USER GUIDE ON CASH FLOW FORECASTING AND ANALYSIS TOOL FOR FRAGILE AND LOW-INCOME COUNTRIES

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Acronyms

BD	Budget Department
CCC	Cash Coordinating Committee
CFAT	Cash Flow Forecasting and Analysis Tool
DMD	Debt Management Department
DX	Domestic Currency
EBF	Extra-Budgetary Fund
FX	Foreign Currency
GFSM14	Government Finance Statistics Manual 2014
IFMIS	Integrated Financial Management Information System
MDAs	Ministries, Departments and Agencies
MoF	Ministry of Finance
MPI	Ministry of Planning and Investment
PMO	Project Management Office
RAs	Revenue Authorities
SNG	Sub-National Government
SoEs	State-Owned Enterprises
T-bills	Treasury bills
T-bonds	Treasury bonds
TSA	Treasury Single Account

This user guide explains the use of the accompanying cash forecasting tool. It covers many experiences and requirements. Users will need to focus only on those aspects relevant to them.

INTRODUCTION

Cash flow forecasting is an integral part of efficient government cash management. The ability to forecast flows across government bank accounts has two broad purposes:

- To facilitate and support orderly execution of the budget; to ensure that budgeted expenditure is smoothly financed avoiding delays; and to give early warning of any cash flow shortages that might force the government to delay expenditures or otherwise ration cash if it is unable to increase borrowing.

- To devise the strategies for active cash management, i.e. planning ahead, and where it can, adjusting financing plans, to ensure that cash is available when required while avoiding any unnecessarily idle cash that is not earning a satisfactory return.

Cash flow forecasting faces a number of challenges in most economies, but these will be especially acute in fragile and low-income states. To support the work of governments tackling these challenges and to create cash forecasting capacity, the IMF has prepared a set of linked documents:

- A "How-To-Note"[1] with advice on building cash management capacity in fragile and low-income countries.

- A questionnaire-based diagnostic tool to understand the starting point, constraints and opportunities in a fragile state for developing a tailored cash management reform strategy.[2]

- An Excel-based tool for preparing cash forecasts and supporting the decisions that flow from them. This note explains the tool and how it might be used.[3]

The tool is intended for the use of those, in the treasury function or elsewhere, with responsibility for preparing cash flow forecasts. It is designed primarily for the practitioner; although it also makes recommendations on the presentation of the forecasts and related policy advice to senior decision makers, who will want to familiarize themselves with its underlying construction and purposes. The length of this note is a reflection of the range of experiences, capabilities or requirements that the tool has been designed to cover. The practitioners in any one country will want to identify those sections or points that are relevant to their circumstances.

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[1] Sailendra Pattanayak, Racheeda Boukezia, Yasemin Hurcan, and Ramon Hurtado "How to Build Cash Management Capacity in Fragile States" (IMF 2022)

[2] Racheeda Boukezia, Jean-Baptiste Gros and Sailendra Pattanayak "Questionnaire Based Diagnostic Tool to Assess Cash Management Capacity" (IMF 2022)

[3] [acknowledgements, etc.]

A Glossary of the relevant concepts and terms is at Annex A. Any questions on the tool, comments on its use, or suggestions for improvement should be addressed to the Fiscal Affairs Department at the IMF.[4]

OVERVIEW OF THE TOOL

The tool is primarily a top-down mechanism; it makes use of past patterns. But note also:

- It is designed to incorporate bottom up information, i.e., intelligence from Ministries, Departments and Agencies, and the Revenue Authorities, as that becomes available

- Full deployment of the tool can grow over time – users can make simplifying assumptions at the start, using more of the tool's capabilities when then have the capacity to do so.

- Similarly, users will probably want to start with monthly forecasts, but move to weekly forecasts as capacity and confidence grows. The spreadsheet facilitates this move.

- Users can incorporate templates, charts or categories that they are already using.

Key Characteristics

The Cash Forecasting and Analysis Tool (CFAT) is an Excel-based spreadsheet. Its use does not require any special IT skills, although it should be deployed on Excel 2013 or later and users should enable Macros after they have opened the file.[5] The tool supports cash flow forecasting; it will enable practitioners to construct from scratch a cash plan and cash forecast for the upcoming year, to adjust the forecasts throughout the year as outturn data become available; and to present policy proposals to decision makers for responding to the forecasts.

The preparation of a cash flow forecast is related to but distinct from other exercises required at the start of the budget year and potentially updated during the year – see Box 1.

Box 1: Cash Plans and Cash Forecasts

There are three cash planning and forecasting exercise in the budget year:

- Preparation of a **budget profile** across the year, usually monthly, and constrained by the approved annual budget. There will usually be separate profiles for expenditure, which in total has to be no higher than the budget authority, and for revenue, and often for their constituents. The profile will be coordinated and agreed by either the Budget Department (BD) or the Treasury within the Ministry of Finance (MoF); it will usually although not necessarily be based on submissions from the spending and revenue departments to the MoF. The agreed profile

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may be the basis for the release of spending authority; but in any event will be used to monitor and control execution of the budget. The spending units should be encouraged to accompany their budget profiles with procurement plans.

- Preparation of a **cash plan**, sometimes called a cash program, which is also usually monthly and starts from the approved budget. It may be based on the budget profile, but some adjustments will be needed: e.g. for non-cash expenditures or other accrual concepts, and for the processing of arrears or other obligations arising from the previous year's budget. It will often also be wider than the budget profile, e.g. adding financing transactions if they are not already part of the budget. The cash plan provides a check on the consistency of the budget and its planned financing. It will normally be updated during the year, in the light of changed circumstances, but it will tend to be constrained at any time to the currently-approved budget targets.

- Preparation of the **cash flow forecast**, which can be defined as "an estimate of future government cash inflows and outflows, with a view to taking action necessary to ensure that sufficient funds are always available to meet any net government cash requirements; and, in any period where there is a net cash surplus, to ensure that it is used to best advantage." At the beginning of the budget year, the cash plan and cash forecast for the year are likely to be very similar.[6] But the focus of the plan is on what <u>should</u> happen, i.e. the execution of the budget; and its updating may continue to be constrained by the approved budget, e.g. expenditure ceilings or revenue targets. The forecast on the other hand has to identify what <u>will</u> happen, and should be an unbiased and unconstrained best estimate. The two series will often diverge as the budget year unfolds. Moreover, towards the end of the budget year, the cash forecast has to look to the following year even if there may be no formal budget.

The tool makes no precise assumption about the institutional responsibility for cash flow forecasting. In many countries it lies within the Treasury department of the MoF, although it may also be in the budget unit, or a unit that brings cash management and debt management together.[7] There may be an identifiable Cash Management or Cash Forecasting Unit, or forecasting may be part of a wider function. In this note "the Treasury" is used as shorthand for all these options.

The tool is primarily a top-down mechanism, i.e. relying on known flows for higher order items and on past patterns. But it is designed to incorporate bottom up information – flows from Ministries, Departments and Agencies (MDAs), and the Revenue Authorities (RAs) – as that becomes increasingly available and proves to be an important input to high-quality forecasts. Weekly forecasts as they develop are also likely to rely more heavily on inputs from the MDAs/RAs.

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[6] Although as the How to Note points out, in some countries the budget is far from credible; in such circumstances the forecasters must be prepared to diverge from it. At the extreme, the forecasters could input their own best estimate of a credible budget, rather than the approved budget, although some care would be required when reporting internally.

[7] There is a fuller discussion in the How-To-Note.

Decisions will have to be made about the characteristics of the forecast: the coverage and detail, the forecast horizon; the time granularity; the refresh rate and frequency of circulation: see Box 2 for explanations.

A fragile state or low-income country may have limited capacity to develop forecasts with a long horizon, high granularity and frequent refresh rate. Initially, particularly as the government is trying to move away from cash rationing, the forecaster will focus on the period immediately ahead. But **the tool is flexible; and it allows for different deployments and inputs, with the projections becoming richer over time as capacity, data and experience grow**. Similarly, the tool allows users to make use of templates, charts or categories that they are already using, by inputting their data in the relevant lines in the tool.

Box 2: Key Forecast Characteristics

- **Coverage and detail of the forecast**: the intention should be to cover at a minimum all the cash flows that have a material impact on the central government's bank balances.[8] But extensive detail should be avoided. The largest budget lines and the main revenue sources can be identified but extra detail is likely to be time consuming without adding value. The forecasts are not a tool to monitor budget performance of the MDAs/RAs; decision makers will need only summary data.

- **The forecast horizon**: the tool is linked to the annual budget, normally the formally approved budget, although the tool will accommodate whatever is input. As the budget year proceeds, the forecasters may be asked to update the prospect for the remaining months of the budget year. But there should be particular focus on the months immediately ahead, with a rolling forecast at least three months ahead and ideally more (and potentially rolling across the end of the budget year). That will give sufficient guidance to decisions on how to ensure cash adequacy, whether those decisions relate to financing of the budget or the pace at which the budget is executed.

- **Time granularity of forecast**: initially, monthly cash flows should be identified. Over time, granularity should increase; and since many large cash flows are known with some precision both as to timing and size (e.g. debt servicing payments, monthly salaries, probably some transfers and some revenue flows) it is quite possible for even fragile states to move quite soon to preparing weekly forecasts, with daily forecasts following later. That is important, because there are likely to be substantial cumulative cash movements within a month, and end-month estimates of cash balances may give little idea of the likely need for cash on specific days or weeks during the month.[9]

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[8] This could be general government's bank balances in countries with a centralized cash management function covering the whole of general government.

[9] The tool focuses primarily on building monthly forecasts, but illustrates how weekly forecasts might be developed in tandem. Subsequently daily forecasts can be developed from the weekly forecasts. Daily forecasts, however, are likely to be much more demanding in terms of data maintenance and information flows, and are a more medium-term objective for fragile or low-income countries.

- **Refresh Rate of forecast:** the forecast should be revised at least every month, with the arrival of new outturn data and updated information—at least from large MDAs/RAs—on potential flows in the coming weeks or months. It may be that there is a distinction between a full and partial refresh rate, depending on the quality, extent and frequency of new data. A refresh in the third week of the month is often the best trade-off between the availability of outturn information for the previous month and the need to prepare and consider an updated forecast before the start of the following month.[10]

- **Frequency of circulation of the latest forecast**: the revised forecast should normally be issued every month, or more often if it is frequently refreshed. But it would be good practice for the forecasters also separately to report cash outturns on a weekly or daily basis and flag up whether there has been any unexpected divergence.

The Target Variable

The bottom line of the forecast should be the cash balance in the bank accounts over which the MoF or Treasury has control. It will be probably be the balance in the Treasury Single Account (TSA) where that has been established.

Developing a comprehensive TSA is often challenging, Most countries have a main government account, which is usually and ideally in the central bank, But there will often be cash balances in the central bank or commercial banks outside this account, held by others, to which the Treasury may or may not have access. What matters for the tool is the cash over which the government at the center has control and which is available to meet its commitments, whether or not it is a single account or a network of accounts.

The bottom line of the forecast should usually be the balance in the Treasury Single Account (TSA) where that has been established. It is the cash in the TSA that the government has available to meet its commitments. The TSA should include all central government cash balances (and in those countries that include the balances of sub-national governments (SNGs), all general government cash balances). But developing a comprehensive TSA is challenging. Most countries have a main government account, which is usually and ideally in the central bank, and which will be the kernel of the TSA. But there will often be cash balances in the central bank or commercial banks outside this account. These balances may be held by central government MDAs, or extra-budgetary funds (EBFs); or in project-related accounts financed by donors who typically want to retain a degree of control over "their" financial contributions. Sometimes the Treasury may set up a separate account as a way of managing earmarked or hypothecated resources; that is an inefficient way of managing cash but sometimes necessary in the absence of adequate financial management systems.

