TECHNICAL NOTES AND MANUALS

The Macrofiscal Function and its Organizational Arrangements

Prepared by Israel Fainboim and Ian Lienert

Fiscal Affairs Department

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The Macrofiscal Function and its Organizational Arrangements[1]

By Israel Fainboim and Ian Lienert[2]

This note explores the following questions concerning macrofiscal analysis:

- What is the macrofiscal function and why is it needed?
- What activities are included in the macrofiscal function?
- What are the main outputs associated with the macrofiscal function?
- What are the options for the organizational arrangements for the macrofiscal function in a Ministry of Finance (MoF) and how should the macrofiscal department (MFD) coordinate with other departments of the MoF and government agencies outside the MoF?
- How can a strong MFD—one that prepares high-quality fiscal forecasts, monitors the economy and public finances, examines fiscal risks, and provides macrofiscal advice and support to the MoF's management—be built?

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INTRODUCTION

Conducting sound fiscal policy requires a strategic vision of public finances that anchors the budget in a medium-term perspective. In turn, the medium-term fiscal framework (MTFF) incorporates a country's policy choices and priorities given their growth and equity objectives, available resources, and debt sustainability considerations. In many countries, the macrofiscal framework supports the annual budget as the government's most important policy tool.

The macrofiscal framework includes a medium-term fiscal framework and, in many countries, fiscal rules or targets. The framework provides the context under which fiscal targets are set, policy choices are determined, and realistic revenue and expenditure projections are prepared. Governments need strong macrofiscal analytical capacity for preparing a sound MTFF, which underpins the medium-term budget framework (MTBF—see Harris et al., 2013) and the annual budget that lay out the government's policy priorities.

The macrofiscal department (MFD) of a Ministry of Finance (MoF) is the government's key unit for elaborating sustainable medium-term fiscal objectives and policy orientations, and for assessing fiscal risks.[3] It also ensures consistency between macroeconomic developments and projected revenues and expenditures. In this paper we refer to the MFD as the organizational unit (or units) of the MoF or other government agencies that perform macrofiscal functions. Despite the importance of the macrofiscal function, there is little research on what constitutes macrofiscal analysis, how macrofiscal tasks should be distributed within the MoF and other government agencies, and what are the key features of a strong MFD. One of the few cross-country studies on MFDs is that of Martinez-Vazquez and Ortiz (2009).

This Note is laid out as follows: Section I defines the macrofiscal function and examines why it is needed. Section II describes the main components of the macrofiscal function. Section III focuses on the MFD's main inputs and outputs. Section IV discusses organizational arrangements for MFDs and coordination issues. Section V examines key issues for building a strong MFD, including developing human resource capacities, data management and forecasting tools. Concluding remarks are presented in Section VI.

[3] In this paper, MoF is used generically, to indicate the ministry, department, or agency that performs all or most "ministry of finance" functions.

I. WHAT IS THE MACROFISCAL FUNCTION AND WHY IS IT NEEDED?

The macrofiscal function refers to the preparation of the macrofiscal framework that is needed primarily to attain fiscal and debt sustainability objectives, with due recognition of fiscal risks. It also serves economic stability objectives and supports structural policies. Macrofiscal policies—revenue, expenditure, deficit- and asset-management policies—are adopted to achieve the objectives of macrofiscal management. For these purposes, the MoF needs capacity to:

- **Develop a medium-term macroeconomic and fiscal strategy**. The MFD informs policy-makers of the impact of their policy choices. Periodically, the fiscal strategy needs to be reviewed to include the impact of macroeconomic shocks or changed policy priorities. When there are changed economic circumstances or difficulties in attaining current fiscal objectives, the MFD would propose to policy-makers modifications in existing fiscal objectives and policies. Iterations between MFD/MoF technical staff and policy-makers at the political level are needed to reach a consensus.
- **Monitor fiscal objectives and targets of key fiscal aggregates such as those for the overall fiscal balance, public debt and total expenditure.** In many countries, fiscal rules—permanent constraints on selected fiscal aggregates—are adopted at political level and, possibly, embedded in a law.
- **Examine the impact of new fiscal policies on fiscal developments and economic growth.** New fiscal policies may be needed to attain medium-term fiscal objectives and to lay the basis for the annual budget's forecasts. There is also a need to assess the impact of revenue and expenditure policies on economic growth ("feedback effects").
- **Identify, assess, monitor, and manage fiscal risks**.
- **Prepare macrofiscal projections for a long-term period** (more than 10 years). Policy-makers should be made aware of the impact on public finances of structural changes, such as those related to ageing populations and climate change.

While the above five macrofiscal tasks are common in all countries, the specific needs and capacities vary across countries. Advanced countries have capacity for performing all of the above tasks. For example, fiscal risk analysis has become common and is increasing in sophistication. Long-term fiscal projections incorporating the impact of demographics are regularly produced in several countries. In contrast, low-income countries need to focus first on "the essentials" of macrofiscal analysis, notably the first two bullet points above.

II. WHAT ARE THE MAIN COMPONENTS OF THE MACROFISCAL FUNCTION?

Four components of the macrofiscal function are identified: (1) macroeconomic and fiscal modeling, forecasting and debt sustainability analysis (DSA); (2) macrofiscal policy analysis; (3) fiscal risk analysis; and (4) monitoring macroeconomic and fiscal developments.

A. Macroeconomic and Fiscal Forecasting Including Debt Sustainability Analysis

Macroeconomic forecasting involves developing and maintaining an internally consistent model that produces medium-term fiscal projections. Key variables for fiscal forecasts include: real GDP (and key components such as consumption and investment), nominal GDP, inflation, exports, imports, exchange rates, interest rates, oil prices, etc. Only a few of these variables need to be "modeled" in lower income countries. If resources permit, more ambitious macroeconomic modeling can be developed (see section V).

In its fiscal modeling work, the MFD needs to develop revenue, expenditure and debt modules. The MFD needs "sub-models", assumptions and parameters for its projections of the MTFF and the annual budget's aggregates. Whereas many revenues, social transfers and interest payments are endogenous (driven by economic or demographic variables), most primary expenditure projections are based on existing policies and plans for future budgets. Judicious choices are needed for the degree of fiscal modeling work that needs to be performed inside the MoF and the time horizon for fiscal projections.

For fiscal forecasting, the coverage of the "government" sector needs to be as comprehensive as possible. The "general government" sector (as defined in IMF, 2014a) provides an analytic framework for fiscal analysis. Ideally, fiscal projections should cover not only the central government budget, but also those of subnational governments and extrabudgetary funds controlled by governments. An even more comprehensive treatment includes all public sector entities. Transfers to or from State-Owned Enterprises (SOEs) and other non-budgetary units can play a significant role in implementing fiscal policy.

Two important tasks associated with fiscal forecasting are to prepare:

- **Baseline projections ("no policy change" scenario).** An essential task of the MFD is to prepare a MTFF, from which the annual budget is derived. The MTFF comprises, initially, baseline medium-term projections for key fiscal aggregates (revenues, expenditures, financing, and debt) on the basis of *existing* tax and expenditure policies.
- **Projections of the impact of new fiscal policies.** At a second stage, the baseline projections are transformed to incorporate the impact of *new* revenue and expenditure policies decided by policy-makers. On the basis of the updated projections, the MFD may propose further measures to ensure the consistency of the annual and medium-term fiscal projections with the previously decided medium-term fiscal objectives and targets.

Debt sustainability analysis is considered to be part of the macrofiscal function. A "limited vision" of the macrofiscal function confines the fiscal analysis to the "above the line" budget variables, i.e., it focuses on the revenue and expenditure projections, consistent with the annual and medium-term budget strategy and targets. This view ignores the impact of how, over time, the budget is financed. If fiscal deficits are growing, and, especially when borrowing to finance budget deficits is on market terms, debt servicing becomes increasingly heavier. Market participants may demand a premium on government bonds. This adds further to the overall fiscal deficit and could lead to a debt crisis.

The MFD should examine the dynamics of fiscal deficits and debt sustainability.[4] The DSA is not to be confused with debt management, which is a distinct activity. The DSA examines debt projections under various assumptions, and feeds into fiscal policy decisions. Although a debt management office (DMO) contributes to the DSA, the DMO's main focus is on managing public debt, including developing a medium-term debt management strategy and an annual borrowing plan (for guidance, see IMF and World Bank, 2009).[5]

The MFD could be the key MoF department for proposing debt targets to the political leadership and reporting on compliance with the target. The public debt strategy incorporates the evolution of net borrowing that finances projected fiscal deficits. In countries with fiscal rules on public debt, the MFD's role would be confined to monitoring compliance with debt targets. The MFD would collaborate with the DMO for the medium-term debt management strategy, to ensure consistency with the MTFF. The DMO focuses on managing the public debt stock and associated risks, including by examining the term structure of debt (short- and long-term), its foreign/domestic currency composition, and by issuing new debt instruments.

