

Mexico: Technical Assistance Report-Strengthening Public Assets and Liabilities Management



MEXICO

TECHNICAL ASSISTANCE REPORT—STRENGTHENING PUBLIC ASSETS AND LIABILITIES MANAGEMENT

December 2021

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Mexico

Strengthening Public Assets and Liabilities Management

Sailendra Pattanayak, Felipe Bardella, Fabien Gonguet, Fritz Bachmair, Karla Vasquez, Azzedine Lazizi, and Mike Williams



Technical Report

July 2021

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Abbreviations and Acronyms

ALM	Asset and liability management
BANCOMEXT	<i>Banco Nacional de Comercio Exterior</i>
BANOBRAS	<i>Banco Nacional de Obras y Servicios Públicos</i>
Banxico	<i>Banco de México</i> (Central Bank)
BCG	Budgetary Central Government
BCRP	Central Reserve Bank of Peru
Cetes	Treasury certificates (<i>Certificados de Tesorería</i>)
CFE	Federal Electricity Commission (<i>Comisión Federal de Electricidad</i>)
CONAC	The National Council of Accounting Harmonization (<i>Consejo Nacional de Armonización Contable</i>)
CONSAR	Pension System Regulator (<i>Comisión Nacional del Sistema de Ahorro para el Retiro</i>)
CSD	Central Securities Depository
CNBV	National Banking and Securities Commission (<i>Comisión Nacional Bancaria y de Valores</i>)
CNSF	National Insurance Regulator (<i>Comisión Nacional de Seguros y Fianzas</i>)
CONSAR	Pension System Regulator (<i>Comisión Nacional del Sistema de Ahorro para el Retiro</i>)
CUT	<i>Cuenta Única de Tesorería</i> (Treasury Single Account)
EBF	Extra-Budgetary Fund
EP	<i>Etablissement public</i> (France)
FAD	Fiscal Affairs Department of the IMF
FCR	Consolidated Reserve Fund
FARP	Pension Restructuring Fund (<i>Fondo de Apoyo para la Reestructuración de Pensiones</i>)
FEIEF	Federal Entities Income Stabilization Fund (<i>Fondo de Estabilización de los Ingresos de las Entidades Federativas</i>)
FEIP	Budgetary Revenues Stabilization Fund (<i>Fondo de Estabilización de los Ingresos Presupuestarios</i>)
FEIPEMEX	Investment in Infrastructure of PEMEX Stabilization Fund (<i>Fondo de Estabilización para la Inversión en Infraestructura de Petróleos Mexicanos</i>)
FIES	Infrastructure Trust for the States (<i>Fideicomiso para la Infraestructura en los Estados</i>)
FMP	<i>Fondo Mexicano de Petróleo</i>
FONADIN	National Infrastructure Fund (<i>Fondo Nacional de Infraestructura</i>)
FSF	Fiscal Stabilization Fund
FTE	Fiscal Transparency Evaluation
HBPSBR	Historical Balance of the Public Sector Borrowing Requirements (<i>Saldo Histórico de los Requerimientos Financieros del Sector Público</i>)
GFS	Government Finance Statistics
GFSM	Government Finance Statistics Manual
IPAB	Deposit Insurance Fund (<i>Instituto para la Protección al Ahorro Bancario</i>)
IMF	International Monetary Fund
IMSS	Mexican Institute for Social Security (<i>Instituto Mexicano del Seguro Social</i>)
IPSAS	International Public Sector Accounting Standards
ISSFAM	Institute for Social Security for Military Personnel (<i>Instituto de Seguridad Social para las Fuerzas Armadas Mexicanas</i>)
ISSSTE	Institute for Social Security and Social Services for Workers of the State (<i>Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado</i>)

LEG	Legal Department of the IMFLOAPF	Federal Public Administration Law (<i>Ley Orgánica de la Administración Pública Federal</i>)
LFEP	Federal Law of Parastatal Entities (<i>Ley Federal de Entidades Paraestatales</i>)	
LFPRH	Budget and Fiscal Responsibility Law (<i>Ley Federal de Presupuesto y Responsabilidad Hacendaria</i>)	
LM	Line ministries	
LMOs	Liability Management Operations	
LTF	Federal Treasury Law (<i>Ley de Tesorería de la Federación</i>)	
MoF	Ministry of Finance	
MoU	Memorandum of Understanding	
MXN	Mexican peso	
NAFIN	National Development Bank (<i>Nacional Financiera</i>)	
NDPB	Nondepartmental Public Body (United Kingdom)	
NFPS	Nonfinancial Public Sector	
ONP	Social Security Normalization Office (<i>Oficina de Normalización Previsional</i>)	
OPG	Office of the Paymaster General (United Kingdom.)	
PEMEX	<i>Petróleos Mexicanos</i>	
PFM	Public Finance Management	
PFN	Financial Net Worth (<i>Posición Financiera Neta, PFN</i>)	
PPP	Public private partnership	
PSBR	Public Sector Borrowing Requirements (<i>Requerimientos Financieros del Sector Público, RFSP</i>).	
PSBS	Public Sector Balance Sheet	
SALM	Sovereign asset and liability management	
SAT	<i>Servicio de Administración Tributaria</i> (Tax Administration Service)	
SHCP	<i>Secretaría de Hacienda y Crédito Público</i> (Ministry of Finance)	
SHRFSP	<i>Saldo Histórico de los Requerimientos Financieros del Sector Público</i>	
SIAFF	integrated financial management information system (<i>Sistema Integral de Administración Financiera</i>)	
SOE	State-Owned Enterprise	
SSE	<i>Sub-Secretaría de Egresos</i> (Expenditure Sub-Secretariat)	
SSHCP	<i>Sub-Secretaría de Hacienda y Crédito Público</i> (Sub-Secretariat of Finance and Public Credit)	
SSI	<i>Sub-Secretaría de Ingresos</i> (Revenue Sub-Secretariat)	
T-bills	Treasury bills (see also <i>Cetes</i>)	
T-bonds	Treasury bonds (<i>Bondes "D", Bonos de Desarrollo, Udibonos</i>)	
TA	Technical Assistance	
TESOFE	<i>Tesorería de la Federación</i> (Federal Treasury)	
TBI	Tony Blair Institute for Global Change	
TSA	Treasury Single Account (see also <i>CUT</i>)	
UCP	<i>Unidad de Crédito Público</i> (Debt Management Unit)	
UPCP	<i>Unidad de Política y Control Presupuestario</i> (Budget Policy and Control Unit)	
UPEHP	<i>Unidad de Planeación Económica de la Hacienda Pública</i> (Economic Planning Unit)	
UPI	<i>Unidad de Política de Ingresos</i> (Tax Policy Unit)	
WGA	Whole of Government Accounts	

PREFACE

At the request of the Ministry of Finance and Public Credit (SHCP) of Mexico, a team from the IMF's Fiscal Affairs Department (FAD) undertook a mission during May 3–17, 2021 on strengthening the public asset and liability management function. The mission was conducted remotely given health and travel-related restrictions in place at the time due to the COVID-19 pandemic. The mission team was led by Sailendra Pattanayak and comprised Fritz Bachmair, Felipe Bardella, Fabien Gonguet (all FAD), Karla Vasquez (IMF's Legal Department), Azzedine Lazizi and Mike Williams (FAD experts). A scoping mission in April 2021 identified the scope and focus of this mission.

On the first day of the April 2021 scoping mission, the team was received by Mr. Gabriel Yorio, Undersecretary of Finance and Public Credit, SHCP, who provided advice and orientation to the team. At the end of the May 2021 mission, the team presented its findings and recommendations to Mr. José De Luna Martínez, Deputy Undersecretary for Public Credit and to SHCP staff.