What matters is the cash over which the government at the center, i.e. the MoF or Treasury, has control. This may only be the balance in the main government account; but it may extend to the

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[10] As noted further below, as the forecast is rolled forward during the year, the base month is likely to be a mixture of actual outturn and estimated flows.

balances in at least some bank accounts, including sometimes accounts held by MDAs, which the Treasury can call on if required, either directly or by transferring balances to its main account. In some countries, the Minister may also control accounts whose balances are in practice available to the Treasury and can be included in this category. The nature of the TSA is elaborated below, **but this note labels the TSA balance as the aggregate cash over which the MoF or Treasury has control** whether or not it is strictly in a single bank account or a network of bank accounts that gives a more consolidated view of government cash resources.[11]

It is important to emphasize that the relevant variable is cash, i.e. government assets that are perfectly liquid and can be used immediately as a medium of exchange to pay salaries, to purchase goods and services, or to support investment. Not all government revenue and expenditure flows imply movements of cash and, as explained more fully below, some adjustments to budget figures or the data collected by MDAs/RAs may need to be made. There may be cash flows not covered by the budget, e.g. to honor obligations of arrears accumulated in previous years. Similarly, if government accounting data have accrual as well as cash elements they will need to be adjusted.

Governments should try to maintain a cash buffer, i.e. a sufficient balance to be able to protect the budget even in the face of unexpected outflows or financial market disruption. One of the outputs of the forecast will be the decisions needed to sustain the required buffer;[12] or to reduce the likelihood that it will ever be exhausted, pushing the MoF to ration cash.

Data Format and Classification

<table>
<tr><td colspan="2">The presentation of the data is important. Avoid a simple inflows/outflows split.</td></tr>
<tr><td>Revenue
Current Expenditure</td><td>The tool instead uses this format down the page.</td></tr>
<tr><td>Interest Payments
Operating Cash Surplus</td><td>That encourages a focus on financing choices which are the main policy variable.</td></tr>
<tr><td>Capital Expenditure
Net surplus/deficit</td><td>The tool emphasises the economic classification of cash flows; but a mixed classification can be used. More important is to identify all major flows affecting the TSA.</td></tr>
<tr><td>Financing, net
Net change in Cash</td><td></td></tr>
</table>

The default classification used in the tool to present the forecast data is based on the IMF GFSM format.[13] That flows down the page or screen from revenue to current expenditure,

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[11] Israel Fainboim & Sailendra Pattanayak, "Treasury Single Account: Concept, Design, and Implementation Issues" (IMF 2010) www.imf.org/external/pubs/ft/wp/2010/wp10143.pdf

[12] There is a fuller discussion in a How-To-Note on the required cash buffer: See Yasemin Hürcan, Fatoş Koç, and Emre Balıbek "How to Set Up a Cash Buffer? A Practical Guide to Develop and Implement a Cash Buffer Policy (IMF 2020) www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2020/12/21/How-to-Set-Up-A-Cash-Buffer-A-Practical-Guide-to-Developing-and-Implementing-a-Cash-Buffer-49955

[13] The terminology here is not strictly in line with the IMF's Government Finance Statistics Manual 2014 (GFMS14) (see: https://www.imf.org/external/np/sta/gfsm/index.htm); the emphasis is on usability of the tool. Local

generating an operating cash surplus or deficit, to capital expenditure, hence to the overall cash surplus or deficit, with a focus then on financing flows (with the change in cash balances, net of change in overdraft, being the residual). This format is preferred to categorizing flows simply as inflows and outflows because it focuses the user on the financing choices, which is usually the main policy variable open to the government in the event of in-year divergences from plan as the budget is executed.

The emphasis is on the economic classification of cash flows. In practice flows may be classified and recorded in other ways – administrative, program, sectoral and so on.[14] But in most countries, the economic classification will be widely used and reflected in budgetary, payment and accounting systems; it is where financial, budgetary and statistical and macro-fiscal reporting converge. The economic classification is also the most useful from a forecasting perspective, as it brings together flows that are likely to have similar statistical characteristics. But in a fragile or low-income country environment there may be cases where data, particularly expenditure data, are unavailable by economic classification, or available only after a long time lag.[15] Instead data may be available, at least initially, only on an administrative or organizational basis, with individual MDAs reporting on their expenditure without being confident in supplying more detailed classifications. Revenue may also be reported by the collecting agency rather than economic codes. Sometimes the bank statement gives the first indication of the outturn, but the Treasury lacks the tools to reconcile it speedily with the preferred classification. Alternatively, detailed revenue and expenditure flows linked with large enterprises exploiting natural resources may be available, but not those from other sectors.

In these circumstances the forecasters may have to adopt a mixed classification – maybe an economic classification covering the larger more sophisticated MDAs, an administrative classification for the rest. The techniques described below can still be used, although they will have to be applied with some care to the more heterogeneous categories, and the spreadsheet rows will have to be relabeled accordingly.

Whatever the approach or classification used, it will be important that the forecasters identify all major cash flows, i.e. those that have a material impact on the balance in the TSA.[16] They can then decide to make simplifying assumptions in forecasting the lesser or more stable flows; or to identify those larger flows on which they should focus, including by pressing for further information.

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accounting concepts or definitions might also differ. It is open to the forecasters to change the terminology or the categorization of different series. Again, as capacity grows, any misalignment should be removed.

[14] If there is a unified chart of accounts and supportive IT systems – a desirable aim in all administrative environments – the coding should support a range of classifications and reports for all accounting segments: as well as the economic, they may include: source of funds, organizational, project, functional, geographic, and program. But achieving this goal is likely to be a long-term project in a fragile state environment.

[15] There is unlikely to be problem about revenue classification, at least at a high level. Tax revenues and social contributions will be identified through the process of collection, and grants and dividends will tend to be large and identifiable, even if "other revenues" are less well specified.

16 The point applies to revenue, expenditure and financing flows, but also to flows between bank accounts outside the TSA and the TSA itself – which may individually sometimes be substantial and uncertain in timing.

THE FORECASTING TOOL

The tool comprises a single spreadsheet, with a main worksheet and some inter-linked supporting worksheets

With the help of the tool, the forecasters initially prepare an annual cash plan for the budget year, drawing on previous years' data, the budget profile (probably prepared by Budget Department), and financing plans (from Debt Management Department)

As the year unfolds and outturn data and revisions are incorporated, the tool generates a short-term forecast which is rolled forward, in turn feeding a worksheet that supports decision making

The spreadsheet:

- Has been designed to support user choices
- Includes charts designed simply as visual aids to decision making. The user is free to use different charts if preferred

Allows users to input data to illustrate the sensitivity of the projections to certain risks or the impact of different scenarios; and also to inform discussion of policy responses to the projections

Tool Structure

Overview

The tool follows the logical structure of putting together a cash forecast for a budget year. Essentially, the components of the forecast add to a summary forecast which, after required adjustments, in turn feeds a table that will support decision making. The process assumes that the forecasters will be responsible for preparing the annual cash plan, although they may take some inputs from the budget profile that is likely to have be prepared within the BD; and financing plans may come from the Debt Management Department.

There are linkages between individual sections and worksheets of the tool as shown in Figure 1 (which is reproduced as one of the worksheets of the accompanying Excel tool).

Figure 1: Worksheet Linkages
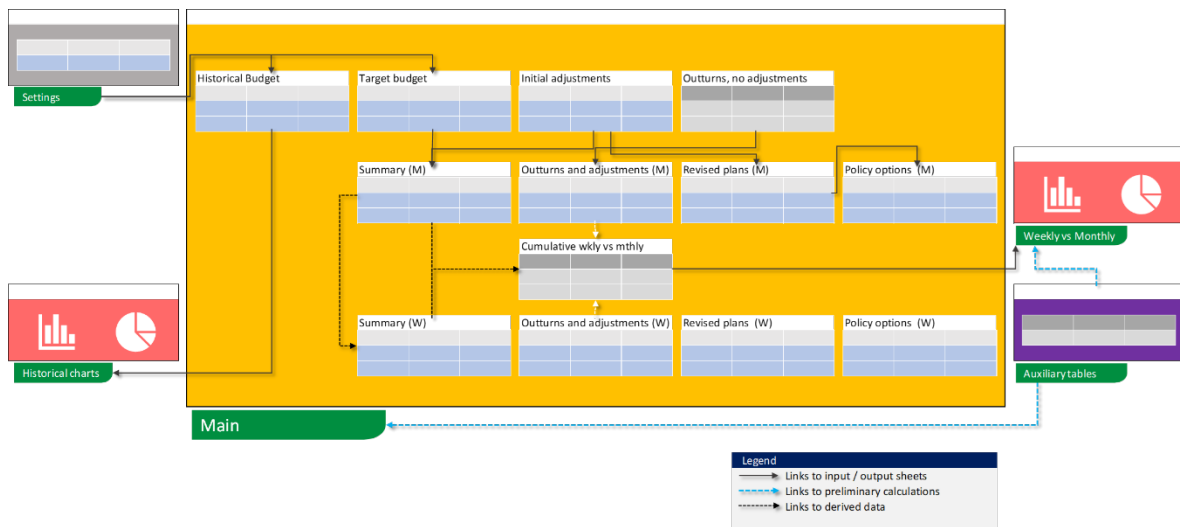
Most of the tool can be accessed through the worksheet Main. A series of buttons on the left of this worksheet allows the user to jump to the different sections of the worksheet, as explained below. One button also takes the user to the Settings worksheet; other worksheets show supporting charts and tables – they can be reached directly or through buttons on the Settings worksheet, The different sections of the Main worksheet can also be accessed from a tab "CFAT TOOL" added to the ribbon.[17] The tab also includes options for reading and adjusting formulas, displaying different sections of the worksheet together, and toggling between manual and automatic calculations.

The user should input data directly into the cells shaded in **light blue** on the Main worksheet. An overview of the data required is below.

The tool's worksheets

Settings

When first using the tool, users must input descriptive information about the data in order to prepare the cash forecast – there is a step-by-step guide in one of the worksheets. The relevant inputs include: the target budget year; the first month of the cash forecast; the last full month before the forecast period; the availability of outturn data for that month (it does not have to be complete); and the opening TSA balance for the first day of the target budget year (assumed here to be January 1, but that can be changed as necessary). When preparing forecasts the emphasis is often on forecasts over the next three months; that refers to the three months following the month in which it is being prepared. Since there will be limited data available for

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[17] The buttons on the ribbon are particularly useful when scrolling down the tool since the panel on the left may then be obscured. Note that if changes are made to the spreadsheet by using the embedded macros they cannot be reversed by the usual "undo" button, but only manually. Manual changes can be reversed.

this base month, at most covering the first one or two weeks, the outturn for that month will also need to be estimated or forecast.[18]

Main

Budget Outturns: Users must input the historical monthly data for the budget (i.e. revenue and expenditure – the historical financing flows are not relevant). Where possible the data should be in cash terms: if cash numbers are significantly different from the budget numbers (e.g. because of accounting conventions), they will need to be adjusted, either directly or with specific adjustments). The Historical Charts in the adjacent worksheet are linked directly to the outturn data.

Target Year Budget: Users must input the total yearly budget allocation for each line item of the budget. Revenues and expenditures for the target year are then calculated by applying the average historical profile. Users should also input the planned financing for the target year. They are able also to add adjustments here (or in the next section) to ensure that flows affecting the TSA are identified.

Adjusted Budget Numbers: Adjustments of various kinds will probably need to be made to the profiles generated by the budget data. The forecasters may have additional information or judgments about the size of flows or the time bucket in which they are likely to fall. There may be more technical adjustments (discussed further below) needed to ensure that the flows refer to cash. These adjustments will likely vary both across country and across time. In this section users should input any adjustments in order to arrive at the initial cash forecast for the balance in the TSA. If adjustments are made to the future months for any of the series, then an entry must usually be included for all the remaining months of that series. The adjustments must show the revised numbers, not changes to those in the target year budget. A box to the right enables users to input comments on the relevant adjustments for clarity and the record.

Summary: In the remaining sections of the worksheet, the use of monthly or weekly buttons will depend on the chosen time granularity of the forecasts. The table brings together the adjustments with the target year budget to present the cash plan for the year as a whole. Towards the bottom of the table, there are two segments that are for the users to complete as thought most helpful. Thus "finalization of the forecast" may show the impact of some expected policy changes, with "policy options" illustrating the impact of possible further changes (they are here the same as the policy options floated in the Policy Options section of the worksheet; the user may prefer to use that section of the worksheet for more elaborate analysis during the year). If there was doubt about credibility of the budget an initial provision might initially be noted here if allowance has not been made in individual lines.