B. Macrofiscal Policy Analysis

Macrofiscal policy analysis assesses the impact of fiscal policy changes that help achieve growth, macroeconomic and budgetary objectives and targets, including fiscal rules.[6] The MFD prepares short-, medium-, and long-term scenarios on the basis of policy objectives and possible changes in fiscal policies. At the political level, decision makers decide the objectives, targets and policies for its medium-term fiscal strategy. Based on the agreed fiscal policy strategy and/or fiscal rules, the MFD provides guidance on specific fiscal policies. More specifically, the MFD may:

- **Evaluate the impact of fiscal policies and other legislative proposals on the baseline fiscal projections.** The MFD may develop and use a model to help quantify the impact on fiscal aggregates of changes in the macroeconomic outlook, and revenue and spending policies. Iterative projections—and dialogue with policy-makers—help develop corrective fiscal policy actions to achieve fiscal targets and/or fiscal rules.
- **Collate fiscal analysis within the MoF.** Depending on the MFD's specific responsibilities—and whether a Tax Policy Department exists, as well as the Budget Department—the MFD would either conduct policy analysis itself, or collate analysis performed elsewhere in the MoF

4 Hemming (2013) discusses the macroeconomic impact of fiscal deficits and the rationale for the DSA.

5 The DMO is typically a separate MoF department or an arm's length government agency with autonomy for debt management. IMF and World Bank staff (2014) provide guidelines for public debt management.

6 There is a large literature on fiscal rules. See, for example, Budina, Kinda, Schaechter and Weber, 2013.

(or other ministries and agencies). Examples include: tax reforms (including tax expenditures);[7] civil service reforms; reforms of government subsidy policies, social safety nets and health care; pensions; and public investments.

- **Analyze the impact of fiscal policy on public debt.** If there were a high probability that gross or net debt is unsustainable (or likely to exceed a fiscal rule on debt), the MFD would draw up fiscal consolidation scenarios and would propose policies to policy-makers to restore the government balance sheet.
- **Analyze the impact of fiscal policy on macroeconomic growth.** The analysis could be done initially through an estimation of fiscal multipliers (see Batini et al. 2014). For long-term fiscal analysis, growth could be modeled endogenously.
- **Analyze fiscal-financial sector linkages.** The MFD would examine the coherency of financial sector and fiscal policies. This is a relatively new area that grew as a result of the 2008-2011 international financial crisis.
- **Analyze long-term structural issues.** Long-term macroeconomic and demographic developments may require changes in the current fiscal policy stance. Analyses here include evaluating the fiscal balance and debt implications of population ageing, social security, health expenditures and climate change. The impact of changes in revenue and expenditure policies on income distribution issues could also be examined by the MFD.

Basic fiscal policy analysis should be prioritized. The above list of fiscal policy analysis tasks is comprehensive. Some are quite complex. Especially in low-capacity countries, the priority should be on analyzing the impact on the MTFF and public debt of changes in revenue and expenditure policies (first two bullet points above).

C. Fiscal Risk Analysis

Fiscal risk is the possibility of short- to medium-term deviations in fiscal variables as compared to what was anticipated in the MTFF or annual budget (see IMF, 2008). Fiscal risk analysis identifies the differences between expected and actual fiscal outcomes for key fiscal aggregates such as the budget balance and public debt. Reasons for deviations include: (1) budgets are based on assumptions that may not materialize; (2) external shocks may induce revenue shortfalls or surpluses, or call into play automatic stabilizers (e.g., when economic growth is lower than projected, unemployment benefits rise); or (3) off-budget or off-balance sheet fiscal operations have consequences for government revenues, expenses, financial assets or liabilities. Government guarantees and other contingent liabilities can be an important source of fiscal risk (Cebotari, 2008), ranging up to 40 percent of GDP in extreme cases (Bova et al., 2016).

Fiscal risks should be analyzed and reported. When included in annual budget documents, the fiscal risk analysis informs the legislature and public of the potential budgetary impact of various risks. The IMF's Fiscal Transparency Code (IMF, 2014b) provides norms for good practice in fiscal

[7] Tax expenditures should be analyzed especially when the revenue loss from preferential tax treatment is quantitatively important and/or when there are policy proposals to reduce or increase tax expenditures. Such analysis includes assessing the costs and benefits of tax expenditures and whether direct budget expenditures could produce similar benefits at lower budgetary cost and with greater transparency. The MoF's tax policy department may be responsible for preparing the detailed revenue estimates.

risk reporting. These norms provide the basis for the content and coverage of a fiscal risk statement (see section III.E on page 13). Cebotari et al. (2009), Budina and Petrie (2013), and IMF (2016b) provide guidance for identifying and managing fiscal risks.

The MFD is the key MoF department responsible for preparing an annual fiscal risk statement. The MFD would collate estimates of various fiscal risks. The MFD itself could examine some fiscal risks such as macroeconomic risks. Other fiscal risks, such as those arising from Public Private Partnerships (PPPs), require special expertise. For example: debt and debt guarantee risks could be assessed by the DMO; fiscal risks originating in the financial sector, assessed by financial sector regulators and supervisors (IMF, 2015, includes good practices for measuring and reporting such risks); and risks from SOEs, subnational governments and legal proceedings against the state should be documented by the MoF and/or relevant government departments.

Alternative macroeconomic scenarios can illustrate the importance of fiscal risks. For example, scenarios can illustrate the implications of the differing probabilities of the occurrence of contingent liabilities, or of varying prices and recovery rates of financial assets recorded on the government's balance sheet.

D. Monitoring Macroeconomic and Fiscal Developments

Monitoring macroeconomic and fiscal developments during the year is a starting point for informing the forecasts. In developing countries especially, top priority should be accorded to this aspect of the macrofiscal function.

Regular and timely reports on macrofiscal trends and prospects should be prepared: first, to ensure that the base-year fiscal estimates are as accurate as possible; and second, to inform the government and the legislature of policy options required to redress impending fiscal imbalances. Specifically, this function includes:

- **Monitoring the macro economy, fiscal policy implementation, and budget execution, in order to identify deviations from the annual budget forecasts.** Significant deviations of actual developments compared with projections require careful analysis to identify their cause, whether they are temporary or permanent, are due to factors within the government's control or outside it, and whether administrative or policy responses are warranted. The analysis allows corrective policies to be designed.
- **Monitoring fiscal risks,** with a view to determining if their materialization is imminent and whether the policies adopted to manage them should be strengthened.
- **Preparing monthly and/or quarterly reports on macroeconomic and fiscal performance and perspectives.** This requires maintaining an up-to-date database of recent macrofiscal trends and updating projections at regular intervals.

III. MAIN OUTPUTS OF MACROFISCAL DEPARTMENTS

A. MFD Outputs—and Associated Inputs—During the Budget Cycle

The MFD produces an array of documents at critical stages of the budget cycle. Table 1 illustrates typical outputs of a MFD. A key document is the Fiscal Strategy Document (FSD).

TABLE 1. Typical MFD Outputs

Budget Cycle	Macrofiscal Outputs			
	Monthly or quarterly	Twice a year	Annual	Periodic
Pre-budget review and/or mid-term review Draft annual budget (presentation to legislature)	In-year economic and fiscal reports (developments of revenues, spending, balance, debt)	Updates of the FSD Updates of MT budget strategy, objectives, macro-economic and fiscal projections	Medium-term fiscal strategy document, including macroeconomic and fiscal projections Strategy and policy priorities for annual budget DSA Fiscal risk statement Report on compliance with fiscal rules	Long-term fiscal projections (20–50 years) (optional) Pre- and post-election fiscal updates Ad hoc research