During the mission, the team held several technical meetings with SHCP officials. In the Public Credit Unit, the team met with Mr. Roberto Lazzeri Montaña, Director General of Public Debt; Ms. Elvia Angelica Sosa Vela, Director of Financial Programming; Mr. Ulises Ruiz Hernández, Director of Risk Management; Mr. José Miguel Larrieta Arteaga, Director of Debt Policy; Ms. Brenda Ciuk, Director General of Foreign Affairs; Ms. Laura Hernández Osorio, Director General of Legal Procedures of Credit; and their collaborators. In the Economic Planning Unit, the team met with Mr. Felipe de Jesús Martínez Gallegos, Director General of Public Finance Statistics; Ms. Elisa Hernández Vargas; and their collaborators, as well as officials from the Federal Treasury (TESOFE). The mission also met with Mr. Cajeme Villarreal, Chief Economist, SHCP; Mr. Eric Avilés Herrera, Deputy General Director of Projects; and Ms. Maricela Pestaña, Director of the Administration of the Integrated Information System.

The mission team held meetings with the following senior representatives of other public sector entities: Mr. Gerardo García, General Director of Operations; Mr. Rodrigo Cano and Mr. Juan García from Banco de México (Banxico); Mr. Miguel Siliceo, Deputy General Director, International Relations at the National Bank for Foreign Trade (BANCOMEXT) and his collaborators; and Mr. Carlos Guevara Vega, Mr. Guillermo Christy Vera and Mr. Carlos de Jesús Viveros Medina from the Federal Electricity Commission (CFE).

The mission also delivered a workshop to SHCP officials on good international practices in financial assets management.

The mission team would like to thank the Mexican authorities for their cooperation and participation in constructive discussions on all topics during the mission. The mission would especially like to thank Mr. Roberto Lazzeri Montaña and Mr. Ulises Ruiz Hernández for their excellent support in organizing the mission, setting up meetings, and providing documentation. The mission is also grateful for the excellent interpretation services of Ms. Pilar Islas, Ms. Susan Asselin, Ms. Dorina Bonatti, Ms. Joyce Denton, Ms. Lorenia Rincon, and Ms. Hilda Tejada.

EXECUTIVE SUMMARY

The Ministry of Finance and Public Credit (SHCP) of Mexico intends to strengthen public asset and liability management (ALM) practices. The 2018 Fiscal Transparency Evaluation (FTE) identified several gaps in reporting public sector assets and liabilities and analysis of the associated risks. The authorities have identified the need for further reforms in three interrelated areas: (i) adopt the public sector balance sheet (PSBS) analytical framework to inform policy making; (ii) move toward more active cash management; and (iii) strengthen the management of financial assets and introduce a sovereign assets and liabilities management (SALM) framework in a phased manner. This report provides recommendations for reforms in these three areas.

Adopting the Public Sector Balance Sheet Analytical Framework to Inform Policy Making

The SHCP has been making consistent efforts over the last two decades to compile the PSBS and expand its coverage of institutions, flows, and stocks. The 2006 Fiscal Responsibility Law and subsequent regulations introduced the Public Sector Borrowing Requirements (PSBR) as an expanded fiscal balance indicator with wider institutional coverage, and the Historical Balance of the Public Sector Borrowing Requirements (HBPSBR) as a measure of the public sector net stock position. More recently, a financial net worth (PFN) type of indicator has also been introduced. Since the 2018 FTE, there has been progress in compiling the PSBS, which is published quarterly; the statement of operations accompanies it. The SHCP makes institutional and methodological adjustments during the compilation of PSBS to bring it in line with international standards.

Despite the progress in compiling the PSBS, some gaps in its coverage remain. The central bank (Banxico) and subnational governments are excluded; nonorganic trust funds are partially covered; assets and liabilities related to public private partnerships (PPPs) are not reflected; treasury securities used by the Banxico for liquidity management and the corresponding restricted government account are not reported on a gross basis; employment-related pension liabilities are only partially reported; and the value of subsoil assets are not reported. The report recommends addressing these gaps gradually by incorporating all assets and liabilities of nonorganic trust funds in the short term and in the Banxico and state governments over the medium term. Full reconciliation between flows and stocks and clear disclosure of other economic flows affecting assets and liabilities would enable further use of the PSBS for policy analysis.

The PSBS could serve as a powerful analytical tool to assess the resilience of Mexico's public finances. The SHCP should enhance its understanding of the structure and evolution of the PSBS and could start computing a few PSBS strength indicators, as suggested in the report, to gauge its overall exposure to risk, though some indicators may require additional data collection. Adding the intertemporal component of the balance sheet in the short to medium term would facilitate analysis of fiscal sustainability under current policies and help identify required adjustments. The SHCP might consider, once key prerequisites are met, using the fiscal stress test methodology over the medium term to assess the effect of tail-end risks on the PSBS.

Expanded fiscal indicators, based on PSBS data and going beyond gross public debt, can provide useful insight into public finances and improve fiscal policy making. However, it is premature to envisage their use as firm policy anchors. It is important to first understand the drivers underlying their evolution and to develop the capacity to project them over the medium term. Further explanations on the currently reported indicators should be the focus to enhance transparency.

Strengthening the Cash Management Framework

The SHCP has built a comprehensive cash flow forecasting infrastructure. The forecasting process is thorough and detailed, but the forecast errors have been nonnegligible. The sharp within-month pattern of cash flows is challenging. The Federal Treasury (TESOFE) is aware of the pattern but is dependent on others for forecast inputs, and the pattern has not always been captured. A persistent tendency to overcaution is reflected in the strongly positive cumulative cash flow forecast errors in most months. There seem to be several underlying factors influencing this cautious approach, and three related challenges need to be addressed: cash forecast data from the main revenue and spending agencies are potentially influenced by budget-related negotiations; the TESOFE does not have the discretion under the current policies and guidelines to make their own adjustments; and there are delays in the recording of actual cash outturn data, particularly on the expenditure side.

The report recommends several measures to strengthen cash forecasting. The TESOFE should be given more authority to decide how best to build the cash flow forecasts and to use first-hand information from agencies by building direct links with the larger spending agencies and the Tax Administration (SAT). The SAT should prepare and regularly update rolling forecasts for submission to the TESOFE (which should also explore the use of incentives). The Working Group (*Comisión de Trabajo*) reviews forecasts of future cash flows extending some months ahead, but its focus, reportedly, tends to be on the month ahead; this should be extended to at least three months, with the forecast for that period updated and rolled forward at least monthly.

Improved quality of the cash forecast is important to underpin the move to more active cash management. The authorities have the tools for more active cash management, but in practice, the response to cash balance fluctuations has been somewhat passive. There is no formal objective or model for cash balance smoothing; there has been negligible investment of temporary surplus cash and no general attempt to smooth cash flows. The move to more active cash management will require a clearer specification of a cash buffer, which should be kept under review and set dynamically. The report recommends building over time a more active approach to smoothing cash flow fluctuations primarily through financing transactions. Any shift to using treasury certificates (Cetes) more actively in this way should be fully explained to the market. The TESOFE should develop the capacity to invest in reverse repo, which could be a useful instrument for active cash management. A clear understanding with the Banxico on the SHCP's operations, which should support monetary policy operations, would be helpful. The SHCP should also consider institutional options for better integration of debt and cash management functions.

Improving Management of Financial Assets and Introducing a Sovereign Assets and Liabilities Management Framework

Outside of the budgetary central government (BCG), the legal framework for financial asset management mirrors the complex public sector institutional landscape in Mexico.

The so-called parastatal sector encompasses a diverse pool of entities with different financial and budgetary relations with the central government. Aside from parastatals, substantial federal financial assets are managed through nonorganic trust funds, which lack an overarching framework for financial oversight. The BCG's financial assets consist primarily of cash managed by the TESOFE. The nature and composition of the financial assets of central public sector entities outside of the BCG largely reflect their policy objectives and the legal and regulatory regimes under which they operate. In coordination with the SHCP's Economic Planning Unit, the Public Credit Unit (UCP) has collected detailed granular information on the financial assets of certain central public sector entities. The SHCP's legal power over federal financial assets varies widely depending on the asset pool owner. The report's analysis focuses on a subset of entities representative of the various governance structures and based on the size of their assets.