 Outturns & Adjustments: This section enables the user to input outturn data and relevant adjustments based on the outturn data, on returns from the MDAs/RAs (discussed below), or any other recent intelligence. Users should input the relevant outturn data in the light blue cells and

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[18] When preparing the 3-months forecast at the start of the year, i.e. for January-March, the base month should be input as "none". As the year proceeds, the base month will be that before the start of the 3-month forecast period, and the spreadsheet will pick up the available outturn data.

any adjustments (if any) in later months or weeks; as above, the adjustments should be the revised numbers, not changes. Adjustments are not required; or users may confine themselves to making adjustments for the next three months only, that period being the focus for policy action. Again, there is space to provide commentary on why the adjustments have been made. To the right of the tables are charts showing forecast performance, i.e. comparing forecasts with outturn.

Revised plans: this table brings together the outturns and adjustments, together with the original plans for any cells that have not been adjusted, to present a revised plan or forecast.

Policy Options: In this section, in addition to the user inputs to create the cash plan or forecast and revised cash plan or forecast, users will be able to input data to illustrate the sensitivity of the projections to certain risks or the impact of different scenarios; and also to inform discussion of policy responses to the projections. This information will vary by country. It can also be input at the bottom of the Summary section of the worksheet; but that section will be more relevant when considering the robustness of the budget and financing plans over the year as a whole. The Policy Options section will be more useful as the year unfolds (explained further below). There are charts to the right of the Policy Options table, as visual aids to policy making.

Other Worksheets (Back-end)

The Historical Charts and Weekly v Monthly worksheets simply chart the available data, much of which is brought together in the Auxiliary tables worksheet. This worksheet also includes some consistency tests, along with the results of how to calculate the number of weeks per month, and the calculation of forecasts and outturns ranges based on inputs from users within the settings. All charts in the spreadsheet are designed simply to be visual aids; the user is free to use different charts if preferred. The data can also be copied into a separate spreadsheet for reporting purposes, where the user will be free to change the presentation or add charts in line with management preferences. However, it will usually be sensible to copy data on a 'paste special/values' basis, which will break links with the rest of the spreadsheet that might otherwise generate strange results. As relevant, formulae can be copied back in.

The spreadsheet also includes three worksheets that are templates for the RAs and major MDAs to supply rolling forecasts during the year for the months immediately ahead. They are not linked to the other worksheets and in practice should be extracted before being circulated more widely. Another template provides a bridge between the calculated TSA and the bank statement from the central bank.

The Script worksheet records the labels used in different languages; in the Parameters worksheet users will find the table that determines the ranges that the menu buttons should hide or show (this worksheet will be relevant for those users who need to customize the tool to their needs); the Tool Structure worksheet summaries the tool diagrammatically; and the step-by-step guide worksheet provides a an initial guide to help users work with the tool.

Using the tool

The CFAT tool is distributed with this guidance document. The data included in the tool are for an imaginary country and for illustrative purposes only; the data aim to show how some of the more

detailed adjustments and choices discussed below might be handled. When first setting up the spreadsheet, the user may find it more convenient to overwrite the illustrative data, rather than deleting the entries entirely before building a forecast.[19]

<div style="border: 2px solid red; background-color: #f9d9d9; padding: 1em;">

The user must make some initial choices:

- To decide the weights to be given to each of the previous years' outturns

- On the extent of forecast detail: if possible fewer lines should be used than in the illustrative spreadsheet (lines can be left blank; they need not be deleted)

- On the rounding convention: budget totals rounded to four significant figures, with the spreadsheet cells being 2-3 significant figures is likely to be enough

- To adjust the illustrative spreadsheet if January is not the first month of the budget year

- Data are in domestic currency (DX), including DX equivalent of foreign currency (FX) flows

- A new spreadsheet should be used each month (saving the old one); and always backed-up

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Initial Choices

There is a step-by-step guide for the set-up in one of the worksheets.

The default technique for the forecast is to average the profiles of previous years' outturns. Users will normally enter up to three years of historical data, although there is a facility to enter five years of data which may be possible for countries as they evolve towards a more stable fiscal environment. If fewer than three years are available, then users should enter whatever data are available (one year is required in order to calculate initial monthly distributions for the budget year). The number of previous years of data, and the weights to be applied to each, should be entered in "Budget outturns adjustments" in the Settings worksheet (discussed further below).

Before preparing a forecast, the user should decide the extent of forecast detail. The worksheets have been designed flexibly. Some care is needed when adding or taking away rows. Where possible fewer rows should be used, not more (rows can be left blank in the spreadsheet; they need not be deleted). If more rows are required they can be added: first select the row (any cell in the row) where the new row should be added and then click on the plus sign to the left of the row labels in the relevant segment (the "add row" menu will display an arrow on the left of the screen indicating where the row should be added, ensuring that it is entered as intended). The new row will be inserted in all sections of the worksheet. The added numbers will usually be taken into account by the relevant sub-total, although this should be checked, especially where the new row is among those that are sub-totaled within a segment.[20] If a new row is added

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[19] The illustrative data include outturns for the first four months of the year, starting in January. If the user chooses a different base month these data will not adjust – they are specific to the example. That will also affect the Weekly v Monthly charts which pick up data that have been included assuming a January base month
[20] This may be relevant, for example, if a new instrument is issued, and inserted under "New borrowing: External" (e.g. a Eurobond) or "New borrowing: Domestic" (e.g. an index-linked bond): there are similar sub-totals for debt

manually, all relevant sub-totals should be checked. Row labels can best be changed in the Script worksheet.

A sub-total inserted onto one section of the Main worksheet will need to be carried through into all the other sections. This can be done automatically by using the "adjust formulas" button on the CFAT ribbon. The user should go to the first cell of that line in the worksheet – i.e. the cell for the first month of the historical data of 5 years ago (even if only 3 years of historical data are being used in practice). After the new formula is inserted in that cell, the "adjust formulas" button should be pressed.

It will usually be unnecessary to break revenue into as many as the seven components shown. Current expenditure distinguishes personnel and pensions expenditure,[21] which together is likely to be the largest component; and then goods and services, social transfers, subsidies and grants, and transfers to SNGs, each of which will often be significant. Capital expenditure distinguishes between those projects that are externally financed (but which may require domestic counterpart funds) and those that are domestically financed. That distinction is usually highly relevant, not least because donor inflows are unlikely to be directly available to the government or fungible with other cash assets. Domestically financed projects may be those carried forward from a previous year or new projects. This distinction can be helpful when considering policy responses; there may be more discretion over spending on new projects.

As discussed above, some countries may not be able to work with a full economic classification. A mixture could be used, e.g. with an economic classification for the major MDAs and an administrative breakdown (or simply an "other" category – too much detail should be avoided) for the rest. The important point is that the bottom line encapsulates all flows that affect the TSA.

A related decision is the rounding convention. Numbers with several digits are unnecessary and indeed would be confusing to read and manipulate. The forecast will carry an error; precise estimates will be spuriously accurate and may mislead. A budget total rounded to four significant figures, with the spreadsheet cells typically being two or three significant figures is likely to be more than adequate.

All data are in domestic currency (DX), including the DX equivalent of foreign currency (FX) flows. Several countries maintain FX accounts which are not completely fungible with DX accounts, either because the central bank does not offer immediate value or because the local FX market is thin and costly to use. But complete ring fencing between FX and DX flows would be very unusual. It would be possible to embellish the spreadsheet to identify FX movements separately, but in many countries that is unlikely to add much value. Instead, DX should be used throughout.

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repayments and debt interest. Users should check that inserts are properly added into the sub-totals, which will be important when assessing policy options.

[21] Strictly, pensions as a personnel expense should be limited to the payments that government makes as contributions to a pension scheme. Pension payments made to the household sector as part of a social security scheme are social transfers.

The example assumes that the financial year starts in January; for financial years starting in other months, the change should be made in Settings. The column headings will then adjust automatically.

A new spreadsheet should be used each month. Thus, the spreadsheet prepared in, say, March (month 3 of the year) would include outturn data for January and February and forecast the outturn for March and subsequent months. In preparing the spreadsheet in April, it should start from a copy of that for March to which outturn data for March should be added. In that way a copy will be retained of every spreadsheet, which will be important when it comes to analysis of forecast errors and identifying how future forecasts might be improved.

Analysis of forecast errors is an important part of the forecasting task. It has two purposes: planning responses to forecast deviations; and learning lessons to apply in future forecasts. Annex B outlines some techniques.

All spreadsheets should also be backed up and password protected appropriately. This protection is essential; Excel files are not always stable and it is all too easy to change them accidentally. Passwords are important to prevent unauthorized users making changes, whether with good or bad intentions, which are unknown to the forecasters and might imply misleading policy advice. The password should be added when the spreadsheet is first prepared. The spreadsheet autosaves every 30 minutes.

Adjustments

Adjustments may need to be made to the data. Some of these will be forecasters' judgments, but others will be technical **to ensure that the flows refer to cash and affect the TSA**.

The user need only make adjustments likely to have a material impact on the forecast.

There is a long list below of potential adjustments. They are highlighted where they are often important; the rest can be ignored in many countries, although they should be briefly reviewed for relevance.

A large number of adjustments of various kinds will probably need to be made to the budget data or the data supplied by others. Some of these will reflect the forecasters' latest information or judgements; but many will be largely technical, in particular to ensure that the flows refer to cash and that they fall into the correct time bucket. Examples of many of these adjustments have been demonstrated in the Adjusted Budget Numbers section of the Main worksheet, although they potentially might be made to any of the series, not necessarily to the ones exemplified.

Note that the spreadsheet assumes that, if an adjustment is made, the whole of the newly-adjusted row is entered in the Adjusted Budget section, not just pluses or minuses on the rows in the Target Year Budget section; the same applies to adjustments following input of outturns. That makes it easier to pick up the new row in the Summary or Revised Plans sections.

A list of possible more technical adjustments follows, with advice on how they might be handled in practice. The user should consider the applicability of each when compiling different series,

and then only make adjustments if they are likely to have a material impact on the forecast. If all flows are in cash and link directly to the TSA, the number of adjustments required will be limited.

Revenue Flows

- **Potentially important**. If a non-tax receipt is retained by an MDA, legally or illegally, in a bank account controlled by the MDA, it will not be available to the Treasury. The forecasters can make a general assumption about such "leakage"; or it may be possible to identify the main culprits and open a dialogue with them.

- Recognition of receipts: outturn data may be defined in budget terms but not in cash terms; there may be differences in both accounting, particularly if there are any accrual components, and in the timing of recognition of flows. For example, if a tax payment is paid into a RA's account at a commercial bank, it may be recorded as revenue, but it is usually not under control of the Treasury until it has reached the TSA.[22] The impact on the monthly forecast may depend on the profile of receipts across the month; but in the absence of any other information, the forecaster can adjust the monthly flows by the average time lag between receipt by the banks and transfer to the TSA.

- If a large flow is expected at the end of the month (e.g. a corporate tax payment) but the end of month falls on a weekend, in practice it may largely be pushed into the following month. Such adjustments will need to be made on a case by case basis, e.g. by identifying the impact of weekends in past profiles.

Expenditure Flows

- **Potentially important**: Payments and hence cash movements in respect of expenditure commitments or obligations that are outstanding at the end of year may in practice be made in the following year. How this works is likely to depend on the annuality or accounting rules in the particular countries, and the extent to which there is a complementary period after the end of the year for payments to be made but which are backdated to the previous year's accounts. The forecasters should explore the impact in previous years and reflect this impact in cash forecasts.

- **Potentially important**: In some cases, unspent provision may be rolled over to the following year: it should be reflected in the new year's budget, but may not be. Similarly, decisions to pay off arrears may not be part of the budget and an adjustment to the cash forecast, which may be large, is likely to be necessary once a repayment program is agreed. The payment of arrears should be distinguished from payments during the complementary period (above); it is important to establish the amount for both forecasting and control reasons. If an agreed arrears payment program is included in the budget, it should also be included in the initial forecast. Previous arrears may have been recorded as debt, which will be reduced by their payment. Relevant data should be available from the BD or others in the Treasury.