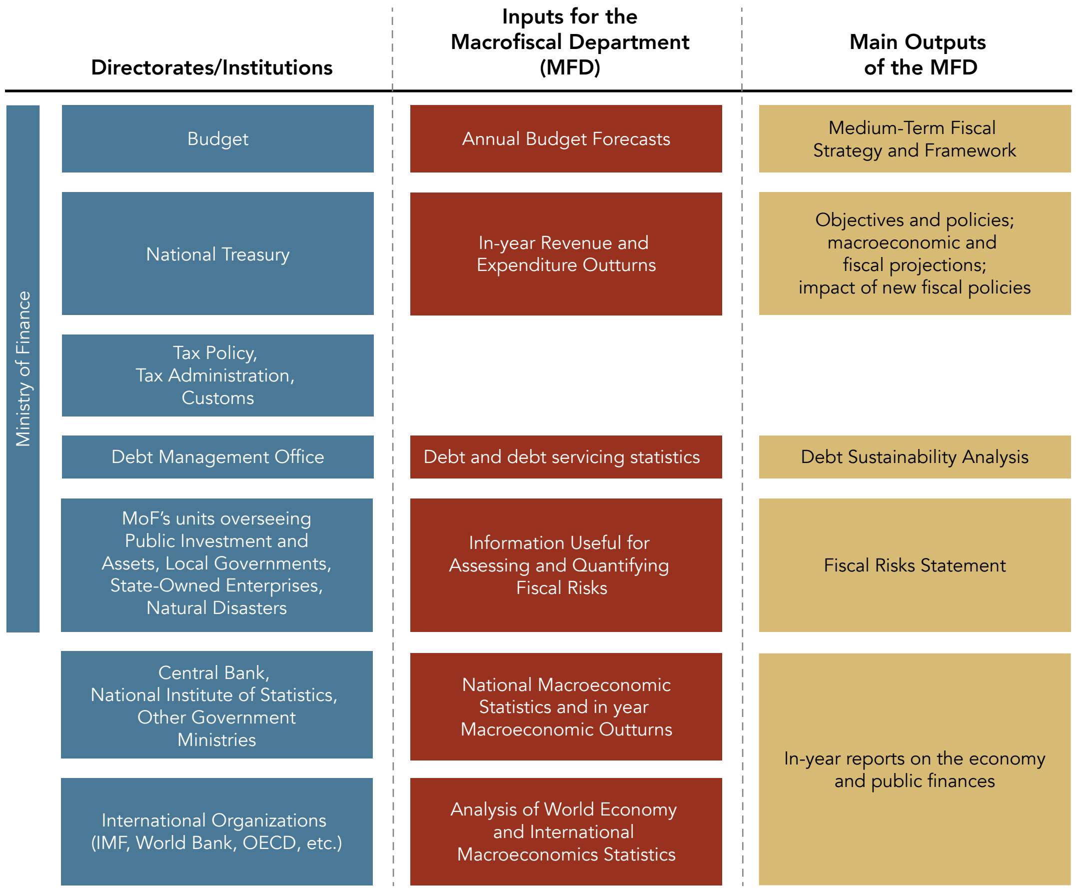
To prepare the above outputs, various inputs are needed from other MoF directorates and outside institutions. The main other directorates and bodies, and the inputs they provide, are delineated in Figure 1.

B. Fiscal Strategy Document (FSD)

The key purposes of the FSD are to highlight the medium-term fiscal strategy and ensure that annual fiscal policies are consistent with the medium-term macrofiscal framework. The FSD provides a basis for policy dialogue within the government at political level, as well as for the legislature, civil society and the media. It also: assists the MoF's Budget Department to prepare the draft annual budget; fosters consistency between medium-term fiscal policy objectives and annual budget targets; and provides a basis for internal MoF discussions on policy options, impending fiscal risks and debt sustainability issues. It can also provide a research agenda for the MFD.

The FSD integrates macroeconomic analysis, fiscal policy priorities and objectives, and policy changes needed to attain medium-term fiscal targets. The FSD can include: the MTFF projections of revenues, expenditures, fiscal balances and debt; a DSA; the separate and cumulative impact of proposed fiscal policy changes; and an analysis of fiscal risks. In some countries, the FSD is known as the "fiscal framework" (over the medium term).

FIGURE 1. Institutions, Inputs, and Outputs of the MFD



The FSD may identify how the government proposes to use fiscal space, if available, to meet policy commitments. Fiscal space is the room for undertaking discretionary fiscal policy relative to existing plans without undermining fiscal sustainability. The MFD's estimates of available fiscal space clarify policy-makers' room to maneuver when deciding on new fiscal policies. Box 2 of IMF (2016a) and Ostry et al. (2010) provide approaches for measuring fiscal space.

There is no unique prescription for the content of the FSD. The possible content and structure of a fiscal strategy document is shown in Box 1.

The FSD (or an update of it) should be prepared early in the budget cycle. It is important to have a strong link between strategic fiscal policy considerations and annual budget preparation. Early formulation of the FSD allows important decisions to be taken prior to those pertaining to the detailed annual budget. In particular, top-down multiyear budget spending ceilings should be decided early in the budget cycle. Dorotinsky and Watkins (2013) provide practical guidance. The FSD—or at least a summary version of it—could be presented to the legislature as part of a pre-budget debate.

BOX 1. Possible Outline of a Fiscal Strategy Document

EXECUTIVE SUMMARY

PART 1: MEDIUM-TERM MACROECONOMIC FRAMEWORK

- International economic environment
- Macroeconomic policies
- Medium-term macroeconomic projections (extending 3, 5, or 10 years).
- Table with key indicators and assumptions.

PART 2: MEDIUM-TERM FISCAL STRATEGY, PROJECTIONS, AND POLICY OPTIONS

- Short- and medium-term fiscal developments
  - Short- and medium-term fiscal targets; progress in achieving them
  - Tax and non-tax revenue policies; expenditure policies
  - Quantification of new fiscal policy measures
- Central Scenario
  - MTFF: revenues, expenditures, budget balance, debt
  - Public sector (or government) assets and liabilities
- Alternative Scenario Projections
- Fiscal Risks (short- and medium-term)

PART 3: FISCAL SUSTAINABILITY AND STRUCTURAL ISSUES

- Debt sustainability analysis (gross and net debt)
- Longer-term structural policies and fiscal risks

STATISTICAL AND OTHER APPENDICES

Depending on its budgetary powers, the legislature may endorse the government's proposed FSD. Many countries' legislatures endorse the MTFF and the FSD, reflecting their limited budget amendment powers. In some countries where the legislature has unlimited powers to amend the government's draft annual budget, the legislature may endorse an alternative medium-term fiscal strategy. This endorsement may be implicit.[8]

The FSD and macrofiscal projections should be updated during the year. Good practice is to update the FSD twice a year, as shown in Table 2. It is also good practice to pre-announce the date of the subsequent fiscal strategy update. Resource-constrained countries should concentrate efforts on publishing a comprehensive FSD once a year. For example, South Africa updates its Medium-Term Budget Policy Statement annually (see www.treasury.gov.za/documents/mtbps/default.aspx).

TABLE 2. Fiscal Strategy Updates

Date	Fiscal Strategy document
About 3 months before the fiscal year begins	Budget Economic and Fiscal Update
Around mid-year of the fiscal year	Half-yearly Economic and Fiscal Update

8 In the United States, for example, Congress adopts Appropriation Bills that deviate from the President's proposed annual budget. The Congressional Budget Office assesses the medium-term budgetary consequences of congressional decisions. However, Congress itself does not explicitly approve a MTFF.

C. Medium-Term Fiscal Framework (MTFF)

The MTFF is a key component of the fiscal strategy. The MTFF provides a coherent quantitative statement of the government's fiscal strategy for key medium-term objectives and targets. When the government is committed to achieving the objectives laid out in the MTFF—and takes the necessary fiscal policy actions to stay on course—the credibility of the both the government and the MTFF is enhanced.

The MTFF is also the foundation for developing a sound MTBF and annual budget. The MTFF is a rolling plan that establishes integrated multiyear limits or targets for key fiscal aggregates, consistent with and supportive of the overall macroeconomic framework. As such, it is a critical tool for strategic fiscal management, and provides the foundation for the resource allocation facet of annual budget preparation consistent with the MTBFs adopted at each level of government (national and subnational, and EBFs controlled by them).

All major policy changes and new spending proposals with fiscal implications should be analyzed and included in the MTFF. The MFD should evaluate the fiscal impact of proposed policy changes and the compliance with any fiscal rules. The MTFF provides the basis for undertaking fiscal policy scenario analysis.

The MTFF coverage should be comprehensive. The key fiscal aggregates in many advanced countries (especially in Europe) cover "general government". In preparing the MTFF, the MFD needs to collate data and ensure the consistency of medium-term fiscal projections for "general government" with its components: the projections prepared by authorities in central and subnational governments. Given the challenges of preparing a MTFF at "general government" level, the MFD needs to be proactive in obtaining medium-term fiscal projections from subnational governments and managers of extrabudgetary funds, especially Social Security Funds. In their absence—and/or if their size is relatively small—the MFD could prepare the MTFF projections for non-central government units.

D. Debt Sustainability Analysis (DSA)

The MFD could take the lead in conducting debt sustainability analysis. Much of the DSA input data relates to the existing and future public debt portfolio, which should be provided by the DMO. However, the interpretation of scenario-based DSA modeling is the role of MFD's staff with macrofiscal analytical skills and experience.

Debt sustainability reports should be published relatively frequently, especially when gross and net debt is reaching unsustainable levels. When primary deficits and interest risk premia are high, political decision-makers should be made aware of the options facing them. Detailed DSA reports can be less frequent in countries without high debt.

In countries with substantial financial assets (negative net debt), reports on asset management should be prepared. The relationship between changes in financial assets (e.g., Sovereign Wealth Funds), the MTFF and annual budgets should be fully transparent, being based on the "Santiago Principles" (see IWG, 2008). Villafuerte et al. (2008) and IMF (2014c) also provide guidance on asset-liability management in resource-rich economies.

E. Fiscal Risk Statement (FRS)

The objective of a FRS is to identify and, where possible, quantify fiscal risks and uncertainties, and present the policies adopted (or proposed) to manage the different risks. The FRS can be published as a chapter of the Fiscal Strategy Document or alternatively as a stand-alone document.