Expanding the SHCP's direct control over financial assets of entities outside the BCG may not be legally feasible, nor advisable. The SHCP should instead focus on developing and implementing a comprehensive monitoring framework that can be expanded to cover all types of financial assets of the central public sector (excluding Banxico) and be guided by a set of general prudential principles to which every entity would have to demonstrate compliance. This would entail additional reporting requirements for entities that the SHCP would evaluate against the prudential principles for suggesting any corrective action when gaps are identified. The process of data collection could be progressively expanded and automated to allow its utilization for multiple analytical purposes. The authorities should undertake a review of the legal framework applicable to each category of central public sector entity for financial assets monitoring.

In the federal context of Mexico, an SALM strategy should focus on optimized management of risks from mismatches in the financial characteristics of financial assets and liabilities of the central public sector, supplemented by oversight of fiscal risks from subnational governments. The SALM framework could be extended over time to include the Banxico. The SHCP has started to reflect SALM considerations, particularly in its debt management operations. The SHCP should build on existing capabilities and undertake a few key measures: an explicit mandate for SALM and an SALM committee to facilitate the discussion and negotiation of potential SALM strategies among institutions while safeguarding their autonomy; strengthening the UCP middle office to conduct relevant analysis, identify PSBS mismatches, and develop strategies to mitigate them; and establishing a process to implement and monitor the SALM strategy. The report proposes three phases for extending the institutional coverage of the SALM framework, with strategies comprising a mix of risk avoidance, transfer, and retention.

Table 1 lists the key recommended measures over the short, medium, and long term.

Table 1. Mexico: Summary of Recommendations

Recommendation	Short Term (within one year)	Medium Term (two to three years)	Long Term	Responsible Agencies
I. Public Sector Balance Sheet (PSBS) Compilation and Analysis¹				
I.1. Expand the institutional coverage and improve consolidation practices to allow for a more comprehensive view of public finances.	Incorporate into the PSBS all assets and liabilities of nonorganic trust funds. Start with selected funds holding significant assets and/or liabilities and quickly expand to other less relevant ones. Add treasury securities used by the Banxico for liquidity management.	Include in the PSBS the Banxico and state governments. Start with the existing data on subnational debt by state with some additional breakdowns by debt instrument.	Expand coverage of the PSBS to municipalities and include liabilities of PPP projects at subnational level.	Economic Planning Unit of the SHCP
I.2. Improve the coverage of stocks and flows and enhance stock-flow reconciliation to better understand the evolution of the PSBS.	Introduce nominal value as the valuation method for the long-term treasury bonds (<i>Bondes "D," Bonos de Desarrollo, Udibonos</i>) to ensure comparability of financing data presented in the statement of operations and financing figures shown in the tables of reconciliation between financing and the change in net debt. Identify and disclose other economic flows affecting each item of the balance sheet.	Publish a statement of other economic flows, isolating valuation changes from other volume changes. Add liabilities of PPP projects at the federal level.	Move to a market basis valuation to allow for proper identification of mismatches between assets and liabilities in the PSBS. Add employment-related pension liabilities and subsoil assets.	Economic Planning Unit of the SHCP
I.3. Enhance understanding and narrative on the PSBS and its evolution, based in particular on the gradual development of balance sheet strength indicators and balance sheet projections for medium term.	Expand PSBS information in the quarterly reports such as subsector balance sheets, crossholdings, and historical series (since 2014) and include in the quarterly reports a narrative on the key drivers of the size and evolution of the PSBS since 2014. Produce a few international comparisons on PSBS and its components, using the IMF PSBS database. Collect comprehensive information on the breakdown of assets and liabilities according to currency and liquidity to enable calculation of mismatch indicators.	Develop simple methodologies to project the balance sheet forward per type of asset and liability. Produce long-term fiscal projections (revenue and expenditure), compute the intertemporal component of the balance sheet, and use it for the analysis of fiscal adjustment needs. Experiment with the fiscal stress test methodology as a one-off exercise.	Apply an annual fiscal stress test to the PSBS.	Economic Planning Unit of the SHCP

¹ This report's recommendations are closely linked to the detailed action plan on improving the PSBS compilation and analysis that was included in the Mexico Fiscal Transparency Evaluation (FTE) report (see IMF Country Report No. 18/289).

Recommendation	Short Term (within one year)	Medium Term (two to three years)	Long Term	Responsible Agencies
II. Cash Management Framework				
II.1. Further develop cash flow forecasting infrastructure.	Give TESOFE more authority to decide how best to build the cash flow forecasts, including by making its own judgments. Widen TESOFE's sources of information and establish a capacity-building program accordingly. The primary forecast focus should extend at least three months ahead.	...	...	Working Group (<i>Comisión de Trabajo</i>) and TESOFE
II.2. Move to more active cash management.	Agree to a cash smoothing objective and a program to manage cash more actively accordingly. Establish a cash buffer target to be reviewed every quarter and meet more frequently, in due course weekly, identifying policy responses to the forecast.	...	...	Working Group
II.3. Further develop Cetes as a cash management instrument.	Further develop Cetes as a cash management instrument and explain it to the market.	...	...	UCP (with TESOFE)
II.4. Amend policies and guidelines to support these operations.	Amend policies and guidelines and associated governance arrangements in line with the above recommendations for endorsement by the Technical Committee.	...	...	Working Group and Technical Committee
II.5. Build reverse repo capability.	Develop capacity to invest through reverse repo.	...	...	TESOFE (with UCP)
II.6. Review options to better integrate debt and cash management.	...	Consider institutional options for better integration of debt and cash management functions.	...	SHCP
III. Management of Financial Assets and Liabilities				
III.1. Analyze and explore opportunities to manage trust funds' liquidity more actively.	Analyze variability of the trust funds' balances and their historical profile of profitability and determine the scope for more active investment strategies to enhance returns within acceptable risk constraints.	If the results of the financial analysis support it, implement necessary legal and operational frameworks for active investment of balances.	Review effectiveness periodically.	SHCP and UCP Middle Office; Trust Funds

Recommendation	Short Term (within one year)	Medium Term (two to three years)	Long Term	Responsible Agencies
III.2. Collect data on financial assets of central public sector entities and build a data repository.	Conduct a pilot study to analyze and define data requirements. Start with entities administered by the SHCP.	Expand data collection to all central government entities, operationalize the data collection process, and develop analysis and reporting capabilities.	Expand coverage to all central public sector entities (except the Banxico) and further refine analytical capabilities.	SHCP; central public sector entities
III.3. Broaden the SHCP's function for proactive analysis and monitoring of central public sector financial assets.	Broaden SHCP's function with responsibility for the analysis and monitoring of central public sector financial assets. Monitor implementation of guidelines issued for parastatals' liquidity management.	Expand scope of financial assets analysis and monitoring to all relevant central public sector entities (except the Banxico).	...	SHCP; central public sector entities
III. 4. Strengthen SHCP guidelines for financial asset management of parastatals.	Strengthen the financial assets oversight mandate of the SHCP by issuing regulations to enhance the existing requirements for reporting of financial information (type of information, periodicity, format, etc.) per category of entity.	Identify gaps and weaknesses in the guidelines issued by SHCP for parastatals. Within the current SHCP legal powers, issue new guidelines on good practices for financial asset management per category of entity respecting the different levels of autonomy.	...	SHCP
III. 5. Strengthen the legal framework for financial oversight of central public sector entities outside the BCG.	Review the current legal framework for financial oversight for each category of entity and within SHCP's current legal powers, issue regulations to strengthen reporting requirements and harmonize accounting standards.	Explore legal reform opportunities to introduce key elements for effective financial oversight of extrabudgetary funds and state-owned enterprises (SOEs).	...	SHCP
III.6. Introduce an SALM framework and expand its institutional coverage in phases.	Start implementing an SALM framework for BCG; priority trust funds, development banks, <i>Petróleos Mexicanos</i> (PEMEX) and the Federal Electricity Commission (CFE).	Expand the SALM framework to the remainder of the central public sector (except the Banxico) and cover contingent liabilities.	Incorporate Banxico in the SALM framework.	SHCP; central public sector entities; Banxico
III.7. Develop an institutional framework for SALM.	Assign SALM mandate to UCP; and expand UCP middle-office resources and capacity.	Constitute an SALM committee to negotiate and coordinate among institutions while safeguarding their autonomy.	Include Banxico in SALM committee.	SHCP and UCP; Banxico

