogously to other current assets.

VII.3.B. BSS - LIABILITIES

91. Accounts payable (row 27) is the sum of two elements:

- **Payables linked to the operations of the company (commercial payables)**, calculated as a constant share of the costs of goods and services sold in each period (IS, row 16). This constant coefficient is modelled as the average ratio of commercial payables to the costs of goods and services sold in the two years previous to the first year of projections. It is assumed that personnel expenses (IS, row 15), which are not included in the costs of goods and services sold, are fully disbursed in each accounting period and do not give rise to payable accounts. This notwithstanding the fact that employee benefits, included in personnel expenses, may give rise to specific current liabilities.
- **Payable taxes**. These are modelled as a constant coefficient (Assumptions, row 40) multiplied by total taxes accrued in each period (RG, row 6).

92. Employee benefits current liabilities (row 29) represents the fraction of these type of liabilities which is payable the next year, and it grows at the same rate as personnel expenses.

93. Current loans and borrowings (row 31) aggregates those debt items that are payable in the next year. Whatever their type is, they are drawn from Debt (domestic, row 29, and in foreign currency, row 28, which reflects next period's debt amortizations). Amortization of FX-denominated debt is valued at current end-of-period exchange rates, as next period's exchange rates cannot be perfectly foreseen. Exchange rate surprises are captured by the CFS, though.

94. Other current liabilities (row 32) is an aggregation of items which are not included in other categories of current liabilities. Their content can vary considerably across sectors, but they can typically comprise consumer deposits, interest and dividends payable or accrued and non-disbursed payroll expenses. Like similarly heterogeneous categories on the asset side, they are kept constant over the projection horizon.

95. Long-term loans and borrowings (row 35) are drawn from the outstanding debt stock at the end of each period (Debt, row 5), less the fraction of that stock that will be amortized next period and is registered in current loans and borrowings. This stock comprises debt denominated in all currencies, and such is affected end-of-period exchange rate movements. Otherwise, the template does not factor other valuation effects on the stock of debt.

96. Employee benefit non-current liabilities (row 36) grows at the same rate as personnel expenses. This modelling approach implies a considerable simplification, for this liability depends on a wider set of variables (e.g. average years of employees in the company, indexation of benefit schemes to inflation and possibly other variables, etc.) but this seems an acceptable assumption to make calculations more manageable and limit the proliferation of parametric assumptions.

97. Other non-current liabilities (row 36) can include deferred tax liabilities, long-term lease obligations, deferred compensation, warranties covering more than one-year period or certain health care liabilities. They are assumed constant over the projection horizon.

VII.3.C. BSS - EQUITY

98. Share capital (row 42) can change only as a result of capital injections provided by the government. Irrespective of whether the government owns the whole capital, it is assumed that shares are not trade and therefore they are nor subject to valuation effects. Therefore, the value of the share capital in each period is equal to last period's value plus the capital injections effected during the current period (row 43).

Note 34. (Basic) As explained in section IV, the user can assess whether capital injections should be considered a pure transfer of the acquisition of a financial asset from the perspective of the government's accounts. For consistency with this approach, only the fraction of those injections that is classified as financial asset for the government is also considered an increase in share

capital on the BASS. The fraction of capital injections classified as transfers will also increase equity, but via an improvement in the company's profit and retained earnings.

99. Accumulated other comprehensive income (row 44) is a stock variable, determined as the sum of the previous year's stock plus the revaluation of assets (row 45) and liabilities (row 46) in the present period. Both revaluations, as detailed in section VII.3, reflect only unrealized capital gains and losses of some types of assets and liabilities. The template does not impose any restriction on the sign of accumulated other comprehensive income.

Note 35. (Optional) In purity, international accounting standards preclude revaluation reserves from being negative. When a company incurs an unrealized capital loss bigger than the size of accumulated unrealized gains, the difference is registered as an expense on the IS. However, adopting this approach in the tool would require the introduction of additional parameters relative to past unrealized capital gains and losses, which are unknown to many SOEs. In view of this, the sign of revaluations reserves is not constrained for the sake of practicality.

This assumption can be expected to have only marginal effects (if any) on the net inflows into the budget. The deductibility of unrealized capital losses is very limited or non-existing in most jurisdictions, and equity will be equally lower whatever the approach followed.

100. Asset revaluation is determined as the sum of the revaluations experienced by fixed assets and investment property, less realized capital gains/losses resulting from the disposal of these assets. The realization of previously unrealized capital gains (losses) will decrease (increase) accumulated other comprehensive income.

101. Liability revaluation only reflects the impact of exchange rate movements on FX-denominated debt, since the price of traded debt is assumed to remain constant. These effects can be related to changes in end-of-period exchange rates, which affect the value of the stock of outstanding debt in local currency at the end of each period, or period-average exchange rates, since they can cause surprises in the value of amortizations of FX-denominated debt. The size of valuation effects on liabilities is proxied by the following formula:

$$LR_t \approx B_t - A_t - (D_t - D_{t-1}) \quad (8)$$

Where LR stands for liability revaluation, B for new borrowing, A for amortizations, and D for the stock of outstanding debt, all the variables being expressed in local currency. While the value of this difference will be zero for debt denominated in local currency, this is not necessarily true for FX-denominated debt. When the sign of the difference is positive, a devaluation (revaluation) of

liabilities occurs, and this increases (decreases) accumulated other comprehensive income and equity.

102. Retained earnings (row 47) are another stock, determined as the value of the stock at the end of the previous year plus (minus) new non-distributed earnings (losses). Earnings are obtained as after tax profits (IS, row 41) minus distributed dividends (RG, row 10). Earnings include those capital injections classified as transfers, for being part of non-operating revenues (IS, row 24).

103. The BSS also includes a consistency check line (row 48) to verify that assets are equal to liabilities plus equity.

VII.4. CASH-FLOW STATEMENT

Table 21: CFS structure

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Cash flow from operating activities (a.1+a.2-a.3+a.4+a.5+a.6)					-10363.3	-9127.1	-11482.1	-13036.9	-13536.5	-14347.4
a.1 Net income from operations					-10839.5	-9305.2	-13360.6	-13425.5	-13959.2	-14761.3
a.2 Depreciation & Amortization					1056.1	789.2	607.0	466.8	359.0	276.1
a.3 Change in account receivables					733.4	243.7	172.5	184.7	182.8	183.5
a.4 Change in inventories					45.2	-5.8	-22.9	-24.5	-24.3	-24.4
a.5 Change in account payables					108.4	-361.6	1466.9	131.0	270.7	345.5
a.6. Income taxes					0.0	0.0	0.0	0.0	0.0	0.0
B. Cash flow from investing activities (b.1+b.2+b.3)					100.0	0.0	0.0	0.0	0.0	0.0
b.1 Acquisition of property, plant and equipment					0.0	0.0	0.0	0.0	0.0	0.0
b.2 Proceeds from the sale of property, plant and equipment					100.0	0.0	0.0	0.0	0.0	0.0
b.3 Purchase and sale of other assets					0.0	0.0	0.0	0.0	0.0	0.0
C. Cash flow from financing activities (c.1+c.2+c.3)					-5197.2	-5294.3	-4863.0	-4519.1	4.8	5.0
c.1 Net repayment of debt					-3810.4	-4217.5	-4174.4	-4209.2	4.8	5.0
of which new borrowing					0.0	0.0	0.0	0.0	0.0	0.0
c.2 Net dividends payments					0.0	0.0	0.0	0.0	0.0	0.0
c.3 Net interest payments					-1386.8	-1076.8	-688.6	-309.9	0.0	0.0
D. Increase/Decrease in cash (A+B+C)					-15460.5	-14421.3	-16345.1	-17556.0	-13531.7	-14342.4
E. Cash at beginning of the year					2872.0	1867.3	1572.0	2254.4	1.0	1.0
F. Total capital injections					14455.8	14126.0	17027.6	15302.6	13531.7	14342.4
G. Cash at the end of the year (D+E+F)					2872.0	1867.3	1572.0	2254.4	1.0	1.0

104. The ultimate objective of the CFS is to calculate the cash balances of the company at the end of each accounting period, and to identify the contribution of government's capital injections to the changes in those balances. To that end, final cash balances (row 32) are generated as the sum of balances at the beginning of the year (row 29), cash flows generated over the year excluding capital injections (row 27), and capital injections (row 31).