The fiscal risk analysis should cover central government risks and, to the extent possible, the risks associated with other public sector entities. Fiscal risks should be identified in various areas, as indicated in Box 2. The scope of the risk analysis could eventually analyze all components of the public sector balance sheet (discussed in Warren, 2013). It should also evaluate the probability of each risk materializing, to the extent that such information exists and its disclosure does not create moral hazard.

The MFD should identify and quantify fiscal risks wherever possible. The importance of macroeconomic risks, for example, can be identified by: 1) alternative macroeconomic scenarios; 2) sensitivity analyses that illustrate the budgetary impact of differing assumptions for key variables, e.g., for higher/lower economic growth, inflation, interest rates (domestic and foreign), commodity prices and exchange rates; and 3) fiscal stress tests, which provide a homogenous approach to valuing most risks. Some fiscal risks, such as those associated with off-budget or off-balance sheet items and natural disasters´ risks are difficult to assess. Appendix 1 of IMF (2016b) illustrates how various countries manage various fiscal risks.

Fiscal risks should be incorporated into the fiscal policy framework. Subsequent to the 2008–11 financial crisis some advanced countries invested extensively in improving fiscal risk analysis. IMF (2016b) provides guidance on how countries can mitigate and manage fiscal risks from multiple sources. Good practices include stress tests and probabilistic forecasting methods as tools for deepening fiscal risk analysis.

BOX 2. Fiscal Risk Statement

A fiscal risk statement describes and quantifies, wherever possible, various fiscal risks. The FRS could be organized around three main areas of risk:

1. Macroeconomic risks:

- Impact on public finances of variations in key economic and other parameters from those assumed in the forecasts.

2. Specific fiscal risks including:

- Explicit contingent liabilities. These come into play when the government has an unambiguous legal obligation, or a declared policy to provide fiscal support should a particular event occur. Examples include:
  - Revenue guarantees from PPPs.
  - Debt guarantees granted by the government to an SOE, a PPP or a subnational government.
  - Explicit government support when natural disasters occur.
- Implicit contingent obligations arise when the government is expected to, or pressured to, provide support should a particular event occur. Examples include government support for:
  - SOEs, both financial and nonfinancial, when in financial difficulties. Governments may, for example, purchase assets that carry substantive risks.
  - Subnational governments should they fall into financial difficulty.
  - Depositors, in the event of failure of a deposit-taking financial institution (and in the absence of an explicit government policy for bank deposit insurance).
  - Climate change risks
  - Natural disaster risks (in the absence of, or over and above the level covered by, an explicit government-run disaster insurance scheme).

3. Risks from structural or institutional weaknesses that increase either the probability of a negative event occurring or the cost to government if the event occurs. Examples include:

- Health care, pensions and other risks to government expenditure overruns due to changing demographic factors.
- Revenue risks: when revenues are volatile and dominated by natural resources (e.g., oil, gas and petroleum products, minerals).
- Difficulties in coordinating fiscal policy among different levels of government.
- Increases in corruption.

Main source: Budina and Petrie, 2013.
Additional reading: Everaert et al, 2009; Cebotari et al., 2009; IMF, 2008; IMF, 2014b; IMF, 2016b.

F. Other MFD Outputs

The MFD may prepare additional reports, either regularly during the annual budget cycle or periodically. For countries with fiscal rules, the MFD would prepare reports indicating the degree of compliance of outturns and fiscal projections with the fiscal rules. For countries with long-term structural fiscal issues (e.g., ageing populations) reports discussing long-term projections should be prepared, but not necessarily every year.[9]

Periodic reports on specific policy-related or technical issues in macrofiscal policy analysis may also be prepared (and published, for transparency). Examples include: special reports on the impact or cyclical sensitivity of tax and spending measures on economic growth; and pre- and post-election updates of the FSD.

[9] For example, in New Zealand, 40-year projections are required to be prepared every four years. The long-term projection model is published; see www.treasury.govt.nz/government/longterm/fiscalmodel.

IV. ORGANIZATIONAL ARRANGEMENTS AND COORDINATION

Organizational arrangements for the macrofiscal function have been increasing in scope and complexity. The tasks that the MFD performs, the products that it delivers, and the MFD's forecasting and assessment tools, have grown, in line with the enhanced importance of the medium-term strategic approach to fiscal policy-making. Issues such as preparing an MTFF, verifying compliance with a fiscal rule, and examining the risks to the medium-term fiscal strategy are central to macrofiscal management. Given the transfer of financial management functions to spending ministries, the role of the MoF has changed in recent years (Schick, 2001). The MFD has become a critical department for macrofiscal policy analysis, advice and projections.

There is no single "model" for where macrofiscal functions should be performed. Most, if not all, functions are normally conducted within the MoF as a single ministry.[10] In practice, when establishing an MFD or changing its mandate, countries give varying weight to administrative, institutional, legal, and political considerations.

There are tradeoffs between focusing all macrofiscal functions in one MoF department and dispersing them across several MoF departments and other government agencies. A "concentrated" MFD that performs all, or nearly all, macrofiscal functions minimizes any inconsistencies in technical work and fiscal policy analysis, and also reduces coordination costs. However, other MoF departments, or an outside agency, could perform certain specialized functions (e.g., tax policy analysis) in a quest for better analysis. Judicious choices are needed when choosing between the different organizational arrangements.

A. Where are Macrofiscal Functions Located in Various Countries?

There is no unique mapping between macrofiscal functions and the organizational arrangements for the MFD. Three major arrangements, with country examples, are identified below.

- **A single MoF department performs all major macrofiscal functions, including preparing the official forecasts.** Such an arrangement is widespread. In some African countries, the MFD is located in a "super-ministry", created by merging the Planning Ministry into the MoF, e.g., Mozambique, Niger. In Sweden, the MFD is a single MoF department, even though other MoF departments and agencies also perform macrofiscal functions (Box 3).
- **Various departments of the MoF perform macrofiscal functions collaboratively.** In France, the Directorate General of Treasury is the lead agency in the MoF on macrofiscal issues, but the Budget Department, along with agencies outside the MoF also play some role. Senegal is an example of a country where one directorate-general (for planning and economic policies) is responsible for macroeconomic projections and another directorate-general (for budget) is responsible for the fiscal strategy.

[10] Allen et al. (2015) discuss the different organizational arrangements for MoFs and their evolution.

BOX 3. Sweden's MFD and Other Government-Funded Agencies

The MoF's Economic Affairs Department (EAD) is Sweden's MFD. The EAD's roles are to:

- Prepare the MoF's official macroeconomic and fiscal projections.
- Make fiscal policy recommendations to the government.
- Analyze the consistency of agencies' policy proposals with macrofiscal objectives.
- Analyze long-term fiscal trends and sector developments.
- Conduct impact assessments of the tax, benefits and welfare systems.

The EAD's macrofiscal work is complemented by the outputs of other MoF Departments, especially those of the Budget Department that proposes the ceiling for total spending covering the next four fiscal years, the Tax Department, and the National Debt Office.

In preparing the official macrofiscal projections, EAD is cognizant of the projections and models of autonomous agencies under the MoF, notably those of the National Financial Management Authority, which makes short- and medium-term fiscal projections, and the National Institute of Economic Research (NIER), which also publishes economic and fiscal analyses and forecasts, four times a year. Detailed short-term forecasts (1–2 years ahead) by NIER are supplemented by medium-term analyses for the next five years. These projections serve as benchmarks to compare with EAD's own forecasts.

Since 2007, Sweden's independent Fiscal Policy Council evaluates government fiscal policies. The Council analyzes whether budget policy targets are being met and medium-term fiscal sustainability issues. It also assesses the quality of the official fiscal forecasts.

Sources: Officials in Sweden; agency websites; and www.oecd-ilibrary.org/budgeting-in-sweden

- **Macrofiscal functions are shared between a "finance" ministry and a "planning" ministry.** In these countries, the Ministry of Planning often prepares the investment budget and possibly also the macroeconomic forecasts. This model is prevalent in Asia, the Middle East and some African countries, some of which have de-merged the finance and planning ministry (e.g., in 2012, Ethiopia re-created a National Planning Commission, with responsibility for macroeconomic and sectorial projections). In Indonesia, a Fiscal Policy Office was created in the MoF in 2006 while the Planning Agency was maintained; efforts were made to integrate planning and budgeting in a collaborative way.[11] Brazil's Ministry of Planning, Budget, and Management and Colombia's National Planning Department are responsible for strategic planning and multiyear investment, while the MoF prepares budget projections. Some OECD countries, including Australia, Canada, and Germany, also have two ministries, for "Economy" and "Finance", with shared responsibilities for macrofiscal management.

[11] In addition, two new laws on public finance and planning were adopted in 2003-04, which helped clarify the respective functions and responsibilities of the MoF and the planning agency ("Bappenas").