Recommendation	Short Term (within one year)	Medium Term (two to three years)	Long Term	Responsible Agencies
III.8. Identify and analyze financial risk exposures of public sector assets and liabilities.	Ensure data collected for PSBS compilation includes information required for SALM analysis, focus on priority risks, and identify (net) exposures at the level of individual entities and in aggregate.	Ensure consistent valuation of assets and liabilities across institutions and integrate a balance sheet into debt models.	Add foreign currency reserves into models.	UCP in cooperation with Economic Planning Unit
III.9. Design and implement the SALM strategy.	Continue foreign currency exposure management and explore options for risk transfers among SOEs.	Negotiate potential transactions among autonomous institutions, consider UCP as residual risk-taker, provide ALM advisory to lower-capacity institutions; and manage contingent liabilities.	Consider matching foreign currency reserves and debt portfolios.	SHCP and UCP; Banxico

I. PUBLIC SECTOR BALANCE SHEET COMPILATION AND ANALYSIS

A. Compiling Public Sector Balance Sheet in Mexico

Recent Developments

1. The Ministry of Finance and Public Credit (SHCP) has made consistent efforts over the past two decades to compile the public sector balance sheet (PSBS) and report on some key PSBS indicators. Building on existing information on the gross and net debt position, the SHCP has gradually included data on other financial assets and liabilities held by public entities—for example, equity and investment shares, accounts payables and receivables—in the PSBS and associated indicators. The National Council of Accounting Harmonization (*Consejo Nacional de Armonización Contable*, CONAC) was established in 2008 as the accounting standard setter for the public sector and has been actively issuing guidelines on standard procedures for public entities to register and report on their assets and liabilities. Moreover, the SHCP has also taken steps to expand the institutional coverage of reporting on the public finances beyond the federal budget framework to also include other public entities such as trust funds, development banks, state-owned enterprises (SOEs), among others.

2. Several legal provisions in this direction were introduced by the Budget and Fiscal Responsibility Law (*Ley Federal de Presupuesto y Responsabilidad Hacendaria*, LFPRH) in 2006 and subsequent regulations.² Article 107 of LFPRH mandates the SHCP to report on the amounts and composition of all public liabilities and financial obligations of the federal government, including contingent and employees-related liabilities. The legal framework also introduced an expanded financial position indicator called Historical Balance of the Public Sector Borrowing Requirements (HBPSBR) (*Saldo Histórico de los Requerimientos Financieros del Sector Público*, SHRFSP) as a measure of the public sector net stock position to be consistent with the expanded fiscal balance indicator with wider institutional coverage in the country, namely the public sector borrowing requirements (PSBR) (*Requerimientos Financieros del Sector Público*, RFSP). More recently, an improved financial net worth (*Posición Financiera Neta*, PFN) type of indicator was introduced, complementing the HBPSBR. The SHCP adopted IMF's *Government Finance Statistics Manual* (GFSM) international standards to build these expanded indicators, which significantly differ from the methodology supporting the more traditional indicators.

3. Although there are areas in need of further improvements, some progress has been clearly achieved since the 2018 Fiscal Transparency Evaluation (FTE).³ Most importantly, the PSBS has been disseminated on a regular basis in the quarterly fiscal reports and other publications on public finances. More specifically, based on the recommendations of the 2018 FTE, the following improvements have been achieved:

² Regulation of the LFPRH and its amendments.

³ IMF Country Report No. 18/289.

- The PSBS is now compiled and published on a quarterly basis, broadly covering public entities at the federal level. It contains breakdowns of assets and liabilities by economic classification in line with international standards. The sectorization—central government, nonfinancial public sector, and public sector, excluding the *Banco de México* (Banxico) and subnationals—is also broadly aligned with international standards and consolidation practices that are in place to cancel out intra-entity transactions (debtor-creditor positions) within the same sector.
- A statement of operations is also included in fiscal reports to inform on how the fiscal performance (revenues, current expenditures, capital expenditures) affects the evolution of the PSBS. It follows the framework of the GFSM 2014 to ensure full integration of stocks and flows, and the breakdowns of revenues and expenditures (by economic categories) are aligned with the international guidelines. The PSBR indicator aligns with the net lending/borrowing balancing item in the GFSM framework; however, providing additional explanations on the differences between the PSBR and more traditional fiscal indicators is advisable (see Section I.C.).
- The *Fondo Mexicano de Petróleo* (FMP) is now included in the PSBS and the issue of asymmetric treatment⁴ of the oil hedging program transactions of the Budgetary Revenues Stabilization Fund (*Fondo de Estabilización de Ingresos Presupuestarios*, FEIP) in the PSBR calculation has been addressed.
- Although the nominal value has yet to be used for valuation of the long-term treasury bonds (T-bonds)—that is, *Boncos “D,” Bonos de Desarrollo*, and *Udibonos*—the corresponding debt stocks reflected in the PSBS have been adjusted to net out the difference between the discounted issue price of T-bonds and their face value. Such difference is recognized as a residual asset in the accounting records.

Further improvements in institutional coverage and reporting of stocks (subnational governments, trust funds, public private partnerships (PPPs), pension liabilities, among other items), as well as reconciliation between the flows and stocks (for example, valuation of debt securities, disclosure of other economic flows), would strengthen the compilation of PSBS and are discussed below.

Adjustments to the Public Sector Balance Sheet to Align It with International Standards

4. A major challenge for the compilation of the PSBS in Mexico arises from the complex legal and institutional frameworks that form the basis of the more traditional fiscal indicators. This challenge is two-fold. First, the complex national sectorization of public entities as illustrated in figure 1. For example, the federal budget comprises the two major SOEs and the social security institutions but does not cover a number of decentralized entities and trust funds,⁵ some of which function as stabilization funds for budgetary revenue. Second, the legal framework, as established in the LFPRH, calls for statistical treatments of some financial transactions that differ from the international methodological guidelines. As an example, transactions related to the acquisition of financial assets other than cash and deposits are to be

⁴ See paragraph 15 of the FTE report: IMF Country Report No. 18/289.

⁵ The nonorganic trust funds are not covered by the federal budget.

recorded as spending in the computation of the traditional fiscal indicators currently used for policy analysis.

5. The SHCP makes adjustments while compiling the PSBS to bring it in line with international standards, but some transparency issues remain when comparing the expanded and traditional indicators. The following adjustments are performed to strengthen the usefulness of the PSBS for analyzing public finances:

- Institutional adjustment: Coverage is expanded from the budget framework to include the following.
 - Decentralized entities (the deposit insurance fund (IPAB), for example), organic trust funds, and other nonfinancial SOEs—other than PEMEX (*Petróleos Mexicanos*) and the Federal Electricity Commission (*Comisión Federal de Electricidad*, CFE).
 - Development banks (examples include *Banco Nacional de Obras y Servicios Públicos*, BANOBRAS; *Sociedad Hipotecaria Federal*; *Banco Nacional de Comercio Exterior* (BANCOMEXT); *Nacional Financiera* (NAFIN); *Banco del Bienestar*); and other government-owned financial institutions.
 - The net financial position of nonorganic trust funds (for example, *Fondo Nacional de Infraestructura*, FONADIN) is taken into account under the equity equivalent method.⁶
- Methodological adjustment:
 - Acquisition of financial assets other than cash and deposits is treated as a financial transaction, not spending.
 - Financing that corresponds to issuance of long-term T-bonds is adjusted to reflect the discounted issue price.
 - Transactions related to the PIDIREGAS⁷ and debt-supported program are included.