105. Unlike the IS and BASS, the CFS is not generated from observed cash-flows prior to the start of projections. Actually CFS projections are made by combining IS and BSS projections, to ensure their mutual consistency, and no specific Input Sheet for cash flow data is necessary. Still, comparing baseline cash flow projections with observed values can be useful to analyze whether past trends persist over the projection period, and understand if the SOE's fundamentals can justify possible breaks in those trends. If unexplained breaks with previous trends are detected, this may mean that some assumptions should be revised.

106. The cash flow generated over the year are the sum of three components: cash flows from operating activities (row 7), cash flows from investing activities (row 15) and cash flows from financing activities (row 20).

107. The cash flow from operating activities (row 7) is calculated by adjusting the pre-tax profit as obtained in the IS by: interest and dividends received (IS, rows 26 and 27 respectively), with a negative sign; interest paid (IS, row 32), with a positive sign; realized capital gains and losses (IS, row 48 and 49), with negative and positive sign respectively; depreciation and amortization, with a positive sign (row 9), changes in receivables, with a negative sign (row 10), changes in inventories, with a negative sign (row 11), changes in payables, with a positive sign (row 12) and paid income taxes, with a negative sign (row 13). The changes in the stock of all these assets and liabilities are drawn from the BSS, while the paid income taxes are imported from IS.

108. Cash flows from investing activities comprise three elements: i) acquisition of property, plant and equipment (row 16), as given by Assumptions, row 75; ii) proceeds from the sale of fixed assets (row 17), given by Assumptions, row 76; iii) purchase and sale of other assets (row 18), namely other current assets, investment property and other non-current assets in the BSS. Capital gains or losses resulting from the disposal of assets are embedded in the receipts from their disposal, and as such they also generate cash-flows.

Note 36. (Optional) Acquisitions of assets are assumed to be fully disbursed in cash. If the user thinks in some circumstances they would be financed via credit, there are three possible situations:

- i) If the liquidity floor is not binding (i.e. if after the acquisition of the asset the quick ratio is still above its floor), no borrowing is necessary, although the user can increase manually the amount of borrowing in the year of the purchase. In this case final liquidity will be well above its minimum.
- ii) If the liquidity floor is binding, but not the leverage floor (i.e. if after the acquisition of the asset the debt-to-equity ratio is still below its ceiling), the tool assumes that the SOE will in any case borrow to reach the minimum liquidity. If new borrowing by formula is lower than the price of the asset, it can be augmented manually to reflect the full price of the asset, but in this case liquidity will again be above its floor.
- iii) If both the liquidity and the leverage cap are binding, then the latter should be raised to accommodate the new loan. However, the wisdom of purchasing an asset in these circumstances may be questionable.

Note 37. (Optional) Non-operating expenses can also include the writing-down of receivables. The effect of the latter on cash flows is neutral, since they will be registered with a negative sign as

a cash flow from operations, and the same time with positive sign as a cash flow from operating activities, as they imply a reduction in the stock of receivables.

109. Cash flows from financing activities include: i) net repayment of debt (row 21), as increases less repayments of liabilities; ii) net dividend payments (row 23), as dividends received less dividends paid; iii) net interest payments (row 24), as interest on assets received less interest on liabilities paid. Changes in the stocks of liabilities other than loans and borrowings are drawn from the BASS, and these not affected by any valuation effect. Loans and borrowings amortizations are taken Debt, row 25. These can be affected by exchange rate movements, to the extent that the SOE has FX-denominated debt. New borrowing is generated by the template (see section VIII), and drawn from row 41. Finally, dividend and interest payments and receipts are drawn from the IS.

Note 38. (Basic) The template nets out dividend and interest receipts and payments within cash flow from financing activities to achieve a more compact presentation and simplify the structure of the statement. In purity, IFRS presents dividend and interest receipts and payments separately, within investment and financing activities respectively.

Note 39. (Basic) The net effect on total cash flows of increases in some liabilities may be zero. *This can be the case of employee benefit liabilities, which represent an operating expense matched by an increase in the corresponding liability. Likewise, increases in provisions can be reflected as an increase in current liabilities, and matched by an additional operating expense.*

Note 40. (Optional) When the user introduces changes in those assets and liabilities which the tool considers constant by default, the associated cash flows should be considered carefully and sometimes adjusted manually. *For example, if the SOE decides to purchase assets and pre-pays them, in a first stage it should register an increase in other non-current assets matched by a decline in cash flows. In a second stage, when fixed asset is received, the increase in property, plant and equipment should be matched by a decline in other non-current assets instead of a cash outflow. Lack of automatism in the registration of changes in these types of assets advises to minimize their use unless they are critical for determining cash balances.*

110. Capital injections are generated endogenously by the template (row 42), and they are assumed to fully materialize in cash. Therefore, the CFS uses these endogenous values to determine cash balances at the end of each period. By construction, these balances must be equal to the balances targeted by the government for each period (row 36).

Note 41. (Basic) When capital injections are positive, additional cash outflows triggered by alternative assumptions will not produce any impact on the final cash balances held by the company at the end of the accounting period. *For example, if capital injections equal LC 1 billion, and the SOE increases its equipment purchases by LC 0.1 billion, this will raise capital injections up to LC 1.1 billion. In this situation the user should consider carefully though, whether the government would be willing to absorb this extra cost in its budget, since this operation would be equivalent to an increase in government's capital expenditure unless capital injections can be registered as purchases of financial assets.*

VIII. FINANCING DECISIONS AND GOVERNMENT BAIL-OUTS

VIII.1. INTRODUCTION

111. Capital injections to the SOEs in the tool mirror the realization of government's implicit contingent liabilities. Governments sometimes provide financial support to SOEs even when they are not legally obliged to do so. This may happen when SOEs have a strategic importance, their probability of default is high, and real or financial spillovers may result from such default. The probability of default is implicitly assessed high by the tool when the SOE experiences liquidity shortages, and its leverage (equity) is sufficiently high (low) to meet its financing needs by borrowing without seriously impairing its solvency. Consequently, the tool assumes that capital injections, always materialized in cash, take place whenever a liquidity floor and a leverage cap, both input as assumptions, are not met by the company. These thresholds are defined in terms of two financial ratios, the quick and the debt-to-equity ratio, which are calculated by the tool before and after capital injections every period.

112. The tool assumes a priority order in financing instruments that place capital injections as an eventual 'last-resort' solution. The tool only opens the door to capital injections from the government if financing through cash or debt is not viable or advisable. In this respect, the following criteria are assessed to determine the subsistence of a financing gap that may be met with capital injections: (i) whether financing needs can be fully met with cash, to the extent the company benefits from a sound liquidity position; (ii) if liquidity is insufficient compared to the size of financing needs, borrowing is considered to the extent the company is not overindebted; (iii) if either cash or debt financing are not possible or face limits, the government may consider bailing-out the SOE (i.e. providing capital injections in the context of the tool).

113. Liquidity and leverage triggers of capital injections are not bounded, allowing for a wide set of considerations in designing government's bail-outs. In practice, SOEs' difficulties to meet their financing needs do not automatically imply government's intervention. If bail-outs are not deemed probable in the near future, the user can set an arbitrarily low (high) liquidity floor (leverage cap), which will increase the share of borrowing in financing if self-financing is not possible. In fact, the tool can show the trade-off between fiscal deficit and contribution to public wealth that may

arise from the company's reliance on its own financing or on debt markets. This flexibility in the implementation of bail-outs also reflects the wide variety of possible intervention criteria in the reality.

VIII.2. FINANCING DECISIONS WITH CAPITAL INJECTIONS

114. Financing decisions are made through a sequential process involving the following steps: i) determination of the level of liquidity of the company at the end of each period, in the absence of new borrowing or capital injections from the government, and assessment of that liquidity level in view of prudential liquidity targets; ii) identification of the liquidity gap, as the difference between actual liquidity and the level of cash balances implied by the liquidity target; iii) quantification of the share of the liquidity gap that can be met through new borrowing, given a prudential leverage ceiling; iv) determination of the necessary capital injections, as a residual between the liquidity gap and acceptable new borrowing. All this information can be found as memorandum items in the CFS worksheet (see Table 22 below).

Note 42. (Basic) Borrowing and capital injections are not the only way the company may improve its liquidity conditions. The user may also want to analyze the effects of reductions in the net purchases of fixed or financial assets (i.e. postponements of the investment plans of the company), backloading its staff hiring plans (or staff downsizing), reducing the indexation of wages to inflation or lowering the elasticity of input requirements to sales (in another words, increasing the efficiency of production). When government's policies compound the financial imbalances of the company, it may also be worth studying the consequences of a lower dividend pay-out ratio, or increasing the sensitivity of prices to domestic inflation if the former are regulated.