Exceptionally, three ministries or agencies may perform macrofiscal functions. There are few countries in this category. The Democratic Republic of Congo has a Finance Ministry, a Budget Ministry, and a Planning Ministry; all perform some macrofiscal functions. However, the strength of the ministries is variable, and given staffing constraints, the macrofiscal function is not well developed. In contrast, in the United States, three agencies of the Executive (Treasury Department, Office of Budget and Management, and Council of Economic Advisors) collaborate closely for preparing the macrofiscal projections and policies underlying the President's draft budget (see Donihue and Kitchen, 1999).

In a few countries, an independent fiscal institution carries out an important macrofiscal function that is usually performed by the MoF, notably the preparation of the official fiscal projections. Two arrangements exist: (i) an independent agency under a non-MoF government ministry. Belgium and the Netherlands are the two examples;[12] and (ii) an agency that is not formally under any government ministry. The United Kingdom's Office for Budget Responsibility is a unique example. In these three cases, the agencies focus on macrofiscal forecasting and fiscal analysis, but do not make policy recommendations. The High Council in Belgium, the MoF in the Netherlands, and HM Treasury in the United Kingdom make the official fiscal policy recommendations to the government. In these three countries, the MFD functions are shared between the MoF and the independent agency. In contrast, in Euro-zone countries, an independent fiscal institution endorses the official macroeconomic and fiscal projections prepared by the MFD.

Independent fiscal institutions complement the work of the MFD. The MFD and independent fiscal institutions (Box 4) are not substitutes for one another: MFDs inform policy formulation and decision-making, whereas the latter normally independently assess policies and forecasts.

Some independent agencies prepare alternative fiscal forecasts and policy analyses. This can enhance the accountability of the MoF and the realism of the official fiscal forecasts. Fiscal councils appear to reduce fiscal deficit bias (Beestma and Debrun, 2016 and 2018). Independent fiscal institutions and MFDs may collaborate, as the former may use data provided by the MoF and, possibly, share models.

In lower income or small countries, independent fiscal institutions may not be warranted, given the lack of resources and (possibly) the marginal value added of such an institution. Efforts to first improve the quality, consistency and usefulness of the MoF-prepared MTFF should take priority.

[12] Belgium's Federal Planning Bureau, which is under the joint authority of the Prime Minister and the Minister of Economic Affairs, prepares the baseline medium-term MTBF (for further reading, see Bogaert et al., 2006). The Netherlands' Central Planning Bureau is an independent forecasting and analysis agency under the Ministry of Economic Affairs. For details, see www.cpb.nl/en and Bos (2008).

BOX 4. Independent Fiscal Institutions

Various types of independent fiscal agencies have been created in several countries in recent years, especially in Europe (see www.imf.org/external/np/fad/council).

- **Principles**. Von Trapp et al (2016) pp.27–30 lists nine key principles for guiding the work of independent fiscal institutions. Independence and transparency are particularly important.
- **Main roles**: to provide fiscal analysis, including an independent assessment of macrofiscal forecasts (short-, medium- and long-term) and, possibly, analysis or assessment of fiscal sustainability, fiscal policy objectives, fiscal policy stance (including compliance with fiscal rules) and the costing of fiscal policies.
- **Location:** some independent agencies are attached to the legislature ("parliamentary budget offices"). In other countries there are Fiscal Councils, neither under parliament nor government. In a few countries the external audit office (e.g., France's Court of Accounts), prepares alternative fiscal forecasts and comments on the macrofiscal outlook. Some General Comptrollers' Offices in Latin America comment on whether fiscal objectives are being met.

Additional reading: Debrun et al. (2013), Beestma and Debrun (2018), Lienert (2015). Von Trapp, Lienert and Wehner (2016) review independent fiscal institution experiences in 18 OECD countries.

B. Possible Internal Structure of the Macrofiscal Department

There is no "one-size-fits-all" organizational structure for the MFD. There are a variety of ways of regrouping the four tasks identified in Section II into different administrative units. The MFD's internal structure depends on the scope of the MFD's activities, the roles of other MoF departments and government agencies, and the availability of staffing.

The MFD's internal structure is context-specific. Country size is one factor. For example, a small country's MoF may only have 4-6 staff available for the MFD, in which case the "department" would be a single unit. For the purposes of illustration, a possible three-division MFD internal structure for a medium-sized country could be:

- **Macroeconomic and Fiscal Forecasting Division.** This division would be responsible for forecasting macroeconomic and fiscal variables. The division would maintain a central database of key macroeconomic and fiscal variables. It would draft regular reports of macroeconomic and fiscal developments and forecasts. Staff of the division would possess technical and analytical expertise for the preparation of the macrofiscal projections and for model development. It could also be the division responsible for preparing debt sustainability analyses, in collaboration with the DMO. Two sub-units could be established: one for macroeconomic forecasting, and one for fiscal forecasting (projections for revenue, expenditures, the fiscal balance and gross debt).
- **Fiscal Policy Division.** This division would be responsible for fiscal analysis and policy advice, especially for updating of the FSD. It would work closely with the MoF's Budget Department and Tax Policy Department, to analyze and interpret how overall revenues and expenditures develop over the short and medium term. This division, in collaboration with the Budget Department, would propose "top-down" expenditure ceilings. The division would ensure the consistency of medium-term projections and, if required, would propose new policies and fiscal targets. When fiscal rules are in place, the division would ensure that the updated MTFF is consistent with

the fiscal rules. The division may assess how alternative assumptions and policy scenarios affect revenues and expenditures (sensitivity analysis) and the MTFF. In its analytical work, it would compare short-term fiscal projections with actual outcomes.

- **Structural Fiscal Policy and Risk Analysis Division.** This division would analyze specific fiscal policy issues, especially those that are structural or longer-term in nature. Examples of possible outputs include: options for major tax reforms; the impact of changes in oil prices on the budgetary outlook; how public investment can best be used to increase potential output. In collaboration with the Fiscal Forecasting Division, it would prepare long-term projections, particularly those for assessing the impact of ageing on the budgetary cost of pensions and health care. This division (or a separate division) would analyze fiscal risks and prepare the fiscal risk statement.

Although some countries organize their MFDs close to this possible structure, there is wide diversity in practice. Table 3 briefly reviews six countries. Canada is closest to the above three-division structure. For some countries, the MFD has 4-5 divisions, whereas Colombia's MFD has only one division. In a few countries, the MFD covers areas not included in the four main MFD functions discussed in section II. For example, Peru's "MFD" includes units examining issues related to intergovernmental relations; and Norway's MFD covers employment policies. On the other hand, none of these countries has a division dedicated exclusively to Fiscal Risk analysis. In Colombia and Peru, for example, the Treasury Directorate is responsible for fiscal risk analyses.

Given the diversity of coverage of macrofiscal functions in various countries, it is difficult to make recommendations on the appropriate number of staff for a MFD. The number of staff depends on the scope of the MFD activities, the size of the country, the MoF's overall budget, and the size of other MoF divisions. In small countries with limited budgets and staff, the size of the MFD could range from 5 to 10 staff (as is the case in the larger Caribbean island countries). For a moderate sized country, if the MFD performs all four functions of section II, the staff size could be 20 to 50, for example.

The diversity of MFD arrangements reflects the wide differences in the MoF's functions in various countries, and the relative strength of other MoF divisions. Some countries have a Tax Policy Unit, which takes the lead for producing tax policy analysis. In such countries, the MFD's contribution would be to analyze the implications of major tax policy changes on the macroeconomic and fiscal outlook. Marginal tax policy changes, including removing or adding minor tax exemptions, would not be analyzed by the MFD. More generally, the MFD should avoid focusing on fiscal issues that have an insignificant impact on the macrofiscal framework and projections.

TABLE 3. Organizational Structures of Macrofiscal Units—Selected Countries

Country	Canada	Colombia	Korea	Norway	Peru	Spain
Name of Unit	Economic and Fiscal Policy Branch	Macroeconomic Policy Directorate	No single unit. Responsibilities shared between: Economic Policy Bureau, Fiscal Management Bureau, Fiscal Innovation Bureau, Tax Policy Division of Tax and Customs Office, and Budget Office	Most macrofiscal activities are carried out by the Economic Policy Department of the MoF. A few are carried out by the Budget and Tax Policy Departments. Statistics Norway develops economic models.	Directorate General of Macroeconomic Policy and Fiscal Decentralization	Ministry of Economy's Directorate of Economic Analysis and International Economics (macro forecasts and risk analysis) and various MoF Directorates (for fiscal analysis, fiscal forecasting)
Parent Ministry	Department of Finance	MoF's Technical Vice Ministry	Ministry of Strategy and Finance (MoSF)	Ministry of Finance	Vice Ministry of the Economy	Ministry of Economy and MoF[1]
Organizational Structure	1. Economic Analysis and Forecasting Division 2. Fiscal Policy Division 3. Economic Studies and Policy Analysis Division	No divisions: the work is distributed between two thematic groups: 1. Real Sector; and 2. Fiscal Sector	The six divisions of the Economic Policy Bureau: 1. Economic Policy 2. Economic Analysis 3. Financial Market 4. Price Policy 5. Policy Planning 6. Macroeconomic Strategy	Divisions of Economic Policy Department: 1. Economic Analysis and Monetary Policy 2. Public Finance and Macroeconomic Analysis 3. International Economics 4. Employment Policies 5. Debt Management	1. Directorate of Projections and Macroeconomic Scenarios 2. Directorate of Fiscal Policy 3. Directorate of Decentralization Policies and Subnational Finances	(only Ministry of Economy) 1. Economic Analysis and Forecasting Division 2. International Economics Division 3. Macroeconomic Analysis and Modeling Division

Main sources: MoF websites of each country.
[1]In Spain's MoF, the National Accounts Division produces forecasts for fiscal variables and the Tax Studies Division prepares tax revenue forecasts.