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[22] There may be a further lag if the revenue flows into a reconciliation account in the central bank under control of the RA before flowing into the TSA. This is not good practice; reconciliation can be done in a sub-account of the TSA.

- Recognition of payments: one example arises where checks are issued; the budget may record expenditure on the issue of the check, but cash will only move when it has been presented and cleared. The central bank, or contracted commercial bank, should be able to supply data to allow the forecaster to calculate an average effect, where it is significant. Since larger suppliers will tend to present checks immediately, any adjustment is likely to be small.

- There are examples where the deferral of payments some time beyond establishing the obligation is part of the contract with the supplier. Payment of salaries may also be deferred in cash strapped environments, but may nevertheless be recorded as paid.

- Extra payments: in the example allowance has been made for a "13th month" salary bonus in December.

- Some grants or transfers may be linked to flows in a previous period (e.g. to illustrate the point, in adjusting the target year budget in the example, SNGs receive "their" share of tax receipts – assumed to be one quarter of receipts from personal income tax, corporate income tax and import/customs duties – only after a lag; in this case the government should be in control of the length of the lag which the forecasters can use as an assumption).[23]

- There may be a lag between donor-financed expenditures and the receipt of the funds from the donor; in effect the project may have to be financed in advance by the government even if there is no budget provision. If donor funds are paid in advance, they cannot (usually) be used by the government, but only drawn against expenditure on the project.

- Imprests have a similar impact: cash may be advanced to facilitate expenditure and, even where there is provision in the budget, the cash flow may be brought forward as a result. Some countries make advances to overseas missions.

- Some revenue and expenditure flows do not necessarily have cash attached to them. A subsidy payment may be netted off a tax liability. That should net out in cash terms – the saving in the subsidy is equal to the shortfall in tax revenue – but a check on the internal consistency of the budgetary treatment of the estimated flows may be required. Similarly, a dividend payment from an SoE may be netted against a promised grant or capitalization payment.[24]

Banking and Financing Flows

- **Potentially important**: The tool defines the TSA, as described above, as comprising those related bank accounts whose balances can be controlled or accessed by the government. Although this may hold generally, in some circumstances it may not always be the case, at least in the short term. **Some examples, and their possible handling, are in Box 3**.

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[23] Revenue sharing can create other forecasting challenges. In some cases, the relevant revenues flow to an account outside the TSA with the shares then distributed after a lag to central and sub-national government accounts in accordance with an agreed revenue-sharing formula. The central government forecast has to focus on the receipt of the central government's share, which may or may not follow a defined calendar schedule.

[24] It is also possible, although perhaps unlikely, that budgeted revenue projections may be gross of "tax expenditures" i.e. tax discounts or exemptions that further the policy aims of government that are scored as expenditure on subsidies, in the interests of transparency, but have no cash flow linked to them.

- Some divergences between the coverage of the TSA and the coverage of the budget were noted above, with "leakage" to commercial banks often being significant. The coverage of the TSA may also be larger than the budget, e.g. if it includes the balances of an EBF. In such a case, the EBF will need to be included within the forecast processes.[25]

- Some pre-funding of banks ("seed money") may be required if core banking systems are not fully integrated, i.e. there is drain of cash ahead of expenditure. But typically, that will not vary much from month to month and, if so, it could be ignored. (Within-month variation might be more material for weekly forecasts).

- The accounting treatment of securities may diverge from the cash flows. For example, if a discount on the issue of a bond is amortized over the life of the bond, it may affect recorded interest. Alternatively, if the sale of a bond is recorded in the debt statistics at its face value (i.e. the payment due at maturity) the discount or premium on issue, which will affect the cash proceeds, may not be captured. In practice such adjustments may be rare, and no such adjustments have been made in the example tool; but in any event they should be straightforward to identify with the relevant accountants or statisticians.

Box 3: Constraints Accessing Cash Balances within the TSA

There are potentially four types of constraints:

- Different flows are earmarked to different bank accounts. Some countries maintain separate accounts to link hypothecated revenues and expenditures, or for debt-related transactions, e.g. securities issuance and redemptions. If the cash balances are legally protected, they may have to be regarded as outside the TSA, in effect as an EBF: but there may be some scope for periodic or arms-length transactions with the TSA.

- In absence of full banking sector integration, it may be more convenient in more peripheral areas to use dispersed accounts to handle both revenues and expenditures in those areas – only the net flows will reach the TSA in the central bank and often with a delay.

- Even where all flows reach the central bank, there may be legacy sub-accounts which are not automatically integrated with each other, and the Treasury has to intervene to request the central bank to move cash between accounts.

- There may be accounts to which the Treasury has access, but which are held outside the TSA at the central bank; there are examples of this particularly in some Francophone countries. Again, the Treasury would have to intervene if it needed to move cash into the TSA.

Insofar as these arrangements reflect current systems constraints, or accounting and control requirements that pre-date modern management systems, the problem should fall away over time. But some workarounds may be needed in the meantime. For a debt-related or similar account which will not have many transactions, the spreadsheet could be amended to aggregate these transactions separately, monitoring the balance, and giving early warning of the need to make a transfer. But that is unlikely to be manageable if there is a large number of separate accounts covering a range of flows. In those cases, more reliance will have to be put on monitoring bank

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[25] More usually the coverage of the TSA will be less than that of the budget which will be less than that of total central government. But for these purposes the focus is on the TSA (more strictly on those cash balances over which the Treasury has control).

statements, whether from the central bank or commercial banks, which should be available as soon as possible to give the Treasury an opportunity to trigger transfers as required. Central banks have also sometimes been willing to look at the total net balance in the government's accounts, ignoring the fact that some may technically have a negative balance.

Under any circumstances, the government will also want to ensure that it receives regular reports on balances in government bank accounts that are outside the TSA, certainly those in the central bank and ideally also those in the commercial banks. These will include EBF accounts, donor-related project accounts and other accounts under direct control of MDAs. Such monitoring and control procedures normally lie outside the forecasts, but the government may sometimes be able to transfer such balances into the TSA, flows that should be incorporated in the forecast.

These adjustments are all made in the Adjusted Budget Numbers" section of the illustrative tool, or in the subsequent "Outturns and Adjustments" section. But there are choices about which category they are made against. Where they are specifically identified and can be monitored during the year, they are best made against the respective revenue or expenditure flow. Where they are more in the nature of adjustments by the forecasters, somewhat arbitrary but drawing on their own experience, they can be below the surplus/deficit line, along with adjustments to take account of the difference between the coverage of the TSA and of total government cash balances. Although there is not a clear-cut boundary, it is useful to distinguish between adjustments that convert budget numbers to cash; and those that are related to TSA coverage, as in the illustrative tool.

The End of the Budget Year

There is a procedure to be followed in setting up a new budget year

The forecaster should always be looking some months ahead in order to be able to advise on the action necessary, even if that horizon extends into the following budget year.

When setting up for the new budget year, the user should save the file as a new version, and clear the data for the old budget year. The data in the Budget Outturns section will need to be adjusted with year T-1, becoming year T-2 and so on; and the outturn data for the nearly completed budget year copied across to become the historical data for year T-1.

Forecasts should not be confined to the months or weeks of the current budget year. The forecaster should always be looking some months ahead in order to be able to advise on the action necessary, even if that horizon extends into the following budget year. Thus the forecast being prepared in November, may cover the months December to February. The forecaster will need to add a forecast for those months, e.g. January and February, in particular in the Policy Options section of the Main worksheet.

This could be done as follows; the outline refers to the monthly sections, but the same process will apply to the weekly sections.

- Inserting columns after the December column (one column for the forecast November to January; two columns for a December to February forecast), but before the 'total' column.

- Copying into those columns, as a default, the outturns for January and February of the current year. Care should be taken to copy only the values of the individual entries, not the associated formulae, although formulae for the sub-totals of the rows can remain unchanged. The TSA balance should be linked back to the closing balance in the most recently recorded month (i.e. the opening balance for January will be same as the closing balance for December).

- Adjusting the copied data as thought necessary. One option would be a common multiplier related to GDP growth or inflation. Alternatively, by this time there may be sufficient certainty about the budget for the following year, even if not formally approved, for the forecaster to copy across data from the plans and forecast being prepared for new year. Or the forecasters could insert other estimates, e.g. from their own or others' work, overwriting some cells accordingly.

- The rows showing the estimated impact of sensitivities and policy options would be completed as for any month.

- The charts to the right of the table would need to amended to accommodate the extra columns – that can be done in the normal way (select data/edit series/series values [and adjust the final column reference]).

The Detailed Flows

The general approach is to identify monthly expenditures over the previous three years, to take an average of the percentage falling in each month; and apply each percentage to the budget figures for the current budget year.

But this approach has to be used with some care; some adjustments may need to be made. There are other technical options that might be relevant in some circumstances.

Previous Year Outturns

The plan and forecast make use of outturn data. The general approach is to identify monthly expenditures over the previous three years, to calculate the percentage falling in each month, then for each month to take an average of the three percentages applying to that month; and apply each percentage to the budget figures for the current budget year. This approach is widely used internationally; however, it has to be used with some care – see examples of adjustments in Box 4.

Box 4: Possible Adjustments to Outturn Data

There are potentially four types of adjustments:

- The outturns may be recorded in budget terms not cash terms; and adjustments will need to be made (either directly or in the Adjusted Budget Numbers section).

- Substantial differences in the monthly profiles in each year should be identified (e.g. by use of charts) and the reasons analyzed (they often arise when major flows fall into one month one year, and a different month the following year), or there may simply be no pattern.

- Historical patterns may not always be relevant for certain types of expenditures as a result of an emerging or past one-off issue. For example, in fragile states where civil (or other) conflict has arisen or intensified, expenditure on internal security may spike. Other examples may be natural disasters, election expenses or responses to Covid-19. There may be other outliers or special cases in the outturn data (e.g. as shown by the charts generated). In all these cases, and as long as they do not affect too many lines, the simplest approach is to overwrite the data with an estimate of the underlying "normal" flow.

- If there have been more wide-ranging changes in procedures, e.g. related to tax collection, or in the way data have been classified, the profiles before those changes may not be of much use and should probably be ignored.

For some of the series, future monthly profiles may be available from the BD, perhaps obtained from the individual MDAs that have been asked to profile their approved provision. Such profiles may often be unreliable, particularly if the MDAs have done little more than divide by 12. Profiles from the RAs may be of more use, although they are likely to cover only the largest taxes. It is the forecasters' judgement whether to use such profiles or the averaging method described; and if so which of the possible adjustments should be made.

If there are no historical data available at all – e.g. if this is the first budget following a period of conflict – the user should construct a prior year budget outturn and enter it accordingly. In practice, it may be essentially the same as the Target Year Budget, and in due course be overwritten by the actual outturns for the target year. If nothing is entered by the user, either in the Budget Outturns or the Target Year Budget sections, then the tool will assume that all revenue and expenditure flows are split evenly across the 12 months. That will not apply to financing projections for the budget year where previous years are not relevant.

Although the outturn for the current year will in due course become the outturn for the year T-1, some care will be needed when copying the data to the Budget Outturns section if that damages consistency with other outturn years. For example, the outturn data in the current year may be recorded essentially on a cash basis although the budget classification – which may include non-cash items – is used for T-2 and T-3. As the data for the current year become outturn data for year T-1 possible adjustments may need to be considered to ensure consistency (adjustments could instead be made in the Adjusted Budget Numbers section but that is likely to be more complicated).[26]

With economic development and greater fiscal stability, the reliance that can be placed on outturn data stretching back more than three years will grow. The spreadsheet, therefore, includes the facility to use the last 5 years of data to create the average profiles to be applied to

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[26] Similar complications might arise if an IMF program was being monitored using a presentation different from the government's own. It is awareness that is important; as already emphasized, time should be spent adjusting only larger or material flows.

the target year. The user can select the number of years where outturn data are available in the Budget outturns adjustments section of the Settings worksheet (ranging from 1 to 5 years). Similarly, data quality may have improved over time suggesting that outturns, whether five or three years ago should not be fully included in the analysis. One technique is to weight past years differently, e.g. 0.45 for the immediately preceding year, 0.35 for the year before that, and 0.20 for the year three years ago; corresponding weights going back five years might be: 0.35, 0.30, 0.20, 0.10, 0.05.[27] This facility is also included in the spreadsheet. The default will be equal weights, as calculated by the spreadsheet, with the weight for each available year dependent upon the user-input number of years. **The user can write-in other weights; but they must add to one.**

The Budget Year

The spreadsheet circulated with the tool has made choices about which revenue, expenditure and financing lines to include, about the numbers themselves, about the policies they reflect, and about the adjustments that might need to be made.