Note 43. (Basic) The template rules out two forms of filling the liquidity gaps. The first of them is the accumulation of arrears and the second deposit overdrafts. The reason is that they are only ways to shift the company's problems to other economic agents, quite often in the public sector, and after some time the consequences may revert equally to the government. In fact, arrears do nothing but transferring liquidity shortages into other companies, and deposit overdrafts are often remunerated below market rates, thus deteriorating the profitability of banks. Moreover, deposit overdrafts may not even solve the problems of the company, as they imply higher short-term borrowing and equally put pressure on its liquidity needs.

Table 22: Financing decisions (memorandum item)

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Calculation of liquidity needs, borrowing and capital injections										
Equity before transfers										
Liquidity target	1867.3	1572.0	2254.4				1.0	1.0	1.0	
Final liquidity before transfers and new borrowing	-12588.5	-12554.0	-14773.1				-15301.6	-13530.7	-14341.4	
Liquidity gap	14455.8	14126.0	17027.6				15302.6	13531.7	14342.4	
New borrowing (unconstrained)	0.0	0.0	0.0				0.0	0.0	0.0	
New borrowing	0.0	0.0	0.0				0.0	0.0	0.0	
Debt/equity ratio before subsidies and after new borrowing	-1.0	-1.0	-0.9				-0.8	-0.9	-0.9	
Total capital injections	14455.8	14126.0	17027.6				15302.6	13531.7	14342.4	
Capital injections to compensate for accumulated losses										
Check liquidity	0.600	0.6000	0.600				0.634	0.635	0.6	
Debt/equity ratio after subsidies and after new borrowing	-1.9250	-2.072	-2.4				-2.4	-2.3	-2.2	
Debt service (principal + interests)	5265.6	5339.4	4902.6				4574.3	0.0	0.0	
Debt service/transfers	0.4	0.4	0.3				0.3	0.0	0.0	
Guaranteed or government-owned debt service	0.0	0.0	0.0				0.0	0.0	0.0	
Service of guaranteed debt and government loans financed by capital injections	0.0	0.0	0.0				0.0	0.0	0.0	

115. The targeted level of cash balances is computed in CFS, row 36 according to the following formula:

$$TC_t = \eta CL_t - rec_t - FA_t \quad (9)$$

Where TC denote the targeted cash balances, CL current liabilities, rec the stock of receivables (after write-downs) and FA liquid financial assets (it is assumed that all financial assets held by the company are liquid). Lastly, η is the targeted level of the quick ratio (Assumptions, row 48). Since bank overdrafts are ruled out, the formula imposes the restriction that targeted cash balances cannot be negative (and symbolically, at least equal to one 1 million, although this amount can be easily modified by the user).

Note 44. (Basic) The quick ratio includes in its numerator cash and equivalent assets plus receivables plus marketable securities. Given the simplified structure of the BSS, marketable securities are proxied by the stock of investment property, but in some cases this item may comprise non-liquid securities. When this is the case and if granular information is available in the financial statements, the user may wish to adjust the quick ratio by the share of investment property that meets its definition. Furthermore, in some companies other non-current liabilities (or a part of them) may have a liquidity comparable to cash, in which case they should also be incorporated in the quick ratio.

Note 45. (Basic) In view of equation (9), it is clear that unconstrained targeted cash balances may be negative in some cases. This is all the more likely: i) the lower the targeted quick ratio is; ii) the higher receivables and financial assets are; iii) the lower current liabilities are.

116. The liquidity gap (row 38) is obtained as the difference between actual liquidity before new borrowing and capital injections (row 37) and the targeted level of cash balances.

A positive sign denotes the existence of unmet liquidity needs given the macroeconomic and company-specific assumptions in that period, while a negative sign means that the company is accumulating cash above its target, and therefore no new borrowing or capital injections are necessary. The calculation of the liquidity before new borrowing and capital injections replicates the derivation of end-of-period cash balances, but leaving aside these two elements.

117. Unconstrained new borrowing (row 39) is calculated to attain a double objective: i) filling the liquidity gap; ii) ensuring that the debt-to-equity ratio will not exceed its cap at the end of the current period. To determine it, the following rule is applied:

$$\left\{ \begin{array}{l} \text{If } \frac{(D_0 + LG)}{E_0} \leq \lambda; B = LG \\ \text{If } \frac{(D_0 + LG)}{E_0} > \lambda; \left[\frac{(D_0 + B)}{E_0 + (LG - B)} \right] = \lambda \Rightarrow B = \frac{\lambda(E_0 + LG) - D_0}{(1 + \lambda)} \end{array} \right. \quad (10)$$

Where D_0 denotes liabilities at the end of the period before new borrowing, B is new borrowing (the endogenous variable), E_0 is equity at the end of period before capital injections (calculated in row 35), LG is the liquidity gap, to fill with a combination of capital injections and borrowing, and λ is the debt-to-equity cap entered in Assumptions, row 47). According to this rule, new borrowing may be equal to the liquidity gap if, after filling it, the debt-to-equity ratio is still lower or equal to its cap; otherwise new borrowing will fill only part of the liquidity gap. Two additional constraints are imposed: i) If the liquidity gap is negative, new borrowing will be zero; ii) If equity before capital injections is negative, new borrowing will also be zero, since it is understood that the company undergoes serious solvency problems that new borrowing could only compound.

118. Effective new borrowing (row 40) will be zero if unconstrained borrowing is negative or zero, and positive otherwise. Unconstrained borrowing could be negative if the initial debt-to-equity ratio is already above its cap. Effective new borrowing is the relevant variable regarding debt and cash flow projections.

Note 46. (Optional) Sometimes the crystallization of guarantees extended by the SOE (usually to some participated companies) may translate into debt assumptions. Debt assumption can be represented by adding this amount to the formula determining effective new borrowing in one particular year. Since this is an event that is not controllable by the SOE or the government, it may drive borrowing above the leverage cap in that particular year. However, in subsequent years the probability of receiving capital injections to meet liquidity needs will be higher.

119. Capital injections (row 42) comprise two elements:

- The main one, the residual between a positive liquidity gap and new borrowing. This is the element that ensures that the liquidity and solvency constraints are simultaneously met.

- Eventually, capital injections may be augmented to cover accumulated losses. This may happen in companies with a large negative equity associated with past financial imbalances, but currently sound liquidity conditions.

Total capital injections is the relevant variable regarding cash flow calculations, regardless of the share of these injections that is registered above of below the line from a government's perspective.

120. The tool provides two checks to verify the consistency between financing decisions and liquidity and solvency objectives:

- The first one concerns the quick ratio after new borrowing and capital injections (row 44). This must be equal or higher than the liquidity floor entered in Assumptions. The final quick ratio can be higher than the liquidity floor in two situations: i) the liquidity gap is negative; ii) the liquidity gap is positive, but the non-overdraft constraint becomes binding and the final level of cash balances is higher than the one implied by the targeted quick ratio.
- The second check refers to the debt-to-equity ratio after new borrowing and capital injections (row 45), which should not be higher than the cap imposed in Assumptions.

121. Financing calculations also provide useful information about the realization of guarantee and credit risks for the government. The tool does not model explicitly the crystallization of government's guarantees or defaults on government's loans. Nonetheless, the service of government's guaranteed debt and loans are part of the liquidity needs of the company (as identified in row 48), and as such capital injections, when conducted, can be understood as pre-emptively addressing defaults on these types of debt. This strategy can pay-off if, by following it, a deterioration in the market perception of government's or the whole public sector's financial health is avoided. Row 49 provides a sense of the share of total capital injections that would address these two imminent risks when a liquidity shortage arises.

VIII.3. FINANCING DECISIONS WITHOUT CAPITAL INJECTIONS (COUNTERFACTUAL SCENARIO)

122. The tool also provides two counterfactuals, one for the BAS and another one for the SS (rows 50 and below of CFS), in which the SOE fills its liquidity gap exclusively via borrowing, and the government abstains from bailing-out the company. This will imply that the leverage ceilings set in the scenarios with capital injections do not hold any more in the counterfactuals. Rather, new borrowing is assumed to be available in an amount such that fully fills the financing gap, and to be denominated in local currency, have a one-year grace period and the

same maturity as in the scenarios with capital injections⁴. The liquidity floor, measured by the minimum quick ratio, is the same as with capital injections. The structure of the counterfactual calculations can be seen in Table 23 below.