When subnational governments have a sizeable impact on the fiscal framework, there are two options for organizational arrangements. The MFD could examine macrofiscal issues related to intergovernmental fiscal relations. Alternatively, a separate MoF department could be established.[13] Under either approach, the department's tasks would include: proposing the size of intergovernmental transfers; designing transfer mechanisms and tax-sharing arrangements; monitoring fiscal developments in local governments; and monitoring compliance with subnational fiscal rules, should such rules exist.

13 In Canada, for example, the Department of Finance (DoF) "intergovernmental" branch has responsibility for reporting to the Minister of Finance on fiscal issues of provinces. The branch leads on all intergovernmental issues, but coordinates closely with other DoF branches such as the tax policy branch.

C. Coordination Within the Ministry of Finance and with Other Government Agencies

The MFD needs to coordinate with a wide range of institutions, inside and outside the MoF. The full benefits of the macrofiscal work can only be reaped through regular inter-agency consultation and cooperation, in which there are exchanges of views on forecasts, fiscal policy options, and their quantitative impact.

Strong coordination between the MFD and the Budget Department is crucial. The MoF's Budget Department guides ministries for preparing detailed annual budget spending estimates. The need for coordination is particularly strong for multi-annual spending projections. The MFD would usually take responsibility for "top-down" spending ceilings[14] and the Budget Department provides the "bottom-up" estimates of budget spending (by program or by sector, under unchanged policies). Should there be a comprehensive Spending Review (see Robinson, 2013), a collaborative approach would be needed, with inputs also coming from other government ministries and agencies.

The MFD also needs to be in close contact with other MoF departments. For its revenue projections and analysis, the MFD needs to collaborate closely with the Tax Policy Department (if it exists). The Tax and Customs Administrations could be consulted for revenue forecasts.[15] Grote (2017) explains why revenue collection agencies should not be responsible for preparing the official revenue forecasts for the MTFF and the annual budget. The MFD should ensure that revenue projections are on a gross basis, rather than only revenues net of earmarked expenditures, e.g., those based on fees collected by a ministry. In preparing DSA projections, the MFD clearly must coordinate with the DMO.

Close coordination is needed when there is a separate Planning Ministry or agency. A planning agency may prepare medium-term (e.g., 5-year) and long-term plans for socio-economic development. In some countries, the Planning Ministry prepares the investment budget and/or the macroeconomic projections. When such a ministry exists, its policy analysis for the "development budget" and investment spending needs to be fully consistent with the medium-term and annual fiscal strategies developed by the MFD. To avoid unnecessary overlap, the responsibilities for macroeconomic and fiscal forecasting and analysis should be clear. A formal agreement between the two ministries on their respective tasks in macrofiscal analysis should be drawn up and agreed to by both parties.

Coordination with the national statistics office and other non-MoF government agencies is needed. The statistics office's historical National Accounts and fiscal data should be identical to the MFD's database used for its macroeconomic and fiscal projections. Non-MoF agencies where coordination is required also include the ministries/agencies responsible for SOEs, energy, civil service, etc.

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[14] Sweden is an exception: the Budget Department establishes the top-down expenditure ceiling (Box 4). Robinson (2012) elaborates on top-down ceilings.

[15] Semi-autonomous Revenue Authorities (RAs) have been created in several countries. Although RAs' main mandate is to assess and collect taxes/duties and to administer and enforce revenue laws, many RAs also provide advice on draft tax laws (Crandall, 2010, p.7).

Collaboration with the central bank is also important. Coordination with the Central Bank is needed for ensuring the consistency of fiscal, monetary and structural policies and for assessing the macroeconomic effects of fiscal policies for a given monetary policy stance. Since the central bank needs macroeconomic projections for monetary policy purposes, the MFD and the central bank's "macro-economy" department should compare macroeconomic projections. If possible, a consistent macroeconomic and budgetary framework for both monetary and fiscal policy purposes should be developed.

Coordination between different levels of government is needed, especially when there are "general government" fiscal rules. An increasing number of countries are decentralizing fiscal powers to subnational governments. Formal coordination bodies are needed, especially when there are deficit and/or debt fiscal rules that apply to "whole of government", inclusive of Social Security bodies (e.g., European Union; CFA franc zone countries). Such bodies ensure that central and subnational MTFFs, annual budgets, and fiscal policies are aligned so as to attain the "general government" fiscal objectives.

V. STRATEGY FOR BUILDING A STRONG MACROFISCAL DEPARTMENT

After examining preconditions for a strong MFD, this section considers key issues associated with developing fiscal forecasting, expanding the scope of the MFD's functions, and improving the quality of a MFD's inputs and outputs.

A. Preconditions for a Strong MFD in the MoF

There are preconditions for strengthening a MFD within the MoF. In some lower income countries, the MFD can only play its critical strategic macrofiscal role when:

- The MFD takes the lead in proposing the MTFF and annual budget strategy, consistent with policy-makers' decisions on fiscal objectives or fiscal rules. A reallocation of macrofiscal tasks may be required, especially in countries where the planning ministry prepares macroeconomic projections primarily for official planning purposes, without updating them frequently, and without a MTFF.
- The recurrent and investment ("development") budgets are unified. If components of the fiscal forecasts are prepared by an agency other than the MoF and are delinked from annual and medium-term budget objectives, there will not be a coherent MTFF.
- Extrabudgetary funds (EBFs) are included in the MTFF and information on them presented with the annual budget.

High-level political support is needed to assure that the MFD's strategic position is sustained. This may happen following an internal restructuring of the ministries involved in macrofiscal and budget management. In countries with a large number of government ministries, the government may reduce both the number of ministers and ministries, and transfer some macrofiscal functions to a new department. For example, in some African countries, it has been difficult to establish a strong MFD within the MoF because planning agencies outside the MoF (sometimes under the Presidency) have not coordinated well with the MFD. The MFD's work has also been thwarted by political decisions to introduce new revenue and expenditure policies outside the MTFF and/or the regular budget cycle.

There is a need to establish priorities for macrofiscal activities. Whereas for advanced countries the priorities should be on improving further the quality of all macrofiscal functions and outputs discussed in sections II and III, lower income countries are faced with strategic choices as to where efforts should be concentrated. Once the quality of annual budget forecasting, budget documentation and annual accounts is adequate, low capacity countries should devote resources to establishing and improving the quality of the medium-term fiscal strategy and framework, especially to ensure that it is useful for annual budgeting. Later, debt sustainability and fiscal risk analyses can deepen or begin. For low-income countries, the preparation of long-term fiscal projections is barely worthwhile, given large uncertainties surrounding short-term fiscal projections.

B. Developing Tools for Macrofiscal Forecasting and Policy Analysis

Macroeconomic forecasts

In lower capacity countries, macroeconomic "modeling" ambitions should not be high. Official projections of the key macroeconomic variables could be forecast by other agencies or taken as targets. The focus for the MFD should be on establishing the links between key macroeconomic variables and the budget forecasts. Since the central bank makes projections for macroeconomic variables, such as GDP, inflation, exchange rate, and interest rates, when there are limited human resources, the MFD could rely on the central bank for forecasts or assumptions for these variables.

The IMF's Financial Programming (FP) framework is one approach that could be used for macroeconomic forecasts. This framework has the advantages of simplicity, consistency and comprehensive coverage. It is mainly based on identities for all sectors of the economy (Box 5) and a limited number of behavioral relationships (for its theoretical underpinnings, see IMF, 1987; for its use, see Ouanes and Thakur,1997). In small economies, the MFD and officials at the central bank and/or other agencies could jointly develop the framework—or at least agree on key assumptions and parameters—since the monetary and external sectors are included, which are essential inputs for the central bank's analysis.

BOX 5. Financial Programming Framework

The Financial Programming (FP) Framework provides a macroeconomic framework for understanding the economy and its inter-linkages. It can be used to assess macrofiscal policies aimed at achieving desirable macroeconomic objectives. This is usually done in three steps: (1) understanding the current state of the economy; (2) assessing the trajectory of the economy if current policies stay the same; and (3) setting of desirable macroeconomic objectives and formulating policy changes to realize macrofiscal objectives.