These choices are set out in detail in Annex C. **Note that they are only intended to illustrate some of the judgements and techniques that forecasters might need to deploy, and some possible information sources.** It will be for the forecasters to make the judgments, drawing on policy guidance as available.

In-year Outturn Data and Revised Plans

Monthly or weekly outturns will need to be entered by hand, unless the spreadsheet is linked to the IFMIS. They must be in cash (or an adjustment made). The statement from the central bank may be an additional source of information.

If the outturns diverge from the forecasts, adjustments to future plans will usually be needed – based on the forecasters' own judgements if there are no other sources. They may be substantial if the budget is revised.

The outturns, and suggested adjustments, shown in the example spreadsheet reflect a number of assumed but common occurrences.

The actual TSA balance, probably taken directly from the bank statement, may be different from the calculated balance. The gap should shrink over time; but if it is large it should be rolled into future forecasts and taken into account in framing policy options.

MDAs/RAs can often be a source of useful real time information, particularly as the Treasury starts to focus on weekly forecasts. Some templates are available. The focus should always be on major flows.

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[27] The responses to Covid-19 might suggest that 2020 or 2021 should always be given a lower weight.

Outturn Data

Monthly outturn data are input into the Outturns & Adjustments section of the Main worksheet. They will probably have to be input by hand, obtained probably either from others in the Treasury or from the central bank (and potentially checked with others in the Treasury); or if necessary by email from key MDAs/RAs. Some countries are able to link the spreadsheet to their IFMIS. If the outturn data are from other departments in the Treasury or MDAs/RAs, again, some care will be needed to clarify whether the data are recorded in cash or budget accounting terms, and adjustments made as necessary. Payment instructions may be recorded in the IFMIS before checks are honored through the bank account. In practice it may be difficult to populate the section in full; outturn data will not be available in the required detail. In some cases assumptions may need to be made about how data are allocated to the rows, or unspecified flows recorded temporarily in one of the "other" categories. If new data require the outturns for an earlier month to be updated, the revised outturns must be entered in the version of the spreadsheet currently being used. Where no outturn data are available at all for a row and nothing is input, the spreadsheet will just show a blank. The relevant rows must be completed by the user. The default option might be to simply copy the data for those rows (values only) in the original plan, i.e. from the Summary section. But ideally the user will be prompted to look for more up to date information.

Where outturn data are incomplete, the forecasters should explore whatever other sources are available. Bank statements in particular are a potential early source of information on transactions if they are not already recorded in an IFMIS. If transactions are managed centrally, either by the central bank directly or through the central bank's oversight and membership of the payment system, details should be available daily from the bank statement from the central bank. If the coding or labelling structure is sufficiently detailed, it should be possible to identify at least major flows (or their lack), before they are categorized by the accounting function – if there is not currently sufficient detail the central bank should be urged to supply it. The statements might help explain apparent divergences from forecasts, or inject an element of caution into future plans.

The worksheet Template Bank Account-GFS Bridge has been added to facilitate this process – to help the allocation of bank statement data (or other data that lacks a full classification) to the relevant series. This worksheet is not directly linked to any of the other worksheets – it is there for the forecaster to use as judged most helpful, e.g. by noting the larger transactions shown on the statements against the relevant classification.[28] The columns of figures added to the worksheet

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[28] The statements are often available in Excel, or if not they can be exported into Excel. Ideally the statement records each transaction against a chart of accounts or IFMIS code, and the necessary sub-totals can be calculated easily by using a filter. But it is probably more likely to record e.g. voucher numbers, which are not easily matched with the relevant economic classification, although some descriptive label should be available (or the central bank should be encouraged to add a descriptive field). In such circumstances, emphasis should probably be on the larger transactions – sorting the flows by size, netting out transfers between sub-accounts and identifying e.g. major tax receipts, debt-related flows, SNG transfers and personnel-related expenses. Taken over a few days, they will usually account for a sufficiently large part of the value of daily transactions to be able to identify any forecast divergence, even if there is an unallocated balance.

illustrate a possible use of this bridge table; a description of the worksheet is at Annex D (which also includes extracts from two example bank statements). But the worksheet example is only one possible technique; it is for forecasters to decide how best to use the table in their own circumstances, depending on the information available from the central bank.

If payments are more dispersed, perhaps managed by local bank branches in the absence of core banking systems, or with only net clearing across the banks' settlement accounts at the central bank, users may have to be more imaginative in seeking out useful early data sources. In some of these cases, the cash will have already left the TSA, so for these purposes it is not a problem. But if the cash is still nominally part of the TSA, or transactions are based on a credit limit, it may be necessary also to obtain bank statements from the local banks or relevant MDAs, or to come to an understanding about generating daily reports of the required data.

The outturns shown in the example spreadsheet reflect a number of assumed but common occurrences. They include:

- Domestic interest rates are slightly higher than assumed in plan.

- External debt repayments are slightly different from forecasts as a result of FX changes.

- There were some shortfalls in the auction proceeds from domestic issuance.

- The government was forced to borrow from the central bank in March to avoid an unexpected cash drain. It is assumed that that borrowing has to be repaid before the end of the financial year – with an allowance made for it in December (ie on the same line as the borrowing – if repayment is due in a different month it can be overwritten).

At the bottom of the Outturns & Adjustments section, and again in the Policy Options section, the actual TSA balance, probably taken directly from the bank statement, is also shown. It is quite possible that there is a difference between that and the calculated balance, a gap that should shrink over time as the reconciliation process completes. (For the current month an estimate of the end-month gap may be necessary). If, however, the gap is large it should be rolled into future forecasts and taken into account in framing policy options (discussed below).

Adjustments to future plans will need to be made in consequence of these divergences, and again the changes should be recorded.[29] It is for the forecasters to judge what adjustments are necessary, taking account of their understanding of the reasons for divergences or analysis of forecast errors, and any other information including from the MDAs/RAs. Over time, forecasters should be able to identify leading indicators that can explain a divergence or suggest a possible future divergence – for example the port authority's reports of shipping volume will give forewarning of future customs revenues. Note that changes in financing plans may also require changes in interest projections (see discussion in Annex C); and past outturn data may need to be

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[29] Outturn data are unlikely to throw much light on the adjustments that need to be made in respect of TSA-related flows. They may provide better data on imprests, etc. but outturns are unlikely to carry any implication for the rest of the year (apart from clearing payments in December).

adjusted in the light of new information. All these changes should be included in the Outturns & Adjustments section which also calculates divergences.

Note that if an adjustment to future months or weeks is made, the fully adjusted monthly forecasts should be entered (as for the adjustments made in Adjusted Budget Numbers), not just changes to the previous forecasts. The new rows will be picked up in the Revised Plans section.[30]

Revised Plans

More fundamental adjustments to future years may need to be made if budget plans are revised, whether as a result of a change in the macro-economic outlook – forecasters should also be aware of the main macro-economic assumptions or projections – a new government, new legislation or a supplementary budget. The implications of the revised plans for future months of the budget would then be among the adjustments to Adjusted Budget Numbers, adding to the future months in Revised Plans, in effect substantially overwriting the previous plans. The revised annual budget could itself be added, and used for subsequent comparisons, by inserting a new column where required and pasting in the numbers (with no formula). The BD will be the main source of information, although financing plans may also need to be revised. If necessary, the MDAs/RAs should be asked to reprofile the remaining months of the year.

Inputs from MDAs/RAs

If the Treasury forecasters are able to develop contacts with opposite numbers in key MDAs/RAs that can often be a source of useful real time information, particularly as the Treasury starts to focus on weekly forecasts. It is good practice to require the RAs and larger MDAs to submit forecasts, at least each month, for, say, three months ahead. The RAs/MDAs are much closer to actual transactions; and they should be better able than the Treasury to predict trends or gather information, including from local offices. They should also be the first to know if there has been or is likely to be any divergence from past trends.

The focus should be on major flows. What this might mean in practice in relation to expenditure is discussed in Box 5. The forecasters will need to aggregate, probably in a separate worksheet, the material coming from different RAs/MDAs and make their own assumptions about flows from the remaining units; they can usually be assumed to be flat, follow a simple pattern or be in line with plans.

Box 5: Major Expenditure Flows

The simplest, and initial, approach is to request information from those budgetary units that are collectively responsible for, say, 75-80 percent of government expenditure. It is often the case that that might require covering only, say, 5-7 MDAs (e.g. defense, transport, education, health, social services, public works, energy).

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[30] Note that these are the forecasters' revised plans. They may be different from those used in, say, the BD which may be constraining any profiles to the currently approved budget. In the example spreadsheet, some changes are made over the remaining months of the year; from the forecast point of view it will be the next three months that should be given particular emphasis.

But some large MDAs may comprise mostly salaries which are relatively straightforward to forecast (e.g. education). It may be more useful, and more manageable, to identify:

- Those series with substantial nominal volatility or seasonality (e.g. agricultural support or transfers to local government)

- MDAs with a small number of large capital projects. The focus there has to be primarily on these few large projects, with other parts of the MDA budget taken into the residual.

- For those few key projects it might be easier to obtain information from the relevant Project Management Offices (PMOs) or Implementation Units.

- MDAs with large capital budgets. These will usually be managed as an investment program, and it may be that the information source is the MDA planning unit, rather than its central finance function.

- In some countries the MPI has a better overview of capital spending than the individual MDAs.

It is specifically recommended that the RAs/MDAs are required to complete each month templates supplied by the Treasury. That will simplify the aggregation processes, and ensure a more consistent approach. A fixed timetable for their completion should also be set, e.g. to submit before the end of the second week of the month a forecast for the remaining weeks of that month and for the three subsequent months (i.e. ideally 13 weeks). Illustrative templates are included with the tool[31] – see Box 6.

Box 6: Revenue and Expenditure Templates

Revenue: The forecast for the three main tax groups is shown. Although this exercise ideally provides a weekly forecast, the monthly forecast is also shown as a check on consistency. Comparisons with the initial monthly and weekly plans are included to assist in identifying trends such as a persistent shortfall from the budget; but as emphasized before, this exercise is about identifying what will happen, and is not designed to hold the MDAs/RAs to account for their performance.

The chart would be optional but again can help to provide a visual check.

Expenditure: there are two templates; one for current expenditure and one for capital. Their design is essentially very similar to the revenue template. But whereas the RAs may account for a substantial proportion of total revenue, that will not be the case in respect of any one MDA's contribution to total expenditure. That might require data to be submitted to an extra place of decimals (as shown in the examples). The contributions from the selected large MDAs will need to be aggregated and allowance made for that proportion of total expenditure that they do cover…

Weekly Forecasts

A combination of techniques will probably be needed to build weekly forecasts: some flows will be known, some will have a regular pattern, and assumptions can be made about others.

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[31] For convenience, three templates are included as worksheets in the main spreadsheet. But they are not linked to the other worksheets, and in practice the forecasters will want to copy the templates into another spreadsheet adding their own design changes before sending them to MDAs/RAs.

In time the weekly forecasts may be built independently of the monthly forecasts. But until then, they should be broadly consistent with the monthly equivalents. Charts are also included showing a comparison – for performance monitoring purposes – between cumulative weekly and monthly outturns and forecasts.

The forecasters are unlikely to have past weekly data in sufficient detail to construct a plan or forecast using the same techniques that are available for the monthly forecasts. Instead a combination of approaches is recommended:

- Where the precise date of a forecast flow is known, e.g. debt servicing payments, it can be allocated to the relevant week.

- The due dates of many tax receipts and expected payment dates of some expenditures (e.g. salaries, transfers to SNG) are also usually known with a degree of accuracy and can also be allocated to the relevant week.