⁶ Consists of calculating claims on the residual value of a corporation or quasi-corporation after the claims of all creditors have been met.

⁷ On December 21, 1995, the Article 18 of the Public Debt Law (Public Debt Law) and the Article 30 of the Abrogated Federal Public Budgetary, Accounting, and Expenditures Law (FPBAEL) were amended to create a new category of long-term contingent public debt to support priority infrastructure projects that would generate revenue for their own funding, creating the Deferred Impact Status Projects of PIDIREGAS – *Proyectos de Infraestructura Productiva de Largo Plazo* (PIDIREGAS).

Figure 1. Illustration of Mexico's Institutional Arrangements

<div>International Sectorization</div> <div>-----></div> <div>National Sectorization ↓</div>	Public Sector										Subnational PS	
	Central Public Sector											
	Central Government					Nonfinancial SOEs		Financial SOEs		Central Bank (Banxico)	State Gov.	Local Gov.
	Budgetary Central Gov.	Extrabudgetary Units (EBU)			Social Security	PEMEX	CFE	Other Nonfin. Commercial Entities (SOEs)	Development Banks				Other Fin. Commercial Entities (SOEs)
Federal Government (Gobierno Federal)												
Productive SOEs (Empresas productivas del Estado)												
Bodies Under Direct Budget Control (Organismos de Control Presupuestario Directo)												
Entities Under Indirect Budget Control (Entidades Bajo Control Presupuestario Indirecto)												
Budget Balance (Balance Presupuestario)												
Parastatals (Paraestatales)												
Federal Public Sector (Sector Público Federal)												
Expanded PSBS (Hoja de Balance del Sector Público)												

Source: IMF mission team

6. Therefore, the structural differences in the various fiscal indicators in Mexico can be summarized in table 2. Further discussion on computing expanded fiscal indicators for policy making is developed in Section 1.C.

Areas in Need of Further Improvements

7. Despite the progress in compiling the expanded PSBS, gaps remain in institutional coverage, and missing pieces of assets and liabilities. The most relevant gaps and omissions are (see the 2018 FTE report for an in-depth analysis):

- **Banxico and subnational governments:** In terms of institutional coverage, the Banxico, the 32 states (including the *Ciudad de México*), and the 2,457 municipalities are missing, which includes all government bodies at the subnational level. For example, there are 65 trust funds at the state level. Expanding the PSBS institutional coverage by including subnational governments is important not only to better understand the PSBS's exposure to fiscal risks from states and municipalities but also to incorporate into the analytical framework around 35 percent of the public sector expenditures that are executed at the subnational level. Expanding the PSBS coverage to Banxico should also be considered.
- **Nonorganic trust funds are only partially covered:** The nonorganic trust funds are reflected in the expanded PSBS to the extent of the equity equivalent method, meaning that the funds' net worth is added as an asset into the central government balance sheet under the equity and investment fund shares item. It is unclear, though, if the fund's net worth

calculations take into account only liquid assets and liabilities, such as securities and deposits. For example, it is unclear if the financing operations provided by FONADIN for infrastructure projects are reflected in FONADIN's net worth taken to compile the expanded PSBS.

- **Assets and liabilities related to PPP projects:** The existing portfolio of projects being executed under PPP arrangements is not reflected in the expanded PSBS. It is recommended to recognize assets and corresponding PPP-related liabilities as assets are constructed. Enhancing the accounting framework for PPPs to make it broadly aligned with International Public Sector Accounting Standards (IPSAS) 32 is advisable.

Table 2. Mexico: Differences Between Traditional Fiscal Indicators Currently Used in Mexico and Expanded Public Sector Balance Sheet Indicators

Traditional indicators (currently used)	Expanded PSBS indicators (also used)
List of indicators: <ul style="list-style-type: none"> • <i>Balance público</i> • <i>Balance presupuestario</i> • <i>Balance Público sin inversión</i> • <i>Balance de entidades bajo control presupuestario indirecto</i> • <i>Balance primario</i> • <i>Deuda pública</i> • <i>Deuda neta</i> • <i>Deuda interna</i> • <i>Deuda externa</i> 	List of indicators: <ul style="list-style-type: none"> • PSBR (RFSP) • HBPSBR (SHRFSP) • <i>Posición Financiera Neta (PFN)</i> (net financial position) • Net financial position (PFN) minus employment-related pension liabilities
Sectorization follows the national legal/institutional framework: <ul style="list-style-type: none"> • See figure 1 for the composition of sectors and subsectors • Nonorganic trust funds are not covered • Banxico is not covered • Subnational governments are not covered 	Sectorization broadly aligned with international standards: <ul style="list-style-type: none"> • Central gov., nonfinancial public sector, and public sector • Nonorganic trust funds partially covered under equity equivalent method • Banxico is not covered • Subnational governments are not covered
Assets and liabilities: <ul style="list-style-type: none"> • Securities (T-bonds) mostly at face value • Bank loans • Pension bonds • Cash and deposits 	Assets and liabilities: <ul style="list-style-type: none"> • Securities (T-bonds) adjusted to reflect the discounted issue price • Bank loans and pension bonds • Cash and deposits • Equity and investment fund shares (nonorganic trust funds) • Accounts payable and receivable

Source: IMF mission team.

- **Treasury securities used by the central bank, Banxico, for liquidity management:** Such securities stand as debt liabilities of the central government (from the counterparty perspective)—regardless of whether they are issued in the market through the central bank under monetary policy operations or directly by the SHCP to fund the budget—and should be reflected as such in the expanded PSBS. Similarly, the corresponding restricted account at the Banxico should be included as a central government asset. Once Banxico is incorporated into the expanded PSBS, these creditor-debtor transactions will cancel out by consolidation from the perspective of the entire public sector; however, it is a good transparency practice to report these items on a gross basis in the PSBS.
- **Employment-related pension liabilities⁸ are partially reported:** Liabilities under employment-related pension schemes should be fully reflected in the PSBS.
- **Subsoil assets:** PEMEX regularly produces estimates of the monetary value of proved petroleum reserves, and they should be incorporated in the PSBS.

8. While some of these gaps should be addressed for improving transparency, others can add value to building a sovereign assets and liability management (SALM) strategy, and progress could be achieved gradually. Ensuring that all assets and liabilities of nonorganic trust funds are properly reflected in the PSBS and that sufficient granular information is available is essential to supporting an SALM framework (Section III). Furthermore, expanding coverage to Banxico, subnational governments, and PPPs can support shedding light on potential contingent liabilities stemming from those entities and operations. Pension liabilities provide for a better understanding of the fiscal impact of long-term trends in the public sector workforce (aging, for example) and sustainability of the public sector employment-related benefits package. Actions to address the gaps can be taken in a phased manner as suggested below:

- **Short term** (implementable within one year): Incorporate all assets and liabilities of nonorganic trust funds. The process can start with selected funds holding significant assets and/or liabilities, then quickly expand to other less relevant ones. Treasury securities used by Banxico can be added for liquidity management.
- **Medium term** (two to three years): Include Banxico and state governments. SHCP already publishes online⁹ tables containing the subnational debt by state with some additional breakdowns by debt instrument, and this database can serve as the starting point to introduce state data in the expanded PSBS. Liabilities of PPP projects at the federal level can also be added.