The FP framework lays out the key relationships between the following four sectors of the economy:

1. **Real Sector:** In-depth analysis of the National Accounts and real economic transactions of the different economic agents: households, firms, government, and the rest of the world.
2. **Government Sector:** This sector links revenues and expenditures to macroeconomic and policy parameters. The fiscal balance is linked to net financing and government debt.
3. **External Sector:** The relationships between residents and non-residents of an economy as portrayed by the external Balance of Payments accounts.
4. **Monetary and Financial Sector:** This block examines different types of financial sector intermediaries and their overall impact on macroeconomic variables.

Fiscal forecasting including revenue projections

There are five characteristics of a good fiscal forecasting system. The most important is usefulness: medium-term fiscal projections must feed into the annual budget forecasts. The MFD should evaluate carefully the relative weight of the following aspects, as there are trade-offs between them:

- ***Useful.*** The forecasts must inform the budget process, particularly by providing analysis and advice useful to the Minister of Finance and senior staff of the MoF. The forecasting processes must also respond to the MoF's evolving needs.
- ***Consistency.*** The "models" used within and between different departments of the MoF—and agencies outside the MoF—should use the same assumptions for GDP, inflation, the exchange rate, etc. for the official forecasts that underlie the macroeconomic and budget forecasts.
- ***Useable.*** The forecasting "model" must be easy for MoF staff to use, straightforward to learn, and produce easy-to-understand results. In low-income countries, modeling ambitions and expectations need to be managed carefully by the MFD director and senior MoF staff.
- ***Accurate.*** Accuracy improves budget credibility and builds trust in the forecasting framework. However, more-accurate forecasts typically use more sophisticated forecasting techniques.
- ***Sustainable.*** One main forecasting model should be used for a number of years. For sustainability, models should not depend only on a very limited number of staff. User manuals should be prepared for training purposes.

The lower the data quality and availability of skilled people, the less should be the sophistication of fiscal modeling. The MFD also needs to balance the availability of reliable recent data, staff time available for forecasting, and the skills and tools available, i.e., trained people and computers (see sub-section F below).

As skills are acquired, fiscal modeling should be refined. Based on periodic assessments, the MFD should refine the specification of the modules (and sub-modules) for revenues, expenditures, fiscal deficit financing, and debt sustainability analyses. Advanced models could be developed for simulating the impact of economic and fiscal policy shocks, including the incremental GDP impact of changes in revenue or expenditure policies.[16]

Various methods and models can be used to forecast revenues.[17] Many revenues are driven by economic variables, making it easier to undertake modeling work (relative to expenditure forecasting). A choice of approach could be from the following methods:

- **Extrapolating past revenue.** Under this approach, there is no link between the revenues collected and the tax base on which the tax liability is assessed. Except for minor taxes unlinked to economic activity, this approach should be avoided.
- **Effective tax rates.** The revenues from each tax are forecasted by multiplying a forecast of the tax base by the corresponding effective tax rate, which is calculated by dividing the tax collected for recent periods by the estimated tax base. A proxy tax base is often used.

[16] Examples are: Vector Autoregression (VAR) and Dynamic Stochastic General Equilibrium (DSGE) models.

[17] For further reading, see Buettner and Kauder 2009; Glenday 2013, Kyobe and Danninger, 2005; Grote, 2017.

- **Elasticities.** A consistent relationship between the *growth* in revenue for each tax and the *growth* in the corresponding tax base—the elasticity—is assumed. Estimates of elasticity values are most commonly done via: (i) macroeconomic models; (ii) theoretical considerations; and (iii) time-series analysis (e.g., Wolswijk, 2007).
- **Structural models** produce revenue forecasts that include the interdependencies of the tax system with the economic variables, including feedback effects.
- **Micro-simulations** mimic the provisions of tax laws. Detailed data are needed for models that produce micro-level revenue forecasts, which are then aggregated. This approach is useful for certain revenues not dependent on economic factors.

If a separate Tax Policy Department exists in the MoF, it could take the lead for tax revenue forecasting. Such a department would forecast the major taxes, the impact of tax policy changes and the improvements in tax administration and compliance. For transparency, these components of the revenue forecast should be shown separately. The MFD would collate all revenue forecasts and, possibly, prepare forecasts of some revenue types, e.g., nontax revenues and, for low-income countries, projections of external grants.

C. Expanding the Scope of the MFD's Tasks While Ensuring Coordination

In weak-capacity countries, the scope of the MFD could initially be confined to macroeconomic and fiscal projections, policy analysis and fiscal monitoring. The emphasis would be on preparing a sound MTFF and fiscal projections for no more than three years. The first-year projections should feed directly into the annual budget framework. New tax and spending policies should be analyzed in at least a basic manner. A fiscal strategy document would be prepared and updated at least annually.

As analytical and technical capacity grows, the MFD would progressively improve its fiscal analysis and take on more macrofiscal functions. Revenue analysis and forecasting would deepen. The impact of new expenditure policies would be analyzed with greater rigor. The links between deficit financing and public debt would be examined more closely and debt sustainability analyses would be prepared. Fiscal risk analysis would begin or deepen.

The MFD and other MoF departments should expand the coverage of fiscal aggregates, as needed. Many developing countries' fiscal frameworks are confined to central government activities only. It important to expand the coverage of the MTFF to "general government", especially when substantive fiscal powers are devolved to subnational governments. The MTFF should include all non-central government and extrabudgetary transactions. However, the inclusion of all public sector entities and the projection of "whole-of-government" balance sheets is an ambition that only a few advanced countries practice.

The MFD should coordinate closely with other MoF departments and government agencies to ensure the consistency of macroeconomic and fiscal projections. Since the MFD is a strategic department within the MoF, it needs to initiate meetings to exchange data and analytical work on impending macrofiscal issues. For agencies outside the MoF, the exchanges should be formalized, for example, through a Memorandum of Understanding (MoU) that outlines the responsibilities of each stakeholder, when exchanges should take place, and what issues should be discussed.[18]

MFD staff should meet their counterparts within and outside the MoF. Working groups should be established, composed of staff from various MoF departments, the planning ministry, the national statistics office and the central bank, to share datasets and methods used in preparing projections. This is particularly important when preparing the official projections for macroeconomic variables.

D. Deepening Fiscal Risk Analysis

The publication of a fiscal risk statement is an attainable objective, including for some low-income countries. Uganda's MoF, for example, conducted a fiscal risk analysis in 2016, consolidated the findings, and published a first-ever fiscal risk statement (IMF, 2017).

The MFD should gradually deepen its fiscal risk analysis. The MFD should first analyze easy-to-identify fiscal risks, e.g., macroeconomic risks. Fiscal risk analysis would expand to cover more of the risks shown in Box 2, especially those that pose the greatest threat to fiscal sustainability. PPP risks could be assessed using the tool described in IMF and World Bank staff (2016).

It is useful to establish a hierarchy of fiscal risks. In establishing such a hierarchy, the MFD needs to balance the likelihood that the risk will occur and the impact of the risk should it occur. Greatest efforts are needed for the analysis of high-likelihood and high-impact risks. The red and orange zones of Table 4 should be prioritized.

Table 4. Criteria for Ranking Fiscal Risks

	Likelihood of risk occurring		
Impact of risk	Low	Medium	High
Low			
Medium			
High			

Advanced countries can incorporate fiscal stress tests in fiscal risk analysis. Fiscal stress tests examine the impact of macroeconomic shocks and realized contingent liabilities on both fiscal flows (revenues, expenditure, and financing) and stock variables (government liabilities, assets, and overall net worth). Using GFS concepts and government balance sheets, Boxes 3 and 4 of IMF (2016b) illustrate fiscal stress tests for Iceland and Peru. The United Kingdom's 2017 fiscal report (Box 6), being a comprehensive FRS, is an example of best practice. However, considerable resources are needed for such a FRS.

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18 See, for example, the MoU between the UK's Office for Budget Responsibility, HM Treasury, and other UK government departments http://budgetresponsibility.org.uk/docs/dlm_uploads/obr_memorandum040411.pdf.

BOX 6. Fiscal Risks Report—United Kingdom

In July 2017, the UK's independent Office of Budget Responsibility (OBR) prepared a Fiscal Risks Report. The document identified and quantified various fiscal risks, including (but not limited to):

- Spending and revenue related risks—such as the potential for larger than expected increases in welfare spending, and the concentration of tax receipts among a small number of payers.
- Contingent liabilities—such as the potential cost of nuclear decommissioning.
- Financial sector risks.

A novelty in the report is the ***fiscal stress test***. This tool, inspired by banking sector stress tests, identifies how multiple shocks—macrofiscal and financial—interact and impact on public finances. Many of the risks identified in fiscal stress tests exist in parts of the balance sheet that are not usually considered in the standard debt and deficit framework. Exposure to entities outside the general government, valuation changes to government assets, and contingent liabilities emanating from the private sector are risks that only become evident by taking a broader balance sheet approach to fiscal policy.

The report raised questions on how the UK government could reduce, mitigate, and manage risks within its overall fiscal framework. The level of risk recognition, analysis and assessment in the OBR report is comprehensive and advanced (it uses the IMF's Fiscal Transparency Code as a benchmark).