- Some flows will have a regular pattern across a month.

- It may be possible to spread other flows equally across the weeks of a month. But if only monthly forecasts are available a more cautious assumption is that revenue is received at the end of the month and payments are made at the beginning of the month, at least until the forecasters have more experience of the in-month profile.

Suggested techniques or sources of information for the weekly expenditure profiles are summarized in Annex E.

The awkwardness of a month comprising fractions of a week can usually be addressed in one of two ways:

- Identifying months with either 5- or 4-week periods;[32]

- Keeping strictly to the monthly calendar, with some months having one or two stub periods, each of which might be one, two or three days.

The technique usually preferred is the first, and that is the one adopted here. But because a "month" may have 4 or 5 weeks, some care is needed; it may be that a lumpy flow will fall in a week allocated to an adjacent month.[33] If a revenue or expenditure series flows evenly across the year, the totals in some "months" will be different from others. Flows due on a certain date will not materialize on that date if it falls on a weekend – more such adjustments will be needed than for the monthly projections.

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[32] A few countries define their monthly forecasts in terms of 4 or 5-week periods, which simplifies the transition to weekly forecasts, although if may complicate identification of some calendar-specific flows.

[33] For example, a corporate tax receipt due in June may be deemed to arrive at the end of June, but the week including 30 June may be regarded as part of July not June.

In the illustrative spreadsheet, the weekly data in the Summary section have been constructed from the monthly data. It has mostly been done in a simple fashion – the monthly figure for any month has been spread equally over the 4 or 5 weeks identified for that month. There has been no attempt for example to base weekly estimates on the average daily flow of a month. In practice, it will be necessary to overwrite such numbers, whether to take account of lumpy transactions or specific flows in weeks that overlap two months.

The monthly plan and forecast is, as described above, essentially a top down process. In the weekly forecast, it will be important for the forecasters to incorporate more bottom-up information; to fine tune the profile. There should be more emphasis on obtaining forecast information from the MDAs/RAs, as discussed above. This will be particularly important for those series for which good weekly outturn data are not available. But at the same time, it will be less important always to update the plan for the remaining weeks of the budget year in the light of outturn information. The emphasis should instead be on building good quality forecasts for the next three months (or more): and drawing on forecasts from the MDAs/RAs to do so. The updated monthly plan will provide an adequate framework to ensure that the forecasts of requirements coming from the MDAs do not risk exceeding the budgetary totals.

In time the weekly forecasts may be built independently of the monthly forecasts. But until then, they should be broadly consistent with the monthly equivalents (or any divergences identified). Whether they are prepared by breaking down the monthly plan or through a more detailed bottom-up process. the forecasters should monitor the cumulative totals as the work proceeds, i.e. to check that the cumulative weekly flows stay in line with the cumulative monthly flows. To facilitate this, charts on the Weekly vs Monthly worksheet compare the cumulative monthly and weekly data for both forecasts and outturns. Weekly (as well as monthly) outturn data should be entered directly into the Outturns & Adjustments section. The data will then also be recorded in the supporting data worksheets which are the basis of the charts that bring together the forecast and outturn data to enable the user to identify forecast performance.

Policy Options

The Policy Options section is important: it is designed to be the one that the forecasters might submit to the Cash Coordinating Committee (CCC) or similar decision-making body. There are two versions, depending on whether the forecasts are monthly or weekly.

There are three segments to the section:

- The central forecast, including recent outturn figures and projections of future months

- A segment to show the impact of sensitivities, risks materializing or other what-ifs.

- A chart that shows projections under different assumptions: if it is available at meetings of the CCC, it can be used dynamically to show the impact of any policy options

The Policy Options section of the Main worksheet is designed to be the one that the forecasters might submit to the Cash Coordinating Committee (CCC) or similar decision-making body for

decisions on how to respond to the emerging forecast.[34] The section picks up the data from the Revised Plans section, in some cases just subtotals to avoid the table becoming too big. There are again two versions depending on whether weekly or only monthly forecasts are available. In deciding financing or other policy responses, it is often useful to take account of the expected cash profile beyond the immediate forecast horizon, and in both cases projections for the remaining months or weeks of the year are also included. However, focus for policy action is likely to be on the next 3 months, and the next three months plus the current month (which will be a mix of actual and estimated outturn) have been highlighted in green to stress the stronger status of these entries.

There are three segments to the table:

- The top comprises the central forecast, including recent outturn figures and subsequent adjustment to future months. Some series have been added together, to highlight in this table just the main influences, with other rows brought together in 'other' categories. It is for decision makers to choose how much detail is shown, but their focus should be on the projections of the TSA, or the cash over which government has control. This spreadsheet is not designed to monitor budget execution performance. The series have, however, been split into discretionary and non-discretionary expenditures. This split is only intended to be illustrative of a technique that is sometimes helpful to decision makers, i.e. distinguishing between those lines whose expenditure cannot realistically be cut or delayed – whether for political, legal or contractual reasons – and others where there is more flexibility. In the example only personnel expenses and debt interest are regarded as non-discretionary; it may be that e.g. security expenditure should be added; it is for the forecaster to decide, taking account of policy guidance. The split can help clarify the options for decision makers; for example, if the treasury is being forced to ration cash, whether deferring payments or withholding appropriation or commitment authority, it gives an indication of the size of expenditures that might be targeted. The basis of the split may need to be periodically reviewed; and it may then interact with the order of presentation of the different flows in the other sections.

- The next segment provides an opportunity to show the impact on the forecast of sensitivities, risks materializing or other what-ifs. It is the forecasters' choice what to show here, based on discussions with others in the MoF. The examples shown are only illustrative, although factors such as called guarantees or poor auction performance are likely to be all too common in a volatile market environment. But the general intention is to give senior management an understanding of the range of potential outcomes and the probabilities attached.[35]

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[34] A CCC would typically be chaired by the Treasurer or other senior MoF official and would review recent cash flows, consider the forecasts, and decide the action needed to ensure cash availability to facilitate the efficient execution of the budget and otherwise meet cash management objectives. Its membership would include representatives of all the relevant functions (debt, budget, macro-fiscal, MPI, as well as treasury) and potentially of the central bank and most important MDAs/RAs.

[35] The forecasters should aim to submit a central case. Senior management might decide to incorporate an allowance for prudence in making decisions on future issuance or expenditure releases; but in that way the cautionary element is explicit.

- The final segment shows possible policy responses; again, somewhat arbitrary examples are included and can be overwritten as required. Note that, in the example spreadsheet, some of the changes are only temporary; thus a delay in a program loan might imply less cash than expected in a month ahead, but the shortfall is made up in a subsequent month. Similarly, delays in discretionary expenditure are assumed (in the example) to be reversed before the end of the year. If, as will often be the case, additional T-bills are to be issued as a response to an emerging cash shortfall, then any redemption in the same financial year should also be shown.

The chart at the bottom right of the table is particularly important. It shows projections of the TSA under the central base, the "worst" case (which is intended to be plausible not extreme) and the impact of the policy options set out above. In the example, there is an implicit cash balance or cash buffer target of 25 million, i.e. action is identified that would prevent the balance going below this level at least over the next few months. If this chart is available at meetings of the CCC, it is possible to use it dynamically to show the impact of any policy options that may be discussed there.

The lack of complete outturn information means that it is quite possible that the actual change in the TSA each month is different from the change that is calculated from the available outturn information (plus an estimate, e.g. taken from the original plan, for the missing data). The Outturns & Adjustments section included a row to allow for this reconciliation gap between the top down calculation of the TSA balance and the actual balance. The Policy Options section has therefore added an additional row for the difference. If this is large, and the drain on the TSA is greater than expected, it would be prudent to take this discrepancy into account in the future forecasts. It has therefore been treated in the table as one of the risk factors. Unless there is a good reason to think that the drain might be reversed it should be carried forward; and potentially some further allowance added to allow for a further drain (depending on judgements about its likely cause). Note that the drain represents a change in the cash balance; it is ignored in cumulating the flow effects of other risks and sensitivities, but then added back in coming to the total impact on the TSA. If the drain or discrepancy is expected to worsen over time, a higher allowance should be included in future months.

ANNEX A: GLOSSARY

This Glossary identifies the main concepts used in the user guide. For statistical definitions, there is a full glossary in Appendix 9 of the IMF's Government Finance Statistics Manual 2014 (GFSM14): at https://www.imf.org/external/np/sta/gfsm/index.htm.

Active Cash Management	Borrowing and lending transactions (or transactions in other financial assets) designed to smooth somewhat the (daily or weekly) fluctuations of government cash balances in the TSA
Annual Borrowing Plan	A plan that identifies the size and timing of the financing transactions across the year, consistently with financing the deficit generated by the approved budget.
Arrears	Amounts that are both unpaid and past the due date for payment
Budget Execution	The processes directed at ensuring that the budget is implemented and controlled in line with its stated objectives (and consistently with Parliamentary or other authority).
Budget Profile	The expected or planned time profile (usually monthly) of approved annual budget expenditure and revenue flows across the year.
Capital expenditure [also "investment"]	Transactions in non-financial assets (i.e. economic assets other than financial assets). Non-financial assets are stores of value; they may be fixed assets, inventories, valuables or non-produced assets.
Cash	Government assets that are perfectly liquid and can be used immediately as a means of payment in exchange of goods or services. A government's cash resources are overwhelmingly represented by the balances in the bank accounts that it controls. In only very few countries is the use of physical cash, i.e. notes and coin, materially important, or are securities, rather than claims on a bank account, used as a means of payment.
Cash Buffer	The minimum level of cash balances to be sure of meeting day to day cash requirements, at all times, under all circumstances, taking into account the availability of other liquid resources.
Cash Flow Forecast	An estimate of future government cash inflows and outflows, with a view to taking action necessary to ensure that sufficient funds are always available to meet any net government cash requirements; and, in any period where there is a net cash surplus, to ensure that it is used to best advantage.
Cash Coordination Committee	A ministerial or senior management committee charged with deciding how to respond to the most recent cash flow forecasts in such a way as ensure cash availability to facilitate the efficient execution of the budget and otherwise meet cash management objectives.
Cash Management	The processes to ensure that the government has access to cash or liquidity to facilitate the smooth execution of the budget, consistently with other objectives. The other objectives may include economizing on cash (including by investing any temporary surplus cash), managing efficiently the timing mismatch between inflows and outflows, and supporting other financial policies.

Cash Plan (or Program)	The planned pattern (usually monthly) of all government cash flows across the year. It includes flows of revenue and expenditure (i.e. the budget profile) and of financing.
Contingent Liabilities	Obligations that do not arise unless a particular, discrete event(s) occurs in the future
Current expenditure (or operating expenses)	Transactions that imply a decrease in net worth. They include compensation of employees, use of goods and services, consumption of fixed capital, interest, subsidies, grants, social benefits, and other expenses.
Dividends	The distributed earnings allocated to government or public sector units, as the owners of equity, for placing funds at the disposal of corporations.
Extra-budgetary Funds	Central government entities whose revenues and expenditures (and hence any cash balances or other financial assets) are not fully reflected in the annual budget.
Financing	Transactions in financial assets and liabilities. Such transactions can be categorized in different ways, the forecasting tool distinguishes according to whether the counterpart liability or asset was incurred by a resident (indicated by "domestic") or a non-resident (indicated by "external").
Fixed Capital Consumption (or depreciation)	The decline, during the course of the reporting period, in the current value of the stock of fixed assets owned and used by a government unit as a result of physical deterioration, normal obsolescence, or normal accidental damage.
Forecast Horizon	The length of future period in relation to which cash flows are forecast.
Issuance Calendar	A published plan for the domestic issuance of government securities over the next period, typically quarterly.
Local counterpart funds	Budgetary expenditures (usually on capital projects) that are applied jointly with, and linked in timing to, flows from an external source financing the same transection.
Ministries, Departments & Agencies	Collectively, the administrative units of central government to which the expenditure budget is allocated.
Net surplus(+)/deficit(-)	Total revenue less total expenditure.
Operating surplus(+)/deficit(-)	Total revenue less current expenditure.
Refresh Rate of forecast	The frequency of revision of the cash flow forecast.
Revenue	An increase in net worth resulting from a transaction. The major types of revenue are taxes, social contributions, grants, and other revenue.
Revenue Authorities	Those entities charged with the collection of tax revenues (they may also collect social contributions or some other revenues).
Tax expenditures	Concessions or exemptions from a "normal" tax structure that reduce government revenue collection. They may not be recorded as flows (although should be in supplementary statements); in forecasting cash flows it is consistency between the treatment of revenue and expenditure that is important.