123. New borrowing in the counterfactual is calculated in row 52. New borrowing in period T will be equal to the liquidity gap in the scenario with capital injections in the same period, adjusted by the following factors:

- Plus additional interest payments in T stemming from higher debt, since they represent negative cash flows in T.
- Plus additional amortizations faced by the company in T as result of higher debt, for the same reason.
- Plus additional current liabilities in T (i.e. additional amortizations in T+1) adjusted by the targeted liquidity ratio. This is done so because current liabilities are the denominator of the quick ratio, and therefore the larger the expected amortizations, the more pressure on liquidity conditions.
- Minus additional cash held by the company in the counterfactual, as the former will reduce liquidity pressures. Note that the additional cash raised in each period is not the same as the additional cash held in the same period, as the additional cash raised in previous periods usually makes the latter higher.

Note 47. (Basic) It is important to distinguish the counterfactual from standard BSS or SS in which capital injections are possible, but take a value of zero. There are two main differences: (i) Where capital injections are not ruled out, they can turn positive with different assumptions; (ii) The characteristics of new borrowing are different in the counterfactual (one-year grace period, domestic debt), while they can be determined by the user in standard BSS and SS.

Note 48. (Optional) The user may wish to enrich the counterfactual by adding several features while keeping calculations as simple as possible. Jus to set out some possibilities, interest rates of new borrowing are assumed to be equal to the ones applied with capital injections, but in situations of severe financial distress the company's risk premia could be expected to rise. Additional cash inflows in the counterfactual are assumed to remain idle, but they could be more profitably invested in financial assets that are equally computed within the quick ratio. Higher interest payments would translate into lower income tax payments for the company, as long as they were positive with capital injections. All these developments would have an impact

⁴ If for some reason the company can be expected to face severe limitations to increase its borrowing, such as prohibitive interest rates, the counterfactual analysis will not be relevant.

on the liquidity position of the company, negative in the first example and positive in the other two.

Table 23. Financing in the counterfactual scenarios

		2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Calculation of additional borrowing and quick ratio in the counterfactual (without capital injections)												
New borrowing (counterfactual)						14455.8	17436.7	25421.3	30377.6	36678.0	46904.8	
Incremental cash (counterfactual)						0.0	3310.7	8393.8	15075.1	23146.3	32562.4	
Outstanding new borrowing issued in (counterfactual)		2019				14455.8	14455.8	11564.6	8673.5	5782.3	2891.2	0.0
Outstanding new borrowing issued in (counterfactual)		2020					17436.7		13949.3	10462.0	6974.7	3487.3
Outstanding new borrowing issued in (counterfactual)		2021						25421.3	25421.3	20337.1	15252.8	10168.5
Outstanding new borrowing issued in (counterfactual)		2022							30377.6	30377.6	24302.1	18226.6
Outstanding new borrowing issued in (counterfactual)		2023								36678.0	36678.0	29342.4
Outstanding new borrowing issued in (counterfactual)		2024									46904.8	46904.8
Total outstanding new borrowing (counterfactual)						14455.8	31892.5	54422.6	78421.8	103637.0	133003.5	
Current long-term liabilities (out of new borrowing, counterfactual)						0.0	2891.2	6378.5	11462.8	17538.3	24873.9	
Non-current long-term liabilities (out of new borrowing, counterfactual)						14455.8	29001.3	48044.1	66959.0	86098.7	108129.7	
Remaining additional cash (counterfactual)						0.0	1734.7	3827.1	6877.7	10523.0	14924.3	
Current long-term liabilities (out of pre-existing debt)						3945.1	4220.6	4178.6	0.0	0.0	0.0	
Total pre-existing debt (before the first year of projections)						11835.4	8441.1	4178.6	0.0	0.0	0.0	0.0
Total pre-existing domestic debt (in the absence of new borrowing)						5902.0	3934.7	1967.3	0.0	0.0	0.0	0.0
Total pre-existing foreign debt (in the absence of new borrowing)						5933.4	4506.4	2211.2	0.0	0.0	0.0	0.0
Total debt (with capital injections)						11835.4	8441.1	4178.6	0.0	0.0	0.0	0.0
Total debt (counterfactual)						26291.2	40333.6	58601.2	78421.8	103637.0	133003.5	
Non-current liabilities (out of pre-existing debt)						7890.3	4220.6	0.0	0.0	0.0	0.0	
Quick ratio counterfactual (check)						0.60	0.60	0.60	0.6	0.6	0.6	
Current long-term liabilities from new borrowing (counterfactual)							2891.2	6378.5	11462.8	17538.3	24873.9	
Amortization new borrowing with transfers						0.0	0.0	0.0	0.0	0.0	0.0	
Current long-term liabilities from new borrowing with transfers						0.0	0.0	0.0	0.0	0.0	0.0	
Incremental interest payments						0.0	1576.0	3410.2	5646.0	8038.2	10622.8	
Counter Year 1		2019				0.0	1.0	1.0	1.0	1.0	1.0	1.0
Counter Year 2		2020				0.0	0.0	1.0	1.0	1.0	1.0	1.0
Counter Year 3		2021				0.0	0.0	0.0	1.0	1.0	1.0	1.0
Counter Year 4		2022				0.0	0.0	0.0	0.0	1.0	1.0	1.0
Counter Year 5		2023				0.0	0.0	0.0	0.0	0.0	1.0	1.0
Counter Year 6		2024				0.0	0.0	0.0	0.0	0.0	0.0	1.0

124. Outstanding debt issued in the counterfactual after the first year projections is computed, by years of issuance, in rows 54-59 of the CFS, the total stock being displayed in row 60. The calculation is linked to an auxiliary system of year counters that can be found in rows 78-83 of the CFS, which ensures that the amortization of new borrowing starts two years after the issuance date and takes place in equal installments. Total debt in the debt in the counterfactual (row 69) is the sum of the existing debt (row 65, the same as in the scenarios with capital injections) and outstanding debt issued after the first year of projections. The fraction of this debt in T that will be amortized in T+1 (i.e. current liabilities out of debt) is shown in row 61.

125. All the variables in the formula that determines new borrowing are computed in rows 53 and below as follows:

- **The liquidity gap** in the scenario with capital injections is drawn from row 38, as described before in this section.
- **Incremental interest payments in the counterfactual** are obtained in row 77, as interest payments in the counterfactual less interest payments in the scenarios with capital injections (Debt,

row 14 for the BAS). The effective interest rate applied is the same as in the BAS and SS for domestic debt.

- **Incremental amortizations in the counterfactual** are obtained as the difference between the amortizations in the counterfactual (row 61) and in the scenario with capital injections (row 75).
- **Incremental current liabilities from new borrowing in the counterfactual** equal the difference between these current liabilities in the counterfactual (row 61) and in the scenario with capital injections (row 76).
- **Incremental cash held by the SOE in the counterfactual (row 63)** equals incremental cash raised in each period in the counterfactual (row 53) minus cumulative incremental amortizations in the counterfactual minus cumulative incremental interest payments in the counterfactual.

126. A consistency check for the quick ratio in the counterfactual can be found in row 72. As in the scenarios with capital injections, the quick ratio can be higher than the floor entered in Assumptions, row 48, in those years where the non-overdraft constraint becomes binding.