Sources: Office for Budget Responsibility (2017); http://blog-pfm.imf.org/pfmblog/2017/07/stressing-the-public-finances-the-uk-raises-the-bar.html

E. Improving the Quality of Fiscal Information and Fiscal Forecasts

The MFD needs to ensure that the fiscal information underlying the forecasts is of a high quality. The quality of the forecasts is impaired when the MFD's historical database is not up-to-date, inaccurate and/or incomplete. The quality of the government's annual financial statements is assured when an independent external auditor provides, each year, an opinion on their quality. It is also important to ensure that the fiscal projections are consistent with the historical database for central (or general) government flows and stocks.

Since the MFD is highly dependent on quality data, it should have an important voice when it comes to improving macroeconomic and fiscal data. The MFD should promote:

- **Good cooperation and coordination among data-producing agencies within the MoF and between the MoF and other agencies.** The MFD should participate in working groups established to improve national accounts, budgetary and other data relative to its outputs.
- **Efficient and opportune data collection systems, with timely publication of macroeconomic and fiscal data.** When there are large revisions in historical data, the reasons need to be explained and actions taken to prevent reoccurrences.
- **Comprehensiveness.** The financial transactions of all autonomous noncommercial government agencies and extrabudgetary funds should be included in fiscal data.

There are various ways for improving the quality of fiscal forecasts. Guidelines include:

- **Evaluating the accuracy of forecasts.** One task of the MFD, or an outside body, is to regularly conduct post mortems of forecasts. Various statistical measures and methods are available for measuring forecast bias and errors. A key objective is to disentangle the impacts of discretionary fiscal policy measures, macroeconomic developments and other factors such as statistical changes (Leal et al., 2007).
- **Reviewing forecast errors.** The sources of forecast errors should be determined and used to improve the accuracy of future forecasts. Sometimes a law requires this. For example, Australia's fiscal policy documents regularly include an assessment of the prior year's forecast and explanations for the reasons for variations.[19]
- A**voiding deliberate optimism in GDP and revenue forecasts.** Politicians may be tempted to project budget revenues optimistically, so as to include more expenditure in the annual budget and MTBF. The MFD should resist pressure to prepare optimistic projections, especially since they can lead to unforeseen fiscal deficits and public debt increases. While the MFD should aim for unbiased macrofiscal forecasts, it is prudent to lean towards pessimism, rather than optimism, in growth and revenue projections. In Canada, in the 1990s, GDP and budget projections were deliberately pessimistic, so as to avoid another debt crisis (Mühleisen et al., 2005).
- **Comparing models in-house.** The MFD should compare simple and alternative models. For example, forecasts based on actual tax filings and micro-simulations can be compared with those based on high-level aggregates of specific taxes. Such comparisons facilitate improved model specification and parameters.
- **Comparing with forecasts of non-MoF forecasters.** The MFD should examine the methods and parameters underlying the fiscal projections prepared by other bodies and compare them with those used by the MoF.
- **Creating institutions for improving the credibility of forecasts.** Box 7 highlights institutional arrangements that are helpful for improving the quality of the MFD's forecasts, models, fiscal analysis, and policy advice.

[19] See for example, https://static.treasury.gov.au/uploads/sites/1/2017/06/forecasting-review.pdf.

BOX 7. Institutions for Improving the Credibility of Fiscal Forecasts

Various institutional arrangements can help improve the robustness of fiscal forecasts, including by:

- Establishing or strengthening a macroeconomic and fiscal forecasting Working Group, comprised of officials from the MFD and other departments of the MoF, the Central Bank, the Statistics agency, etc., who agree on a common set of assumptions for macroeconomic and fiscal forecasting purposes.
- Using a panel of competent experts to produce alternative forecasts (e.g., Chile) or to review and comment on forecasts (e.g., Poland).
- Creating an independent fiscal institution to verify and endorse macroeconomic forecasts and/or the fiscal stance (for Euro-zone countries, such an institution is an EU requirement since 2013). Such bodies and procedures help to avoid economic growth and revenue forecast optimism.
- Using consensus assumptions for key variables or tax forecasts. Some US States do this; three States outsource revenue forecasting (see Annex 4, Lienert, 2015).

Forecast error analyses and evaluations, while useful, also have limitations. Forecast evaluations facilitate the calculation of error bands around future forecasts, thereby enhancing the assessment of fiscal risks. On the other hand, the drawing of strong conclusions from forecast evaluations is constrained by four factors: (1) projection methods may have changed during the postmortem period; (2) assessments of the impact of fiscal policy changes are imperfect; (3) only a small sample of past forecasts may be available; and (4) the recent historical outcomes for macroeconomic and fiscal variables may themselves be subject to errors and change.

F. Strengthening Human and Material Resources

Human resources

The MFD needs staff with strong analytical skills and knowledge of modeling and forecasting techniques. Specialized competencies and skills of MFD staff include: (1) a strong understanding of macroeconomics; (2) ability to analyze macroeconomic and fiscal developments; (3) ability to construct models and forecast key macroeconomic and fiscal variables, for the short-, medium- and long-terms; and (4) database management and information technology (IT) skills. On-the-job or external training may be needed to ensure that the MFD staff are competent in these areas.

Staff with strong communication and interpersonal skills are also required. The MFD is not just a technical department preparing the macrofiscal projections. The MTFF needs to be explained orally. Concise summaries of key macrofiscal outputs (see Table 1) need to be communicated clearly to senior management of the MoF, policy-makers at the political level, and perhaps before parliament and the public.

The availability of skilled staff depends on adequate recruitment, remuneration, promotion, and retention policies. These may depend on civil service rules, especially for salary and benefits. If human resource incentives are weak, the ability of the MFD to perform its functions may be limited. To attract the right staff, salaries compatible with the skills needed are required. Since the private sector may be ready to recruit skilled and well-trained people from the MFD, private sector salary comparators should be used. Consistent with its strategic role within the MoF, the head of the

MFD should be remunerated at the level comparable with other MoF departments such as Treasury and Budget. In the face of ongoing high staff turnover, the MoF may have to invest heavily in training programs for MFD staff.

When macrofiscal modeling in the MoF is underdeveloped, the MFD staff could avail themselves of the central bank's macroeconomic modeling expertise. In some low- or middle-income countries, central bank staff are seconded to the MoF, to help develop the MFD's database, forecasting tools and analytical skills.

IT/computerization

Information technology systems for data collection, processing and modeling are required, to facilitate the management of various databases and software for the MFD's work. Such systems need to be maintained by skilled experts and upgraded periodically to provide the necessary tools for the MFD's forecasting and specialized tasks. Computer facilities and databases for the MFD, while they can be modular, need to be linked with those of other MoF Departments, especially the Budget, Tax, and Debt Departments.

VI. CONCLUDING REMARKS AND STRATEGY FOR REFORM

A well-functioning MFD plays an important strategic role in the MoF. The MFD formulates initial versions of the government's medium-term fiscal strategy. It ensures that fiscal and other economic policies are coherent. The MFD is the focal point for analyzing fiscal policy proposals (tax, spending, and structural) and reporting them to senior MoF managers and the Minister of Finance. The MFD also monitors fiscal developments by preparing reports on annual fiscal policy implementation and updating fiscal projections. When data inconsistencies arise, the MFD should challenge data-producing agencies so as to resolve them. In summary, the MFD is the MoF's powerhouse for communicating the economic and budgetary impact of present and medium-term fiscal policies.

This note identifies four core functions of the MFD: (1) forecasting macroeconomic and fiscal aggregates, and preparing updates of the government's medium-term fiscal strategy; (2) analyzing the short- and longer-term impact of new revenue and expenditure policies, with a view to ensuring debt sustainability; (3) analyzing fiscal risks; and (4) monitoring macrofiscal developments.

There is no single organizational model for performing macrofiscal tasks. One choice for the internal structure of the MFD inside a MoF is to create divisions that specialize in: macroeconomic and fiscal modeling and forecasting; analysis of revenue and expenditure policies; and analysis of fiscal risks and longer-term structural policy issues.

The medium-term fiscal strategy statement and the macrofiscal framework underlying the annual budget are key outputs of the MFD. As with other MFD outputs, it should be fully owned by the government and published to enhance transparency.

The MFD needs to collaborate closely with other departments and agencies within and outside the MoF. Close coordination is especially needed with the MoF's budget, tax policy, and debt management departments, as well as with the central bank.

Adequate trained personnel and computer resources are needed. If staff turnover is high, the MFD needs to continue to train staff and, if possible, press for staff salaries similar to those performing with comparable salaries elsewhere.

When the macrofiscal function is underdeveloped, the emphasis should be on establishing or strengthening the core functions of the MFD within the MoF. The initial focus should be on improving the quality of short- to medium-term macroeconomic and fiscal forecasts, while ensuring that the impact of changes in revenue and expenditure policies are accurately assessed in the annual budget. Later, more advanced macrofiscal modeling and comprehensive fiscal risk analysis can be embarked upon, so as to improve the reliability and credibility of the government's medium-term fiscal strategy.

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