Time granularity	The unit time period of the forecast; initially it is likely to be monthly, but it should increase over time to weekly (and in due course to daily) forecasts.
Treasury	Used here as that part of the Ministry of Finance that includes cash flow forecasting among its responsibilities.
Treasury Single Account	A unified structure of government bank accounts to give a consolidated view of government cash resources. For the purposes of the forecasting tool it comprises the account, or network of linked accounts, whose cash balances are under control of the Treasury and immediately available.

ANNEX B: ANALYZING FORECAST ERRORS

Analysis of forecast errors is an important part of the forecasting task. It has two purposes: planning responses to forecast deviations; and learning lessons to apply in future forecasts.

Whenever an error arises during the year, the first question to be asked is what it says about future errors – will the divergence be sustained or correct itself. Advice may be needed from MDAs/RAs.

In the more forensic analysis of forecast errors, a number of prior decisions need to be made:

- How far to drill down. Every series is made up of other series which will each have their own specific characteristics. Judgements have to be made – it is the large forecast errors that have to be identified which will not always lie with the larger series.

- To decide the relevant period: the analysis often starts with the forecast for each month as made at the start of that month, because that is the way that data are stored. But it will be relevant to consider forecasts over a shorter period, and also forecasts made for the same period at different points. Thus it is likely that any forecast made at the start of the month will be more accurate than the forecast for that month made 3 months previously, which will be more accurate than that made at the start of the year; but all that has to be tested.

- To identify constrained variables. At a time of cash rationing, the forecast error suggested for a low priority expenditure line will probably say nothing about the performance of the forecast of that line. Cash rationing is also likely to mean that expenditure is constrained to revenue, i.e. the forecast error of the net cash flow may be misleadingly small even if the revenue and hence expenditure errors are large.

- To identify policy variables. If the main policy variable in response to the forecast cash profile is to change the planned issuance of securities, it will not be the forecast for securities issuance that is at fault if there is a substantial divergence. It is often sensible to take domestic securities issuance out of the cash flows being studied.

In all comparisons, it is important to identify the independence, or not, of errors, as that will give important information not only in the building of forecasts, but in assessing the implications of any deviation from forecast in the course of the year. Independence should be explored over time – for example whether an error in one month is offset in the next month – and in relation to the components of inflows and outflows – for example, whether an error in commodity-related tax revenues is positively or negatively associated with an error in expenditure on goods and services. Such relationships are straightforward to identify, although some understanding will also be needed of the direction of causality.

Timing changes give rise to serial correlation, i.e. the errors over time are not independent and the error or errors in one period are offset in the next or subsequent periods. Many countries will have experience of the error over, say, a year being much less than the errors for individual months. There are formal statistical tests for serial correlation, but just plotting in a scatter graph the error in any one period again the error in the previous period can be useful – clustering of the scatter points suggesting serial correlation. Similarly, even if the forecast error for net cash flows

over a month may be acceptable, that may be consistent with substantial fluctuations in the cash flow errors within the month, variability that might require a higher cash buffer.

In general forecast errors are unlikely to be normally distributed. These characteristics is not only the result of serial correlation, but of the large number of one-off or unexpected events, some of them significant, that affect revenue and expenditure each year. It is probably not practical fully to "clean" any data series. Instead some thought will be needed to identify the factors that triggered large errors and the risks of repetition.

ANNEX C: THE BUDGET YEAR CASH PLAN: SOME CHOICES

This annex sets out some of the detailed choices that may need to be made in constructing the budget year cash plan, as shown in the accompanying spreadsheet. The choices cover revenue, expenditure and financing lines and they extend to the numbers themselves, the policies they reflect, and the adjustments that might need to be made.

Note that the discussion below is only intended to illustrate some of the judgements and techniques that forecasters might need to deploy, and some possible information sources. It will be for the forecasters to make the judgments, drawing on policy guidance as available.

Revenue

The revenue categories shown will cover those of most countries. Indeed, they may be too wide: a low-income country may have yet to establish a value added tax or equivalent (import/customs duties are typically more important among the indirect taxes); and dividends from state-owned enterprises (SoEs) or the central bank may be limited. In a few cases natural resources may be subject to a special tax regime; a row for the revenue generated could be an additional revenue line or replace one of the suggested ones. The receipts from such taxes are likely to be very lumpy, undermining the usefulness of historical patterns; the forecasters instead would have to find useful contacts either in the companies themselves or in the relevant ministry.

The charts show the monthly distribution of outturns over the last years. The examples shown suggest that:

- The corporate income tax receipts are affected by whether the end-of-month due date for a tax falls during a weekend or not.

- There is no pattern for dividends; they will need to be identified separately with information from the relevant SoEs, including the central bank.

The profiles for the year are put together from different sources. The annual totals are assumed to have been supplied by the BD and the RAs have profiled personal and corporate income tax. The calculated profile applies the average percentages of past years to the budget totals. The forecasters then have the choice of accepting the profiles or applying their own from previous experience (in practice there should be some dialogue with the BD and RAs). In the example:

- The historical profile for personal income tax has been used; that provided by the BD or RA does not seem to have reflected what has happened in practice.

- The corporate tax profile has been adjusted to allow for weekends which will split some payments, with some receipts not arriving until the following month or the following year; but there is also an adjustment to allow for delays in cash transfers at the end of the previous year, which will arrive in January this year.

- The dividend flow has been adjusted to allow for new information after discussion with SoEs – note that the total is different from the budget total. The forecast must not be constrained to the budget if there is new information.

In some countries VAT refunds are significant in size and uncertain in timing. If that is the case, they are best treated separately from gross VAT receipts. The past profile of refunds is unlikely to be a guide to the current year, and the forecasters will have to insert their own estimates, based on discussion with the RAs.

The charts of outturn to date in the Outturns & Adjustments section of the Main worksheet are a visual guide to the main forecast errors, some of which may be timing, some of which may indicate a persistent divergence. For weekly data there are similar charts in the Weekly vs Monthly worksheet.

Expenditure

Personnel Expenses

Personnel expenses are mostly wages and salaries (including any employer national insurance or social security contributions or similar) but will also include minor expenses such as travel and subsistence. Employer payments of employees' personal income tax will need to be treated with some care; there may be no associated cash flow but if the RAs record them as receipts at the time salaries are paid, then they should be included as part of personnel expenditure. Some payments to third parties may be deducted from pay but disbursed after a lag. But in general, it is again assumed that cash and budget data are the same; or that any difference will be small, which is likely to be the case (unless salaries "paid" are in practice deferred).

The government has decided to pay a "month 13" salary as a bonus. Hence the budget profile's increase in December. The projection therefore applies the past average profile to all 12 months, then adds the extra sum to December.

Pension payments are fixed historically and increased by the rate of inflation in May each year. The budget profile can therefore be used. (The contributions could alternatively be linked to personal income tax revenues).

Other Current Expenditure

Four lines are shown separately. It is assumed here that the outturn data all follow budget definitions, not cash, and adjustments will need to be made.

There is no clear pattern to either of the first three series – see charts. However, both transfers and subsidies seem to have a clear minimum monthly payment (that is quite usual for subsidies, where there may be some regular subsidies and occasional earmarked grants). If pensions in payment are included under social transfers, they should be predictable (although end-of-service gratuities less so). Ideally the forecasters should seek more information, in particular about larger subsidies from the BD or the MDAs determining those subsidies.

It is assumed that SNGs are entitled to 25 percent of all tax receipts collected in the previous month. The forecasts for SNG grants have therefore been calculated to align with the forecasts for direct and indirect tax.

Adjustments have also been made to the goods and services forecasts to allow for the difference between budget and cash:

- There are payments outstanding from the previous year of DX 3 million – they are assumed to be paid DX 2 million in January and DX I million in February.

- Similarly, in practice some of the budgeted payments are likely to be outstanding at the end of the target year - estimated at DX 1 million.

There is no line shown for a **contingency reserve** in the example. The profile of expenditure drawing on a reserve is highly uncertain. It could be spread equally or the provision all left until the end of the year in the plans. If it is spread over the year, each time it is drawn on the outturn numbers, as well as the future profile, may need to adjusted when the forecast is updated.

Capital Expenditure

Investment projects have been split into those externally financed by donors and those domestically financed. The externally-financed projects are assumed to require local counterpart funds from the budget. There is also a line for the receipts from physical asset sales, which will be netted off total capital expenditure.

The outturn data are all budget data, not cash. There is no clear pattern to most of the series. The externally-financed projects will be driven as much by the availability of donor funding as by budget choices. In practice, in past years, many projects, both externally and domestically financed, will probably have been under-executed, reflecting local capacity bottlenecks or climate vagaries. Asset sales are very unpredictable.

There are no profiles provided with the budget figures. The forecasters should discuss with the Ministry of Planning and Investment (MPI) or similar, or the Project Management Offices (PMOs) of major projects, their expectations for the timing of expenditures across the year. The spreadsheet includes rows to record flows related to major projects.[36] In the example, and in the absence of more specific information, the budget figure for externally-financed projects has been spread across the year, slightly back-end loaded. An adjustment has then been made by the forecasters to allow for the expected under-execution. Local counterpart funds are assumed, in the absence of any other information, to be a constant proportion (here 8 percent, i.e. the annual budget assumption) of externally-financed expenditure throughout the year.

The series for domestically-financed projects allows for an optional split between expenditure on projects that were started in a previous year and those that are only started in the current year. That is potentially relevant because it is spending on new projects where most uncertainty probably lies, with the risk of delays whether in the procurement process or as a result of expenditure constraints. It may also be that the start of new projects is delayed until the budget has been finally approved, implying no expenditure in the first months of the year. In practice the forecasters will need to keep in contact with the MPI/PMOs throughout the year to reassess the

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[36] These major projects rows are the only place in the spreadsheet where the ("of which") breakdown of a sub-total need not add to that sub-total. It is important that the sub-total for "Externally financed projects" incudes all the relevant flows, not least because that total drives estimates of local counterparty funds.

latest position, although they may want to draw on their own experience in, for example, discounting expectations of the effective start date of new projects.

The projections have been adjusted to allow for differences between cash and budget classifications, in particular to make an addition in January in respect of obligations left unpaid at the end of the financial year, with a similar deduction made from the December total. (Arguably, similar adjustments should be made to the figures for each month during the year but in net terms these may not be so material.)

No allowance has been made for fixed asset sales – a prudent approach unless plans are clear. (Proceeds from the sale of securities or privatization transactions should be included under financing.). Some 'other' rows have been added under asset sales; these need not be confined to asset sales; but any other capital receipts should have a minus sign or be subtracted from the sub-total.

Financing

The deficit is financed by donor grants, by external loans and credits, by domestic issuance of Treasury bills (T-bills) or bonds (T-bonds) or by a reduction in cash balances.[37] Fragile or low-income states may have difficulty issuing bonds, and the relevant lines can be ignored if that is the case.[38] It will be the Debt Management Department (DMD) that supplies most of the data on financing, and also the interest projections which are a component of expenditure not financing (although the estimated flow of donor grants and program loans may come from the BD or an international relations department). Significant program loans could be itemized separately if wished for presentational reasons. All data are assumed to be in cash.

Outturn financing data for past years are not a relevant guide to the flows in the budget year. The monthly projections should be input directly by the user into the Target Year Budget section (if nothing is input, the annual total will simply be divided by 12, but will then need to be adjusted in the Adjusted Budget Numbers section). The interest and debt repayment lines, both the respective amounts and timing, are mostly determined by past borrowing, and should be calculated accordingly. The T-bills and T-bond issuance program will probably come at the start of the year from the DMD, although it may be updated during the year in the light of forecasts considered in the Cash Coordination Committee (discussed in the main text). Gross issuance and redemptions are shown separately. That is important, partly because the risks associated with the two series are very different, and partly to take account of the impact on the repayment profile of any in-year changes in T-bills issuance.