⁸ Throughout this report, employment-related pension liabilities refer to the pension liabilities arising from the pension schemes that cover public sector employees, namely the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), the PEMEX and CFE pension regimes, the *Instituto de Seguridad Social para las Fuerzas Armadas Mexicanas* (ISSFAM), and other pension schemes, including schemes for development banks, other government agencies, universities, *Instituto Mexicano del Seguro Social* (IMSS) *patrón*, and closed special regimes (*LyFC*, *Ferronales*). The total pension liabilities related to those pension schemes reached 46.9 percent of GDP by 2016.

⁹ <http://disciplinafinanciera.hacienda.gob.mx/>.

- **Long term** (more than three years): Expand coverage to municipalities, include liabilities of PPP projects at the subnational level, and add employment-related pension liabilities and subsoil assets.

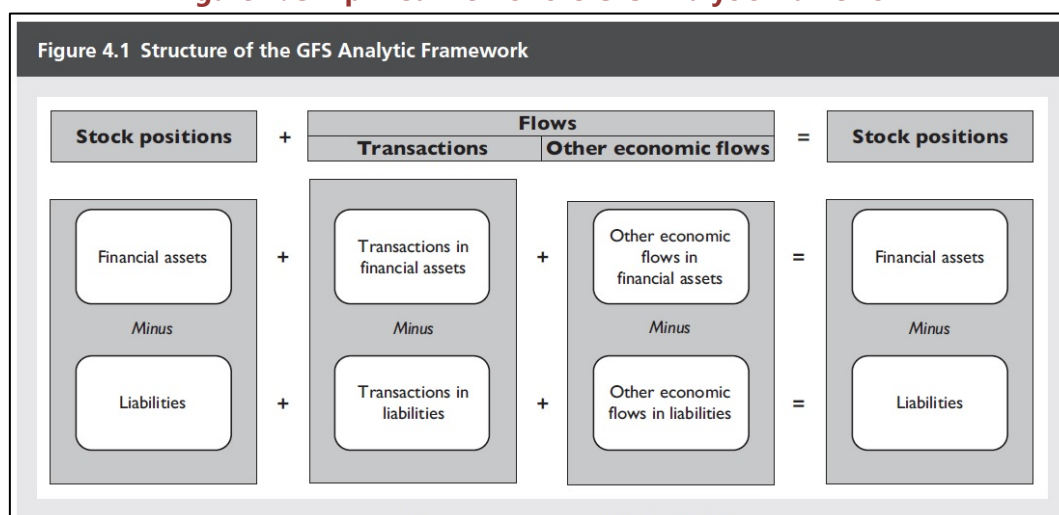
9. Finally, ensuring proper reconciliation between the flows and stocks to better understand the evolution of the PSBS should be a priority.

The use of PSBS for policy analyses relies on the consistency and full integration of the analytical framework. Transactions and other economic flows should be sufficiently disclosed to fully explain the changes in stock positions, ideally breaking them down by each item of the balance sheet. The following two issues should be addressed in the short term:

- **Valuation of debt securities:** Introduce nominal value as the valuation method for the long-term T-bonds to ensure comparability of financing data presented in the statement of operations and financing figures shown in the tables of reconciliation between financing and the change in net debt. This is required because in all debt tables (gross debt, net debt, change in net debt) the stock of T-bonds is registered at face value as well as the flows of issuance of such securities. Moving to a market basis valuation in the long term would allow for proper identification of mismatches between assets and liabilities in the PSBS.
- **Disclosure of other economic flows:** Identify and disclose other economic flows affecting each item of the balance sheet. These are changes in the value of an asset or liability resulting from changes in the level and structure of prices, including changes resulting from exchange rate movements.

10. Clear disclosure of transactions and other economic flows affecting assets and liabilities would further enhance the use of the PSBS as an analytical tool. Data on issuance and redemption of government debt taken with consistent valuations—ideally marked-to-market—of assets and liabilities and across institutions, gains on financial assets, and other economic flows (for example, foreign currency variation) will ensure horizontal consistency within the PSBS framework and potentialize the analytical strengths of the tool (figure 2).

Figure 2. Simplified View of the GFS Analytic Framework



Source: Government Finance Statistics Manual (GFSM) 2014.

B. Using the Public Sector Balance Sheet for Fiscal Policy Analysis

11. Once compiled, the PSBS could serve as a powerful analytical tool. By analyzing, assessing, and projecting the PSBS a few years forward, processes that often rely on simple methodologies, the authorities can get new insights into their public finances. By bringing together the assets and liabilities of all public sector entities, the PSBS enables the identification of potential mismatches and imbalances, opening the door for their active resolution. The understanding of fiscal risks can also be enhanced by analyzing crossholdings of assets and liabilities within the public sector or by assessing the resilience of the balance sheet when shocked with a tail-end risk. Comparing current public wealth with the present value of future revenue and expenditure can also reveal whether the government is in a position to weather the macrofiscal effects of long-term structural phenomena, such as aging or climate change. It is important to note that looking beyond deficits and debt is not new and does not require a PSBS; yet, the PSBS approach has the advantage of bringing together all elements and facilitating the analysis. This section discusses three types of analytical tools that the SHCP could consider deploying over the short to medium term. The IMF's Fiscal Affairs Department (FAD) stands ready to provide hands-on support for the development and implementation of these tools and methods.

Balance Sheet Strength Indicators

12. Measuring the strength of the PSBS can indicate the fiscal resilience of the public sector. There is empirical evidence¹⁰ that PSBS strength is a determinant of macroeconomic resilience and of access to cheaper financing. In the case of an economic downturn, stronger balance sheets provide more leeway for countercyclical fiscal policy and lead to shorter, shallower recessions. Financial markets pay attention to PSBSs in the pricing of sovereign bonds. The “strength” of the balance sheet can be measured by using a range of indicators that focus on the size, risk exposure, mismatches, and natural hedges embedded within the PSBS (see box 1 for examples of such indicators). These indicators are often similar to those analyzed in corporate finance, with the major difference that, contrary to a corporation, the public sector can display a negative net worth for extended periods of time.

13. The SHCP could start computing a few PSBS strength indicators to gauge its overall exposure to risk, though some may require additional data collection. Such indicators could be published as part of the quarterly fiscal reports. Many of these measures are key to managing risk as part of the SALM framework (see Section III.C.).

- The Economic Planning Unit could, for instance, easily produce *international comparisons* using the IMF's PSBS online database, which includes the full PSBS for a sample of 38 countries,¹¹ looking at the size of the balance sheet (see figure 3 for an example) or the net worth. Consistency of institutional coverage might be a limitation to this work because the central public sector is not an available perimeter in the PSBS database; however,

¹⁰ S. Yousefi, *Public Sector Balance Sheet Strength and the Macro Economy*, IMF Working Paper No. 19/170, 2019.

¹¹ <https://data.imf.org/?sk=82A91796-0326-4629-9E1D-C7F8422B8BE6>.

comparisons limited to subsectors, such as the federal government or public corporations, might already bring useful insights.