IX. GFS STATEMENTS

IX.1. STATEMENT OF OPERATIONS

Table 24. Structure of the Statement of Operations

	2019	2020	2021	2022	2023	2024
Revenue	46896.0	46971.5	50803.4	50130.4	49352.4	51217.4
Sales of goods and services	32167.4	32588.5	33516.2	34542.8	35575.9	36619.1
Operating subsidies	0.0	0.0	0.0	0.0	0.0	0.0
Property income	272.9	257.1	259.6	285.0	244.8	255.9
Capital transfers	14455.8	14126.0	17027.6	15302.6	13531.7	14342.4
Expenditure	44666.6	43227.6	47825.0	48563.2	49779.9	51636.2
Compensation of employees	6384.2	6592.8	6874.7	7181.8	7504.9	7842.7
Use of goods and services	34325.3	33636.3	38273.8	39148.4	40447.0	41982.4
Consumption of fixed capital	1056.1	789.2	607.0	466.8	359.0	276.1
Interest payments	1451.4	1118.8	724.0	360.6	0.0	0.0
Other expense	1449.6	1090.4	1345.6	1405.7	1468.9	1535.0
Operating balance	2229.4	3744.0	2978.4	1567.1	-427.5	-418.9
Transactions in non-financial assets	-1201.3	-783.4	-584.1	-442.3	-334.8	-251.8
Net lending (+) / Net borrowing (-)	3430.7	4527.3	3562.4	2009.4	-92.7	-167.1
Transactions in financial assets	3430.7	4527.3	3562.4	2009.4	-92.7	-167.1
Net acquisition of financial assets	-271.3	-51.7	855.0	-2068.7	182.8	183.5
Net incurrence in liabilities	-3702.0	-4579.0	-2707.5	-4078.1	275.5	350.6
Gross Financing needs (ex-transfers)	14839.2	13819.2	17643.7	17506.9	13624.4	14509.5

127. The tool makes an approximate mapping of the IS and some items in the CFS and the BASS into simplified GFS Statement of Operations (SO), in the worksheet GFS. The structure

of the SO can be seen in Table 24, and the approximate mapping of the financial statements in GFSM 2014 is summarized in Table 25 below. Valuation effects are absent both above the line and among financing operations, since they are typically registered in the Statement of Other Economic Flows, which serves to reconcile Transactions in financial and non-financial assets and liabilities with the GFS Balance Sheet. It is important to note that, while expenses are broadly in line with the SGO structure in GFSM 2014 at a two-digit level, revenues are essentially a re-elaboration of Other Revenue (code 14) in GFSM 2014, since the typically main elements of the SO for the general government, taxes and social contributions, are no relevant for SOEs. This aspect constitutes a (necessary) departure of the tool from GFSM 2014.

128. GFS also contains, as a memorandum item, an estimate of the gross financing needs (GFN) of the company (row 30). GFN are proxied as net lending plus debt amortizations, drawn from debt, plus capital injections received. This is done so to reflect the real financing pressures that the SOE undergoes in the absence of government's bail-outs.

Note 49. (Basic) GFN help identify the financing gap of the company. Given the operating deficit (as defined in GFSM 2014 terms), net transactions in non-financial assets and debt amortizations, GFN can be interpreted as the increase in net liabilities that will materialize, everything else being equal. However, net transactions in assets other than cash, and liabilities other than debt are given by the BSS projections, and the liquidity floor imposes a limit for the reduction in cash balances. Therefore, ultimately GFN imply a certain level of new borrowing requirements to make net liabilities increase as needed. If these new borrowing is constrained by the leverage cap, capital injections will reduce the operating deficit and the final increase in net liabilities.

Table 25. Mapping of financial statements into GFSM 2014 used by the tool

GFSM 2014	Financial statements
Revenue	
Sales of goods and services	Gross sales Other operating revenue
Operating subsidies	Operating subsidies
Property income	Interest received Dividends received Other non-operating revenue, except capital gains
Capital transfers	Capital transfers
Expenses	
Compensation of employees	Personnel expenses
Use of goods and services	Cost of goods and services sold Taxes paid
Consumption of fixed capital	Amortization and depreciation
Interest payments	Interest payments
Other expense	Dividends paid Other non-operating expenses, except capital gains
Transactions in non-financial assets	
Transactions in non-financial assets	Acquisition of fixed assets, net of disposals and depreciation Increases in inventory
Transactions in financial assets and liabilities	
Net acquisition of financial assets	Increases in the stock of financial assets, less valuation effects
Nec incurrence in liabilities	Increases in the stock of liabilities, less valuation effects

IX.2. BALANCE SHEET

Table 26: Structure of the GFS-BAS

GFS (Link to PSBS)									
Assets	14666	17258.0	15916.0	14443.5	13608.4	13879.3	11368.3	11216.4	11148.1
Non-financial assets	6748	6455.0	6542.5	5341.2	4557.9	3973.8	3531.5	3196.7	2945.0
Financial assets	7918.0	10803.0	9373.5	9102.2	9050.5	9905.5	7836.8	8019.6	8203.1
Liabilities	14666	17258.0	15916.0	14443.5	13608.4	13879.3	11368.3	11216.4	11148.1
Debt securities									
Loans	9968	15620.0	15608.0	11835.4	8441.1	4178.6	0.0	0.0	0.0
Equity and investment fund shares	-10748.0	-12364.0	-17802.0	-15614.2	-12696.4	-9634.1	-8102.1	-8529.6	-8948.4
Insurance, pensions and standardized guarantee schemes	121.0	128.0	91.0	94.8	97.9	102.0	106.6	111.4	116.4
Other accounts payable	15325.0	13874.0	18019.0	18127.4	17765.9	19232.8	19363.8	19634.6	19980.1
Net financial worth	-6748	-6455.0	-6542.5	-5341.2	-4557.9	-3973.8	-3531.5	-3196.7	-2945.0
Consolidated net financial worth	-17496	-18819.0	-24344.5	-20955.4	-17254.3	-13607.9	-11633.6	-11726.3	-11893.4
Net worth	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Consolidated net worth	-10748	-12364.0	-17802.0	-15614.2	-12696.4	-9634.1	-8102.1	-8529.6	-8948.4
Consolidation									
Financial assets to consolidate	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Liabilities to consolidate	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pro-memoria									
Public share capital	12892	12892	12892	12892	12892	12892	12892	12892	12892
Share of public equity	1	1	1	1	1	1	1	1	1
Share of public equity (without capital injections)	1	1	1	1	1	1	1	1	1

129. The tool maps the BSS into a simplified GFS-BSS (BSS worksheet, rows 52 and below), the structure of which is shown in Table 26. A first block of rows (54-63) captures a GFS-like asset breakdown at two digits, while liabilities are broken down at a four digit level. The only four digit item in GFS left aside on the liability side is Financial Derivatives and Employee Options (its

code being 6307 in GFSM 2014), but this information can be gathered from the SOE's financial statements it can be easily incorporated. A second block (rows 65-77) synthesizes asset and liability information in the net worth (i.e. assets minus liabilities plus equity) and the financial net worth (net worth minus non-financial assets), their consolidated values from the perspective of the whole PSBS and some auxiliary items to perform this consolidation. The criteria guiding the mapping of the BSS into GFSM 2014 are summarized in Table 27 below.

Table 27. GFS-IFRS mapping used by the template

GFS	IFRS
Assets	Assets
Non-financial assets	Property, plant and equipment Inventories Part of other non-current assets
Financial assets	Cash Receivables Other current assets Investment property Part of other non-current assets
Liabilities	Liabilities plus Equity
Debt securities	Part of loans and borrowings (long-term and current)
Loans	Part of loans and borrowings (long-term and current)
Equity and investment fund shares	Residual (assets minus other liabilities in GFS)
Insurance, pensions and standardized guarantee schemes	Long-term employee pension liabilities
Other accounts payable	Payables Other current liabilities Other non-current liabilities

130. The mapping proposed by the template should be understood as a mere approximation, and manual adjustments may be needed and viable depending on the granularity of the financial information available. Other non-current assets may contain financial and non-financial assets, such as tax deferred assets or intangible assets. This issue, which can be quite common, has been addressed by adding one parameter in Assumptions (row 87) that proxies the share of non-financial assets in other non-current assets over the projection horizon. But just to mention other possible adjustments: provisions in IFRS are not recognized in GFS; when property investment includes land, this should be classified within non-financial assets in GFS; the breakdown of loans and borrowings between debt securities may need to be adjusted (by default the template assumes that all borrowings take the form of loans).

Note 50. (Optional) A simple way of conducting these eventual adjustments can be to extrapolate the share of the adjusted item within an IFRS class of asset or liability before the starting date of projections to the whole projection horizon. In the case of debt securities vs. loans, the user can take into consideration their relative maturities, and break down total loans and borrowings according to this coefficient.

In general, it is recommended to minimize this type of adjustments when possible, since they complicate the mechanics of the template. A good criterion to decide whether to adjust is whether the reclassification of items would affect the NFW of the company. In this vein, a mere internal reclassification of liabilities would not matter so much as a re-classification between financial and non-financial assets.

131. GFS-equity is derived as a residual between GFS assets and liabilities other than equity under the assumption that the shares of the company are not traded, irrespective of whether they fully belong to the government. This implies that the NW of the company will identically be equal to zero, as prescribed by GFSM 2014 under these circumstances. If the SOE shares were traded, they should be valued at their market prices and net worth would not necessarily be zero. This can be captured by re-calculating equity in GFSM 2014 before the first year of projections, and assuming that the market value of share capital only changes as a result of capital injections over the projection horizon.