T-bills may be of different maturities. Some countries issue only one maturity, e.g. 3-months, but others may issue 1-, 3-, 6- and 9-months, or T-bills with odd maturities linked e.g. to the date of a tax inflow (thereby helping to smooth cash flows). 12-months T-bills are best treated as T-bonds in the spreadsheet because they will fall to be redeemed in the following year. In all other

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[37] If grants, e.g. budget support grants, are brought to account as revenue, which would be in line with GFSM14, a line should be included in the revenue worksheet accordingly.

[38] Some countries may issue non-marketable or retail debt, or borrow from local banks; that could be included here instead of T-bonds if they are not issued, or in one of the 'other financing, net' rows.

cases, care must be taken to include the redemptions within the year of any T-bills issued. For example, additional issuance of 3-month T-bills will change the T-bill repayment projections for the three months ahead, independently of what had been planned at the start of the year; similarly, a shortfall against target issuance. All T-bills issued must be entered into one of the three categories, i.e., they add to the total T-bills row; for T-bills of unusual maturities, it should be the nearest equivalent. (The example implicitly assumes that only 3-month T-bills are issued, once a month, and the lines for 6- and 9- month T-bills have therefore been left blank).

No allowance is made in the example for the discount of T-bills on issue, which will increase the effective redemption payments three or more months ahead compared to the proceeds raised on issue. In a low interest rate environment, this simplification will be appropriate; but if interest rates are high, the forecasters should add an adjustment. Thus, if T-bill issuance is or will be different from that previously planned, when the forecast is updated an adjustment must be made to future domestic debt repayments and (if significant) to future domestic interest payments. If more T-bonds are to be issued than planned, there may also be an increase in interest payments in the same year. If additional T-bill issuance is being considered in the Policy Options section, the simplest technique might be allow for interest in the "implied redemptions" line. For example, the proceeds from issuance might be 97 this month, with a redemption of 100 in 3 months' time.

Borrowing from the central bank is assumed in the initial plan to be zero, reflecting the policy intention. "Borrowing" in this context includes both overdrafts and advances. If during the year advances are made from the central bank, or the MoF draws on its overdraft, repayments should normally made within the same year. These repayments are entered in the table (initially in the Outturns & Adjustments section) at the end of the year (which will be done automatically by the spreadsheet) with a negative sign in the same 'new borrowing' line as the drawdown; they are not shown separately under repayments.

In constructing the forecast, all project-related donor flows are assumed to be tightly linked to the timing of work on the projects. The relevant estimates (row 68 in the Main worksheet) are equal to the adjusted line for investment on externally financed projects (row 37). In practice the donor flows might lag expenditure somewhat, unless pre-financing can be agreed; and if there is any significant delay the government might decide to bring forward counterpart funds or make other advances to the project (see discussion on adjustments in the main text).

ANNEX D: THE BRIDGE TABLE

The example of the possible use of the bridge table that is included in the worksheet 'Bank Account-GFS Bridge' is intended only as an illustration. There are many different ways in which the table might be used; and different users will find different solutions.

In the worksheet:

- The same table is used for each of the 5 days of the week. The entries in the column for each day show the flows identified from the bank statement.

- The sum of identified flows over the week is compared with an "average" week of the year (i.e. simply dividing the annual totals in the Monthly Summary section by 52). There is no reason for the flows in any one week to be close to the average, but the comparison may nevertheless be helpful.

- A column is added for notes – as an aide memoire for the user to record why flows may be very different from the average, or different than forecast.

- It is assumed that the statement available from the central bank is in Excel – and that there is enough information about the individual transactions, either descriptive or coding, to allow the user to identify the majority sufficiently to allocate them to the relevant categories in the plan and forecast. The user has then sub-totalled the flows by these categories on the statement (e.g. by using the filter tool), transferring the sub-totals to the bridge table. (If this is not possible individual flows may need to be transferred to the bridge table and then summed – but that would probably be much more time consuming.)

There is unlikely to be fully detailed information in the bank statement to allow all flows to be identified. There are also likely to be entries that do not reflect any cash flows into and out of the TSA, which will have to be netted out – e.g. transfers between accounts within the TSA. In practice the user will probably want to make sure that all the large flows are identified, even if the smaller ones are then included in a residual category – as always there will be a trade-off between the time spent and benefit of the exercise. For the purposes of illustration, and drawing on some typical actual bank statements, the worksheet example assumes:

- Although most income tax flows can be identified, there is a large residual, which is likely to be related to personal income tax rather than corporate income tax – included in an "unspecified" line.

- The same department of the revenue authority is collecting sales tax and import duties – and although the department is identified on the statement, the individual taxes are not. They have been brought together in one line.

- Similarly, although salary payments are identified, it is not possible to categorise on the statement either most other current expenditures (apart from debt interest), or many smaller capital expenditures. All these categories have been allocated to goods and services.

- Financing transactions, many of which are individually large, are individually identified.

- The adjustments in the forecast in respect of non-cash flows or other TSA-related flows are mostly not included in the bank statement or, where they are, they are negligible or cannot be specifically identified.

- There is still an unidentified category, which in practice reconciles those identified flows with the balance on the statement. With experience this category is likely to shrink over time.

The category totals, with some allowance for the unspecified or unallocated sums, can then be used as the best estimate of the outturn, or at least reviewed alongside other available data.

Some Examples

Figure 2 below gives an example of the approach described. The column "statement description" is taken from the central bank statement (of a sub-Saharan English-speaking country), but with all identifying individual, company and institutional details removed (hence "xxx"). The final column then shows how that entry has been carried across to the example bridge table in the spreadsheet. Some of the non-payment items can be identified as relating to capital expenditure projects, others will fall into goods and services which is treated as a residual for otherwise unidentified expenditure.

Figure 2: Bridge Table; Example 1

Date/Time	Serial	Statement Description	Value DX	Classification in Bridge Table
		PAYMENT FOR xxx AND RETENTION FEE xxx		Misc personal income tax
		xxx CHQ NO xxx		Misc goods and services
		xxx COLLECTIONS xxx GST		Sales etc tax
		xxx COLLECTIONS xxx CUSTOMS		Sales etc tax
		xxx TRANSIT GOODS AND SERVICES xxx		Misc goods and services
		xxxTBONDxxx		Debt repayment
		INT ON 364 DAYS TB ISD xxx		Debt Interest
		PART EXCISE DUTY FOR xxx		Sales etc tax
		CASH TRF		Transfer with TSA - ignore
		TRADExxx OPRAUCTSETTS		Auction Result
		xxx-GST REFUND xxx		Sales etc tax (refund, negative)
		REDEMPTION OF SECURITIES xxx		Debt repayment
		INT ON 91DAYS TB xxx		Debt interest
		USDxxx IFO xx		Project related loan
		GOSL CHQ NO XXX		Domestic capex [as identified]
		FUNDS TRANSFER BY xxx LIMITED		Corporation tax
		COLLECTIONS xxx INCOME TAX		Misc personal income tax
		PAYMENT IN RESPECT OF GST FOR xxx		Sales etc tax
		TRADExxx OPRAUCTSETTS		Auction Result
		TAXES COLLECTED FROM VARIOUS CLIENT xxx		Misc personal income tax

Example 2:

The example in Figure 3 is based on the central bank statement of a sub-Saharan French-speaking country. It is conceptually similar. The entries in the bank statement have been grouped under particular headings, and the line classification of each of them has been categorised as definitive or provisional (i.e. subject to further investigation if the size warrants it). Again some of the detail has been lost by inserting xxx where required.

Figure 3: Bridge Table; Example 2

Date/Time	Serial	Statement Description	Value DX	Classification in Bridge Table	Status
		Tax Receipts			
		Transfer receipt		Other tax revenues	🟧
		Credit Registration Fee		Other tax revenues	🟩
		Incoming-Credit xxx		Other tax revenues	🟧
		Incoming-Credit VRT TAXES		Other tax revenues	
		Incoming-Credit PAYMENT FROM xxx		Other tax revenues	
		Incoming-Credit xxx		Other tax revenues	
		Customs Receipts			
		Transfer received		Customs duties, excluding oil	🟧
		Transfer received		Customs duties, excluding oil	
		Transfer received		Customs duties, excluding oil	
		Treasury Receipts			
		Cash deposit xxx		Other non-tax revenue	🟩
		Cash deposit-xxx		Other non-tax revenue	
		Cash deposit-xxx		Other non-tax revenue	
		Incoming-credit xxx		Other non-tax revenue	🟧
		Incoming-credit xxx		Other non-tax revenue	
		Treasury Payroll			
		Transfer xxx		Reduction of payment arrears	🟩
		Cash withdrawal-Payment check xxx		Staff costs	
		Transfer xxx		Reduction of payment arrears	
		Treasury Expenses			
		Aggregate debits - Payment of pensions		Transfer expenses	🟩
		Aggregate debits - Payment of pensions		Transfer expenses	
		Transfer xxx		Debt repayment	
		Treasury Deposits			
		Cash deposit xxx		Deposit of third parties	🟩
		Cash deposit xxx		Deposit of third parties	
		Aggregate credits - Payment of pensions		Deposit of third parties	
		Cash deposit-xxx		Deposit of third parties	
	🟧	Provisional classification pending further information	🟩	Definitive classification	

Whatever the techniques adopted, users will want to work closely with in particular the central bank and the RAs to ensure that the statement gives information in the detail needed, and that it can be manipulated as required. A coding that links with the IFMIS codes is likely to be the best approach.

ANNEX E: BUILDING THE WEEKLY FORECASTS

The list below in Table 1 suggests the techniques or information sources for breaking down the monthly forecast of expenditure and financing flows into a weekly forecast (if no other information is available).

Table 1: Suggested Preparation of Weekly Flows

Revenue		
Personal income tax		RAs to identify main collection days or weeks within month
Corporate income tax		RAs to identify main collection days or weeks within month
VAT/sales taxes		RAs to identify main collection days or weeks within month
Import/Customs Duties		RAs to identify main collection days or weeks within month; otherwise spread the monthly total equally across the weeks of each month
Dividends		For larger dividends, obtain estimated date from relevant SoEs
Other non-tax revenue		Spread monthly total equally across the weeks of each month, except where there is specific information, e.g. from MDAs for larger flows
Other revenue		Spread monthly total equally across the weeks of each month
Current Expenditure		
Wages and Salaries		Identify week of the month that salaries are normally paid
Pensions		Identify week of the month that pensions or pension contributions are normally paid
Goods & Services		Spread the monthly total equally across the weeks of each month
Social Transfers		Spread the monthly total equally across the weeks of each month, unless there are standard dates when they are paid
Subsidies/grants		Spread the monthly total equally across the weeks of each month, unless there are standard dates when they are paid
Grants to SNGs		Identify week of the month that grants are normally paid
Interest payments		Obtain weekly profile from Debt Management Department (DMD)
Capital Expenditure		
Externally-financed Projects		Initially spread the monthly total equally across the weeks of each month, but improve with information from MPI/PMOs
Local counterpart funds		Constant proportion of externally-finance project expenditure
Minor Projects		Spread the monthly total equally across the weeks of each month
Financing		
Donor Grants		Spread the monthly total equally across the weeks of each month, except where there is specific information, e.g. from BD
Interest payments		
External debt		Obtain weekly profile from DMD
Domestic debt		Obtain weekly profile from DMD
Debt Repayments		
External		Obtain weekly profile from DMD
Domestic		Obtain weekly profile from DMD
T-bonds		Obtain weekly profile from DMD
T-bills		Obtain weekly profile from DMD
Central bank		[Spreadsheet assumes no repayment until the last week of the year]
New Borrowing		

External loans and Credits		
Program Loans		Obtain weekly profile from DMD, or e.g. BD. Potentially open dialogue direct with donors.
Project related		Obtain weekly profile from [DMD] - but likely to net out with expenditure
Domestic		
T-bonds		Obtain weekly profile from DMD
T-bills		Obtain weekly profile from DMD
Central bank		Assume zero at start of the year, unless other information available