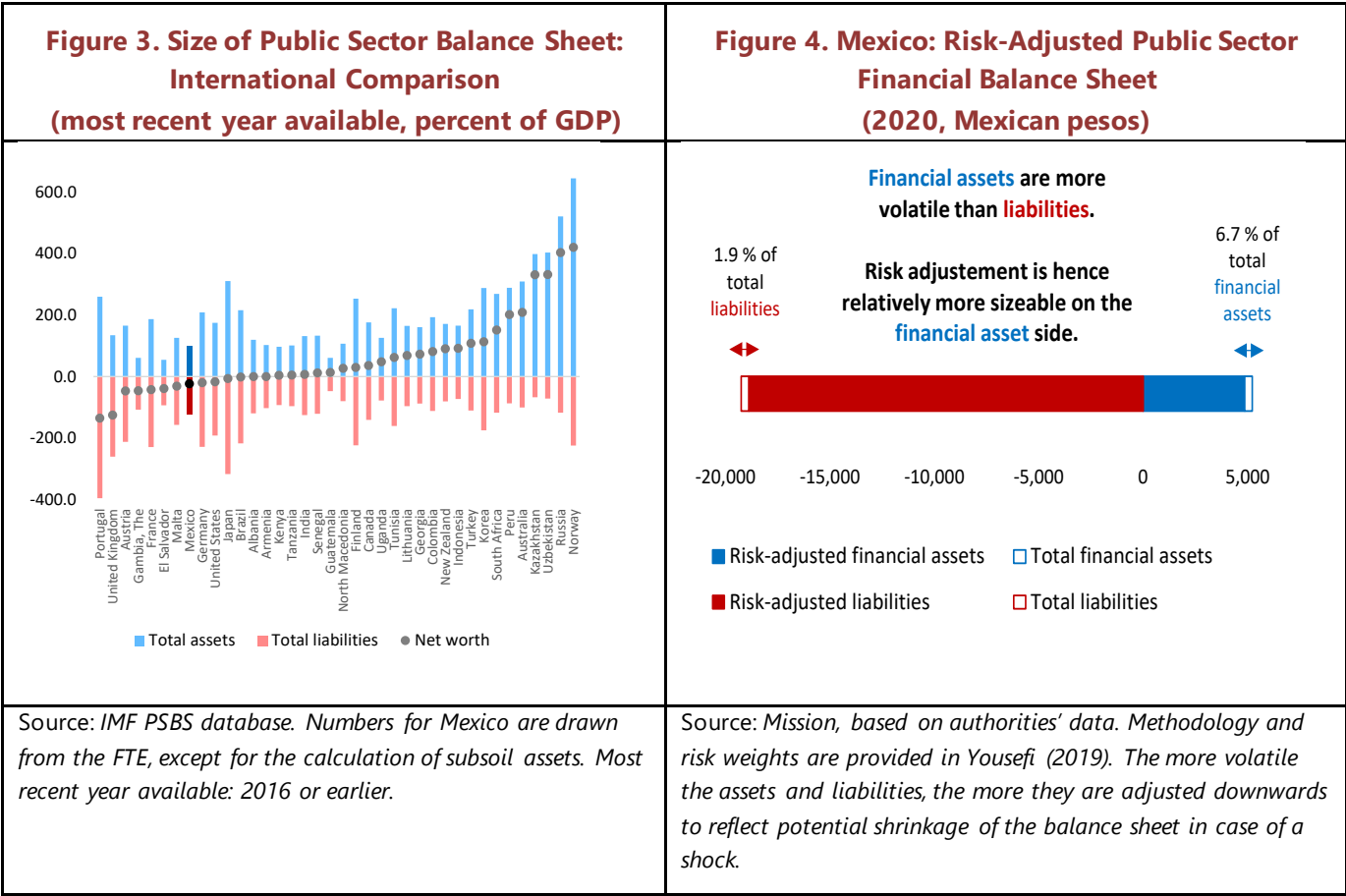
- The Economic Planning Unit could also look at the size and evolution of *crossholdings* of assets and liabilities within the federal public sector, both in terms of size and evolution, as they are a key channel through which fiscal risks may spread to the budget. This data is readily available as it is key to the sound consolidation of the PSBS.
- To compute measures of *exposure to currency or liquidity risk* over the full PSBS, the Economic Planning Unit would need to compile (or at least, make assumptions on) the breakdown of financial assets according to foreign currency denomination or to maturity. This should be complemented by sector-specific or institution-specific analyses, as needed in the context of an SALM framework (Section III.C.).
- To assess *natural hedges* within the PSBS, a measure of asset and liability valuation changes by type of instrument is needed.
- To compute a *risk-adjusted balance sheet*, it would have to weigh each type of asset or liability according to the volatility of these valuation changes (see figure 4 for a risk-adjusted balance sheet for Mexico with a standard risk weighting based on a sample of European countries (methodology provided in Yousefi (2019)).

Box 1. Balance Sheet Strength Indicators

The following examples of balance sheet strength indicators can be considered:

- **Size of balance sheet.** The size of a balance sheet is defined as the sum of the size of assets and liabilities (excluding net worth) in percent of GDP. Balance sheets with larger assets or liabilities are normally exposed to large valuation changes. Valuation changes may expose the economy to macroeconomic risks, depending on the source of vulnerabilities and the nature of valuation changes. For instance, exposure to valuation changes in equity markets and pension liabilities may amplify the impact on public finances.
- **Solvency (net financial worth).** Net worth is a measure of solvency, comparable to the equity position of a corporation. It is calculated as total assets minus total liabilities and expressed in percent of GDP. While providing a snapshot of solvency, it suffers from the various valuation issues that accompany the constituent parts of the balance sheet, particularly stemming from nonfinancial assets. Furthermore, it does not distinguish between assets that can be sold to meet financing needs and assets that are not marketable. Net financial worth is calculated as total financial assets less liabilities and expressed in percent of GDP. In general, financial assets and liabilities can be more reliably valued and are more readily marketable than nonfinancial assets. A measure for net worth excluding pension-related liabilities is also introduced. These solvency measures reflect static stock positions and hence do not take into account future flows of revenue and expenditure.
- **Risk-adjusted assets and liabilities.** These indicators provide a guide to the volatility (and hence inherent risk) of both sides of the balance sheet. Risk-adjusted assets and liabilities provide measures of the assets and liabilities corrected for their riskiness or underlying volatility. The measures are based on estimates of the volatility of each asset (liability) class relative to the sum of the volatilities of all asset and liability components.
- **Liquidity mismatch.** The liquidity mismatch is measured using the “net liquid assets” indicator, which is calculated as current assets minus current liabilities—that is, assets or liabilities that are maturing within one year—expressed in percent of GDP to reflect the materiality of the mismatch. It is a measure of whether the public sector has sufficient liquid assets to support its short-term financing needs.
- **Currency mismatch.** Currency mismatches are assessed using the “net foreign exchange assets” indicator, which shows the net impact of exchange rate fluctuations on the balance sheet. It is calculated as foreign exchange denominated assets minus foreign exchange denominated liabilities, expressed in percent of GDP to reflect the materiality of foreign exchange mismatches.
- **Natural hedge.** The natural hedge is a measure of volatility calculated as the variance of valuation changes in net financial worth relative to the variance of valuation changes in financial assets and liabilities. It measures the covariance between the valuation changes in assets and liabilities, both expressed in percent of GDP, normalized by the size of the movements in assets and liabilities. The measure can be decomposed into two parts: how correlated the financial assets and liabilities are and whether there is a mismatch between the sizes of financial assets and liabilities.

Source: S. Yousefi, *Public Sector Balance Sheet Strength and the Macro Economy*, IMF Working Paper No. 19/170, 2019.



Intertemporal (or Intergenerational) Public Sector Balance Sheet

14. Adding the intertemporal component of the balance sheet allows analysis of the sustainability of the fiscal position under current policies. The static PSBS does not recognize what is arguably the government's largest asset: its sovereign power to collect revenue in the future. Concurrently though, the government is also bound by its constitutional, legal, or even moral commitments, to lastingly deliver a number of goods, services, and transfers. The intertemporal (or intergenerational) balance sheet incorporates the present value of these future revenue and expenditure flows into the static balance sheet. This relies on a set of long-term macrofiscal projections and assumptions, typically over 50 years or longer. Analysis based on the intertemporal balance sheet hinges on the need to fulfill the intertemporal budget constraint, which states that over the infinite horizon, intertemporal net worth should be nonnegative.¹² This allows a number of interesting questions to be tackled: Is the government's current fiscal stance sustainable over the long term? What is the government's fiscal adjustment required to bring the intertemporal net worth back into sustainable territory? What policy scenarios could help cover part or all of this need? Whatever the analysis, the intertemporal component should be interpreted with caution, as it relies on fragile, long-term assumptions and is very sensitive to even small changes to these assumptions. The analysis of the intertemporal balance sheet

¹² Over a finite horizon (such as 40 years), a negative intertemporal net worth could be sustainable, assuming that the whole adjustment will have to be carried by generations beyond the considered horizon.

provides a direction and an order of magnitude of adjustment needs, rather than an accurate number.¹³

15. The computation of the intertemporal PSBS is a stylized forecasting exercise that the SHCP could consider in the short to medium run. The Economic Planning Unit has the necessary skills and capacities to carry out such an exercise. However, it would require developing long-term macrofiscal projections, at least over a 40-year horizon, which are not produced, even internally, by Mexican authorities. Currently, macrofiscal projections are only presented for the next six fiscal years.¹⁴ To carry out the intertemporal balance sheet computation and analysis, the Economic Planning Unit will need, at a minimum, 40-year projections of real GDP, nominal GDP, inflation, and effective government interest rate (to be used as a discount rate), as well as 40-year projections of total revenue and total primary expenditure; the Economic Planning Unit will then need to compute the present value of all these flows. Developing an understanding of the fiscal impact of long-term trends, such as aging¹⁵ or the depletion of petroleum reserves, will be critical to this work.