132. To streamline the mapping of the BSS into the GFS-BSS, it is also assumed that no valuation adjustments are needed. For some BSS items, such as fixed assets and investment property, this is facilitated by the fact that their value on books, according to the tool, automatically reflects market revaluations. For other items, specific assumptions would be needed. For example, if the company had debt securities within loans and borrowings, their market value in local currency should stay constant (absent exchange rate movements) and be the same as their face value. The resulting trade-off between simplicity in the use of the tool and realism of valuation assumptions seems acceptable for analytical purposes.

133. On the basis of the mapping, the tool calculates the NW and NFW of the company (rows 67 and 65) and its contribution to the consolidated NW and NFW of the public sector (rows 68 and 66). These metrics are very important, as they provide a sense of the profitability of the SOE as a public asset. The consolidation is done according to the following criteria:

- The share of financial assets to consolidate is given by Assumptions, row 84, and the share of liabilities other than debt and equity to consolidate, by Assumptions, row 86. Loans from the government (or debt securities held by the government) are drawn from the projections in Debt. These amounts to consolidate are displayed in BSS, rows 71 and 72.

- The share of equity to consolidate is recalculated every period. The initial share of other public sector's units in the shareholder's capital is given by Assumptions, row 85, and every period it is augmented by those capital injections registered as government's assets, and divided by total shareholder capital (BSS, row 76). The resulting share is applied to the whole equity, and used for consolidation purposes.

Note 51. (Basic) To have a sense of the total contribution of the SOE to the public sector balance sheet, it is important to consider its net contribution to the budget as well (see section X). In effect, the net contribution of an SOE to the PSBS net financial worth may look sound just because it is receiving sizeable subsidies and transfers from the government and paying no taxes, but are increasing net liabilities for the public sector as a whole.

X. RELATIONS WITH THE GOVERNMENT

X.1. INTRODUCTION

134. The tool quantifies the contributions of SOEs to fiscal stock and flows consistently with their projected financial performance. Tax and non-tax revenues other than interest payments are obtained by applying their rates, entered as assumptions, to their bases projected in the IS. The tax bases of the income and sales taxes are pre-tax profits and gross sales, respectively, whereas the bases for the calculation of royalties, fees and dividends are the value of production net of its costs, gross sales and after-tax profits, respectively. Interest payments to the government are derived from the outstanding stock of government's loans. As regards expenses, subsidies are exogenous, and capital transfers represent the share of capital injections that is expected to be remunerated below market rates, this fraction being input by the user as an assumption. In turn, capital injections are calculated in view of liquidity and solvency risks of the company, along the lines described in section VIII. Lastly, the stock of the government's assets in the company results from its lending and bail-out decisions towards the latter.

X.2. STRUCTURE

Table 28. Structure of Relations with the Government

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Taxes paid	0.0	3988.4	4091.8	4244.0	4060.5	3930.6	4023.0	4090.3	4144.3	4195.4
Corporate income tax	0.0	12.0	100.0	219.0	0.0	0.0	0.0	0.0	0.0	0.0
Sales tax or VAT		3976.4	3991.8	4025.0	4060.5	3930.6	4023.0	4090.3	4144.3	4195.4
Other taxes		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dividends paid to the government	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Interests paid on government loans		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subsidies	0	0	0	0	0	0	0	0	0	0
Transfers	0.0	0.0	0.0	0.0	14455.8	14126.0	17027.6	15302.6	13531.7	14342.4
Government assets and explicit contingent liabilities										
Share capital		12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0	12892.0
Equity		-10748.0	-12364.0	-17802.0	-15614.2	-12696.4	-9634.1	-8102.1	-8529.6	-8948.4
Loans		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Guarantees		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total net flows to the budget	0.0	3988.4	4091.8	4244.0	-10395.3	-10195.4	-13004.6	-11212.3	-9387.3	-10147.0
Total net flows to the budget (exclu. transfers)	0.0	3988.4	4091.8	4244.0	4060.5	3930.6	4023.0	4090.3	4144.3	4195.4

Memorandum item:

Capital transfers (in percent of GDP)	0.00	0.00	0.28	0.28	0.32	0.27	0.23	0.23
Total net flows to the budget (in percent of GDP)	0.09	0.09	-0.20	-0.20	-0.24	-0.20	-0.16	-0.16
Total net flows to the budget (in percent of GDP, exclu. Transfers)	0.09	0.09	0.08	0.08	0.08	0.07	0.07	0.07
Equity (in percent of GDP)	-0.27	-0.37	-0.31	-0.26	-0.18	-0.14	-0.14	-0.14

NPV fiscal flows (baseline)

Discount rates	0.9	0.9	0.9	0.9	0.9	0.9
Composite discount rates	0.9	0.8	0.7	0.7	0.6	0.6
NPV taxes (billion LCU)	17.6					
NPV dividends (billion LCU)	0.0					
NPV interest receipts (billion LCU)	0.0					
NPV subsidies (billion LCU)	0.0					
NPV transfers (billion LCU)	64.1					
Pre-shock at GDP market prices (billion LCU)	4873.9					
NPV capital injections (in percent of GDP)	1.3					
NPV inflows (billion LCU)	-46.5					
NPV inflows (in percent of GDP)	-1.0					

135. The RG worksheet summarizes the changes in the financial position of the government due to the SOE performance in three blocks: net inflows into the budget by year, intertemporal net inflows into the budget over the projection horizon and government's assets and explicit CL.

136. Net inflows into the budget are measured in accrual terms, presented in local currency at current prices (row 22) and in terms of GDP (row 28), and obtained as revenues less expenses. In turn, these two items have the following elements:

- **Revenues** consist of: i) total taxes (row 6), including CIT, sales taxes, royalties, and fees, all of them determined in the IS; ii) dividends paid to the government (row 10), that are the result of applying the dividend pay-out ratio (Assumptions, row 44) to the after-tax profit; iii) interest payments on government's loans, drawn from Debt, rows 21 and 16.

Note 52. (Optional) The formula of dividends paid to the government precludes their distribution when after-tax profits are negative. However, sometimes SOEs are requested by the government to pay dividends from previously accumulated and undistributed earnings, which

may put pressure on their liquidity ratios and limit their capacity to weather financial distress. This option can be implemented by replacing the dividend formula by lump-sum amounts which can bear -or not- some relation with the size of the retained earnings reserve at the beginning of the first year of projections.

- **Expenses** include: i) government's subsidies (Assumptions, row 81) and ii) government's transfers, or the fraction of total capital injections registered above the line.

137. Intertemporal net inflows into the budget (rows 33 to 44) capture the difference between the net present values of revenues and expenses over the projection horizon, expressed at current prices of the last year before the start of projections, and in terms of the nominal GDP of the same year. Flows are discounted at a constant discount rate, given by the domestic long-term interest rate observed in the last year before the start of projections.

Note 53. (Basic) This metrics provides additional information about the financial viability of the SOE from a medium-term perspective: profitable companies can be expected to yield net positive discounted inflows over a 4-5 year time horizon, despite undergoing short-lived episodes of financial distress. Otherwise, they may be generating net liabilities for the public sector as a whole, and the government may want to re-consider their role in the government's portfolio, also in light of their strategic role as providers of public services. If macroeconomic or marker-specific shocks are permanent or long-lived, this metrics can also highlight possible turnarounds in their medium-term profitability.

Note 54. (Optional) The interest rate prevailing before the start of projections has been selected as the discount rate to minimize the variability of net present values to macroeconomic conditions with a bearing on interest rates. For the same reason, the discount rate in the BAS and the SS are the same. Nonetheless, a useful sensitivity exercise can consist of re-calculating net present values for different discount rates within a plausible range, or even considering fully floating discount rates linked to each period's forecasted interest rates. The substitution of discount rates can be made in row 34.

138. Government's assets on the company comprise the public stake in equity (and share capital, as a part of equity) in rows 18 and 17 respectively, and loans to the company in domestic and foreign currency (row 19). Besides, explicit contingent liabilities in the form of guaranteed debt are also displayed in row 20. While equity and share capital are drawn from the BSS, loans and debt guarantees are drawn from Debt.

Note 55. (Basic) The joint analysis of net inflows and the government's financial position allows to draw richer conclusions on the future contribution of the company to the government's financial portfolio. In a baseline scenario characterized by sound macroeconomic fundamentals, projected net inflows may be positive, but the existence of sizeable loans and guarantees point to potentially high credit risks and significant bail-outs, respectively, in a downside scenario. Further, a negative equity stemming from accumulated and uncompensated losses, or a demonstrated inability to tap private funding sources, can also point to the a future reversal of net flows into the budget.

139. Fiscal outputs of the tool can be interfaced with Fiscal Stress Tests. There are two basic linkages between both tools: to the extent that bail-outs materialize, they affect the fiscal balance of the general government. Besides, the baseline and stressed SOEs can be exported -after consolidation- into the PSBS in the Fiscal Stress Test. One pre-condition for doing, though, is that the set of assumptions in the BS and SS in both tools are compatible, particularly when it comes to their macroeconomic fundamentals.

XI. PERFORMANCE

XI.1. STRUCTURE

Table 29. Summary of financial and economic performance indicators

	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
A. Profitability										
a.1 ROE		NA	NA	NA	-14.2	-29.5	-30.9	-19.3	NA	NA
a.2 ROE (excl. transfers)		NA	NA	NA	NA	NA	NA	NA	NA	NA
a.3 ROA		-41.9	-8.6	-74.6	15.4	27.5	21.5	13.8	-3.8	-3.8
a.4 ROA (excl. transfers)		-41.9	-8.6	-74.6	-84.7	-77.9	-98.6	-106.2	-101.2	-97.4
a.5 Operating ROA		-37.5	-2.0	-63.0	25.4	35.7	26.7	17.0	-3.8	-3.8
a.6 Operating ROA (excl. transfers)		-37.5	-2.0	-63.0	-74.6	-60.4	-75.3	-73.3	-64.2	-56.6
B. Liquidity										
b.1 Current ratio		0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7
b.2 Current ratio (excl. transfers)		0.8	0.9	0.7	0.7	0.7	0.6	0.7	0.6	0.6
b.3 Interest cover		-8.7	-0.3	-6.1	2.5	4.3	5.1	5.3	NA	NA
b.4 Interest cover (excl. transfers)		-8.7	-0.3	-6.1	-7.4	-3.4	-3.2	-2.2	-1.7	-1.4
b.5 Quick liquidity ratio		0.7	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6
b.6 Quick liquidity ratio (excl. transfers)		0.7	0.9	0.6	0.6	0.6	0.6	0.6	0.6	0.6
C. Leverage and solvency										
c.1 Debt-to-equity ratio		-2.4	-2.4	-1.9	-1.9	-2.1	-2.4	-2.4	-2.3	-2.2
c.2 Debt-to-equity ratio (excl. transfers)		-2.4	-2.4	-1.9	-1.5	-1.4	-1.4	-1.4	-1.5	-1.6
c.3 Debt-to-assets ratio		1.7	1.7	2.1	2.1	1.9	1.7	1.7	1.8	1.8
c.4 Debt-to-assets ratio (excl. transfers)		1.7	1.7	2.1	3.1	3.8	4.4	5.4	5.7	5.9
c.5 Non-current liabilities to assets ratio		1.1	1.1	1.3	1.2	1.0	0.6	0.8	0.8	0.8
c.6 Non-current liabilities to assets ratio (excl. transfers)		1.1	1.1	1.3	2.2	2.7	3.2	4.2	4.4	4.5
c.7 Consolidated net financial worth		-17496.0	-18819.0	-24344.5	-20955.4	-17254.3	-13607.9	-11633.6	-11726.3	-11893.4
c.8 Consolidated net financial worth (excl. transfers)		-17496.0	-18819.0	-24344.5	-35411.2	-47412.0	-64203.4	-83177.7	-104840.4	-129972.6
c.9 Consolidated net worth		-10748.0	-12364.0	-17802.0	-15614.2	-12696.4	-9634.1	-8102.1	-8529.6	-8948.4
c.10 Consolidated net worth (excl. transfers)		-10748.0	-12364.0	-17802.0	-30069.9	-42854.2	-60229.6	-79646.2	-101643.6	-127027.7
D. Cost & efficiency										
d.1 Operating revenue per employee		-	3.0	3.1	3.2	3.2	3.3	3.4	3.5	3.6
d.2 Labor cost per operating revenue		18.7	19.0	19.8	19.8	20.2	20.5	20.8	21.1	21.4
d.3 Average cost per employee		-	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8
E. Size										
e.1 Number of employees		-	10,071.0	10,071.0	10,071.0	10,071.0	10,071.0	10,071.0	10,071.0	10,071.0
e.2 Total assets		14,666.0	17,258.0	15,916.0	14,443.5	13,608.4	13,879.3	11,368.3	11,216.4	11,148.1
e.3 Asset-to-GDP		0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2
e.4 Liabilities-to-GDP		0.6	0.6	0.7	0.6	0.5	0.4	0.3	0.3	0.3

140. On the basis of financial statement projections, the tool calculates a set of key financial ratios (PERF worksheets) that summarizes the main developments in the profitability, liquidity and leverage/solvency conditions of the company. Financial ratios are evaluated in the case where capital injections are allowed to be positive and in the counterfactuals (no government's bail outs take place and liquidity gaps are fully met by new borrowing). Nonetheless, these ratios are the same in the years prior to the start of projections irrespective of the existence of capital injections, since it would be difficult to construct a counterfactual for past observations. The remainder of this section defines these financial ratios and identifies their peculiarities in the counterfactual.

141. Profitability indicators can be found in PERF, rows 6 to 12, and comprise three ratios:

- **Return on equity (ROE)** is defined as:

$$ROE = \frac{Net\ Income}{Equity} \quad (11)$$

Where net income is captured by after-tax profits (IS, row 41) and equity is drawn from the BASS, row 41. When both numerator and denominator are negative, the ratio is not defined as it would be misleading. **In the counterfactual**, subsidies, capital transfers and incremental interest payments in the counterfactual (CFS, row 77) are detracted from net income, and cumulative capital injections (i.e. from the first year of projections until the current year) are taken out from equity. Commonly accepted high risk thresholds for profitability ratios are 0.

- **Return on assets (ROA)** is obtained as:

$$ROA = \frac{Net\ Income}{Assets} \quad (12)$$

Where total assets are drawn from BASS, row 23. **In the counterfactual**, net income is subject to the same adjustments as for the ROE, and assets are augmented by the additional cash held by the company (CFS, row 63).

- **Operating return on assets (OROA)** is a variant of ROA:

$$OROA = \frac{EBIT}{Assets} \quad (13)$$

Where profits before interest taxes are drawn from the IS (pre-tax profits plus interest payments). **In the counterfactual**, subsidies and capital injections are detracted from the EBIT, and assets undergo the same adjustment as in the ROA.

142. Liquidity indicators are evaluated in rows 14-20 and include three ratios:

- **Current ratio (CR):**

$$CR = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad (14)$$

Both current assets and current liabilities are drawn from the BASS, rows 9 and 27 respectively. **In the counterfactual**, current assets are augmented by the additional cash held by the company, and current liabilities factor the current loans and borrowings associated to a higher debt, the rest of current liabilities being the same as with capital injections. CR values above 1.25 are usually considered to be associated to high liquidity risk levels.

- **Interest coverage (IC), referred more specifically to weight of debt service on profits:**

$$IC = \frac{EBIT}{\text{Interest Payments}} \quad (15)$$

Interest payments are drawn from IS, row 32. **In the counterfactual**, the EBIT is adjusted as described before, and the incremental interest payments are added to the denominator. IC values below 1.2 denote high liquidity risks.

- **Quick ratio (QR), as a basic reference used by the template to assess the liquidity gap of the company:**

$$QR = \frac{\text{Cash} + \text{Receivables} + \text{Marketable Securities}}{\text{Current Liabilities}} \quad (16)$$

Where cash and receivables are taken from the BSS, rows 10 and 11 respectively, and marketable securities are proxied by investment property (BSS, row 18). **In the counterfactual**, the ratio is taken from CFS, row 72. By construction, the quick ratio should be equal or higher than the floor set in Assumptions, row 48, both with and without capital injections. QR values below 0.8 tend to be associated to high liquidity risks.

143. **Leverage and solvency indicators are summarized in rows 22-32:**

- **The debt-to-equity ratio (DTER) is the basic reference used by the template to assess the capacity of the company to undertake new borrowing, given a liquidity gap. Its formula is:**

$$DTER = \frac{\text{Liabilities}}{\text{Equity}} \quad (17)$$

Where total liabilities are given by BASS, row 39, and Equity, as before, by the BASS row 41. **In the counterfactual**, total liabilities include the higher debt stock resulting from the absence of capital injections, and the cumulative value of capital injections are subtracted from equity. With capital

injections, the DTER should not be higher than the cap set in Assumptions row 47, while in the counterfactual its value can be unbound. Note that the formula does not exclude negative DTERs due to a negative equity, but in these cases the ratio should be interpreted with caution (in fact, a decrease in its absolute value, while remaining negative in sign, may imply a deterioration in equity and solvency, as well as reduction in liabilities). DTER values above 1.5 tend to be associated to high solvency risks, although the variability of this threshold across sectors is important.

- **The debt-to-assets ratio (DTAR) is defined as follows:**

$$DTAR = \frac{Liabilities}{Assets} \quad (18)$$

Liabilities and assets are drawn, as described for other ratios, from the BASS. **In the counterfactual**, liabilities and assets are adjusted as explained before for other ratios based on these variables. DTAR values above 0.75 can be reflective of high solvency risks.

- **The non-current liabilities to assets ratio (NCLTAR) is obtained by applying the following formula:**

$$NCLTAR = \frac{Non - current liabilities}{Assets} \quad (19)$$

Non-current liabilities are equally taken from the BASS, row 34, and **in the counterfactual** they are adjusted exclusively for the share of debt which is amortized the next year. This can be found in the CFS, as the sum of the rows 62 and 70 (non-current new borrowings and existing debt, respectively). NCLTAR values above 0.5 tend to reflect high solvency risks.

- **The consolidated net financial worth of the SOE** helps assess the contribution of the company to the public sector solvency. The reason why this indicator is sometimes preferred to the consolidated net worth is that the markets of some fixed assets can be highly illiquid and pricing them to assess debt sustainability is complicated. This indicator is constructed in GFS terms and drawn from BSS, row 66 (i.e. from the GFS BAS as a memorandum item of the BSS worksheet). **In the counterfactual**, the incremental cash held without capital injection is added to the financial assets, and debt with capital injections is replaced by debt in the counterfactual.

Note 56. (Optional) Because the tool calculates the equity in GFS terms as a residual between assets and other liabilities, the net financial worth of the company would not change in the counterfactual -changes in equity would mirror changes in liabilities minus changes in assets, with opposite sign-. However, the consolidated net financial worth can vary to the extent that the public share of equity is positive and this fraction is consolidated in the PSBAS.

In the limit, in an SOE fully owned by the government net financial worth would entirely reflect variations in financial assets and liabilities caused by the lack of capital injections.

144. Consolidated net worth is derived by adding to consolidated net financial worth, with and without capital injections, the value of the non-financial assets of the SOE.

145. PERF also contains information about some relevant economic ratios (rows 34-37) that measure the productivity and the efficiency of the company, namely:

- **Operating revenue per employee**, where the first variable is determined by IS, row 7, and the second one is displayed as a memorandum item in IS, row 45. Note that the number of employees is the product of increasing the number observed in the last year before the start of projections by the hiring rate entered in Assumptions, row 80. This a metrics of productivity, evaluated at output current prices.
- **Average cost per employee** provides a sense of the total cost per worker, and is calculated by dividing personnel expenses by the number of workers.
- **Labor cost per operating revenue**, as the quotient of personnel expenses (IS, row 15) by the operating revenue. This variable is a proxy of unitary labor costs (in other words, the product of the average cost per employee by the inverse of the operating revenue per employee), and can be used to identify cost pressures related to staff oversizing in public companies.

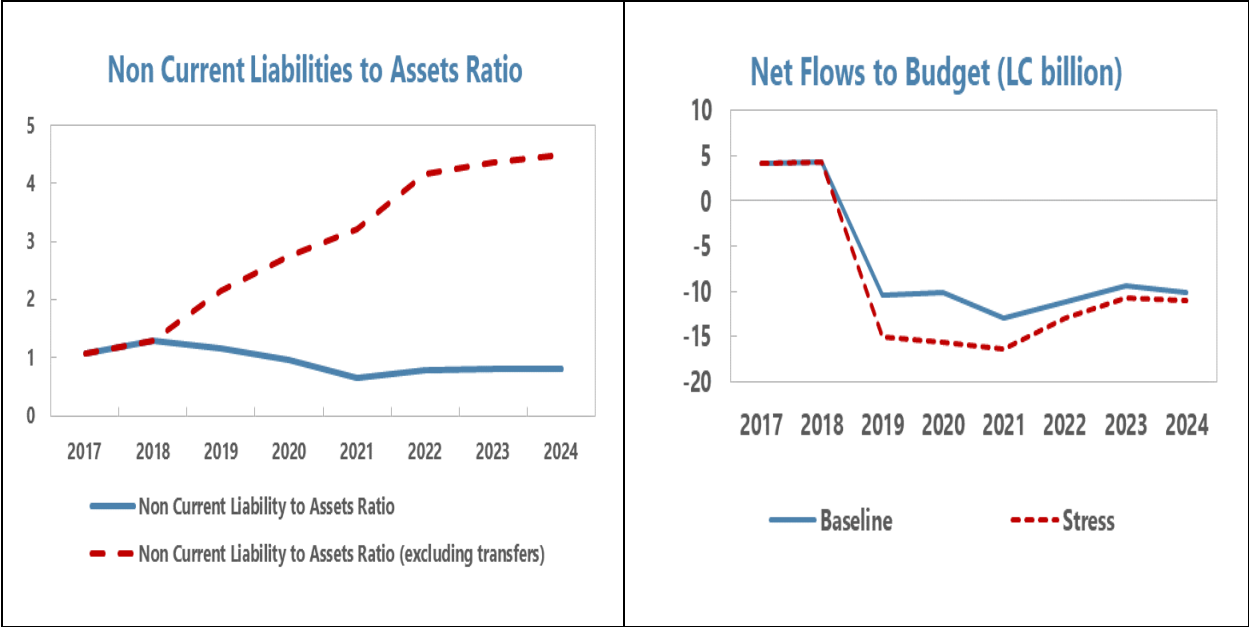
146. PERF also presents some metrics that help gauge the size of the company, from different perspectives (rows 40-44), namely the number of employees, and total assets and liabilities as a share of GDP.

XII. REPRESENTING OUTPUTS IN CHARTS

XII.1. CONTENT AND OPTIONS

Table 30. Sample charts produced by the tool

<p>Baseline financial ratio (scenario with capital injections and counterfactual)</p>	<p>Net contribution to the budget (baseline and stress scenarios)</p>
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147. CHARTS and CHART-stress are designed to assist with the reporting of the tool’s results. Both spreadsheets contain a set of charts that summarize the key results of the analysis, in terms of financial projections and fiscal implications of the SOE’s performance. Therefore, analytical reports can be generated by combining the tables of PERF, RG and the outputs of CHARTS. By default the existing charts reflect the following variables:

- **Profitability ratios:** ROE, ROA and operating ROA.
- **Liquidity ratios:** current and quick ratios.
- **Leverage indicators:** debt-to-equity and non-current liabilities to assets ratios, liabilities and equity in local currency.
- **Other SOE’s financials:** revenue and expenditure in GFS terms and local currency, gross financing needs in local currency, contribution to public net financial worth in local currency and debt to GDP.
- **Contribution to the government’s budget:** taxes, dividends, capital transfers, net inflows into the budget (all in local currency, and the latter as a share of GDP) and NPV of net inflows into the budget as share of the GDP previous to the start of projections.

148. The structure of the charts in the BAS and the SS presents some differences:

- CHARTS, relative to the BAS, compare variables with capital injections and in the counterfactual.
- Graphs in CHARTS-stress compare results without capital injections (i.e. in the counterfactual) between the BAS and the SS. The only exception is the chart on the NPV of net inflows into the

government's budget, which only reflects results for the SS. The comparison is not made with capital injections, because of their potentially very different values between scenarios.

149. All charts are imported from Raw Charts (RC) and Raw Charts-ST (RC-stress), where the user can design its own graphs according to his/her needs. In turn, RC and RC-stress are linked to PERF and RG (and PERF-stress and RG-stress, respectively), from where they import the charts data. The time period selected for the charts starts on average 1-2 years before the first year on projections, they are updated automatically whenever the first year of projections is modified by the user.

Note 57. (Optional) Other analytically relevant charts that the user may want to use, depending on the circumstances, are the following: (i) composition of debt (local and FX-denominated debt, as well as government's loans and guarantees); (ii) funding sources of the liquidity gap (new borrowing vs. capital injections); (iii) funding sources of gross financing needs (here including all assets and liabilities, as well as capital injections); (iv) share of debt service in the liquidity gap; (v) share of capital injections associated with the service of government's guaranteed debt and/or government's loans.