Fiscal Stress Test

16. The fiscal stress test methodology can be used to assess the effect of tail-end risks on the PSBS. This methodology, first presented in 2016 by the IMF,¹⁶ aims to examine the impact of an extreme macroeconomic shock on both fiscal flow and fiscal stock variables. It provides a more comprehensive picture of the size, sources, and interactions of the various risks weighing on the balance sheet, possibly revealing risks that would not show in the standard debt and deficit frameworks. It can also help give an order of magnitude of the extra buffers that would be needed to preserve fiscal sustainability and flexibility in an extreme event. It requires an understanding of the nonlinearities affecting fiscal projections in the event of a severe shock (some revenues might be hit harder by a collapse of activity, while some expenditure heads might remain quite rigid). It also often relies on the use of information going beyond the PSBS, such as evaluations of potential realizations of contingent liabilities that may not feature in the

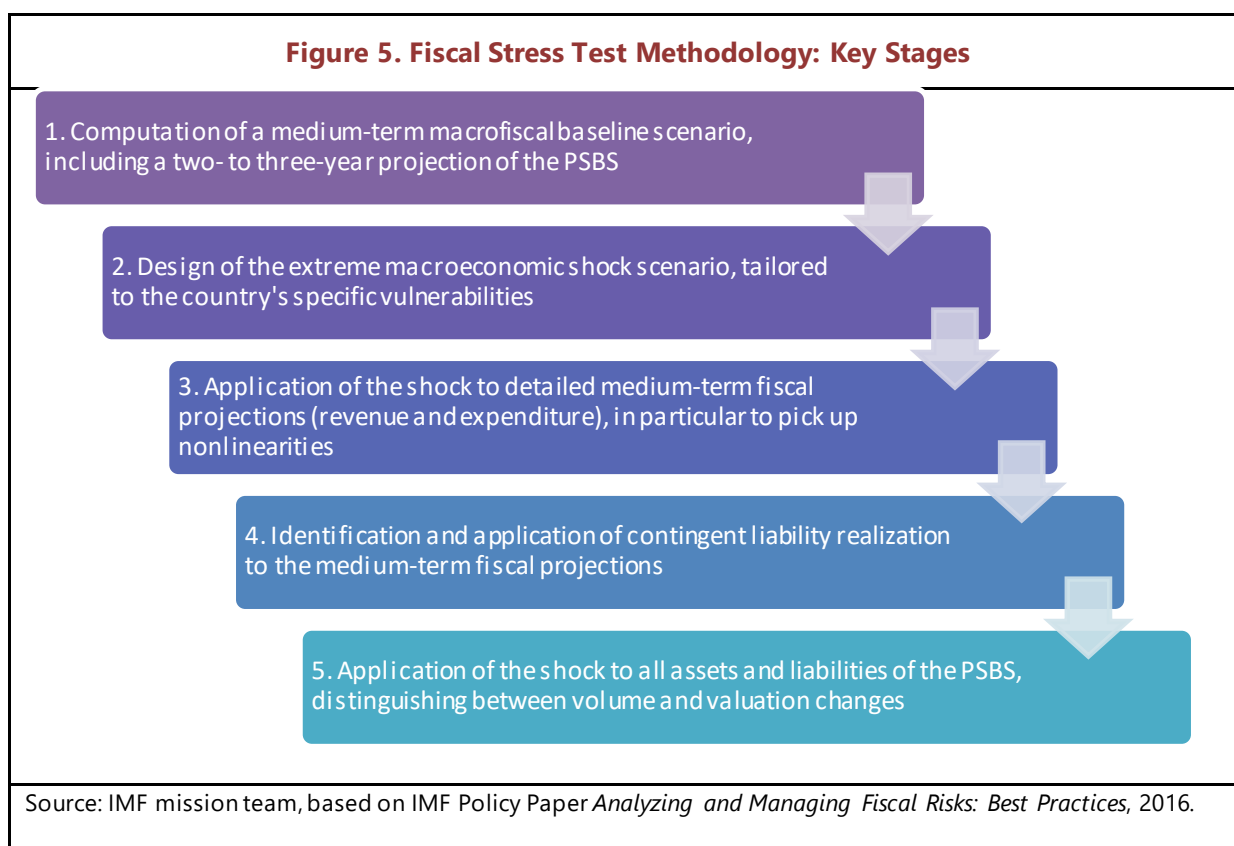
¹³ For examples of analyses using the intertemporal PSBS, please consult the IMF's *Fiscal Monitor*, "Managing Public Wealth," October 2018, as well as the following selection of IMF Working Papers: M. Brede and C. Henn, *Finland's Public Sector Balance Sheet: A Novel Approach to Analysis of Public Finance*, Working Paper No. 18/78, 2018; E. Cabezón and C. Henn, *Counting the Oil Money and the Elderly: Norway's Public Sector Balance Sheet*, Working Paper No. 18/190, 2018; F. Gouguet and K. Hellwig, *Public Wealth in the United States*, Working Paper No. 19/139, 2019; Y. Koshima, among others, *The Cost of Future Policy: Intertemporal Public Sector Balance Sheets in the G7*, Working Paper No. 21/128, 2021.

¹⁴ The IMF's 2018 Fiscal Transparency Evaluation recommended the production and publication of long-term projections of public finances as a way to enhance fiscal risk management (Objective 8 in the Action Plan).

¹⁵ For the effects of aging on public finances, please refer to D. Amaglobeli and W. Shi. *How to Assess Fiscal Implications of Demographic Shifts: A Granular Approach*, IMF How-To Notes, Vol. 2016: No. 2, 2018. Please also refer to the bi-annual *Fiscal Monitor* database, which contains estimates of the net present values of pension and health care spending changes over a 30-year horizon. The latest version is available at: <https://www.imf.org/-/media/Files/Publications/fiscal-monitor/2021/April/Data/FiscalMonitorDatabase-April2021.ashx>.

¹⁶ IMF. *Analyzing and Managing Fiscal Risks: Best Practices*. IMF Policy Paper, 2016.

balance sheet, or financial stability assessments (to estimate the risk of private bank bailouts, for instance). Figure 5 provides a brief description of the stages of a fiscal stress test.¹⁷



17. The SHCP could consider applying the fiscal stress test methodology to the PSBS in the medium term because key prerequisites are not yet met. As tail-end risks have materialized twice in the past 15 years (the 2008–09 Global Financial Crisis and the 2020–21 COVID-19 pandemic), the fiscal stress test methodology is especially relevant to analyze the resilience of the balance sheet and to identify needs for additional buffers. The Economic Planning Unit has the necessary skills and capacities to apply the methodology. The authorities do have a medium-term macrofiscal baseline scenario, and there are existing shock scenarios designed in the context of the debt sustainability analysis or in Banxico's financial stability report that could be used for a fiscal stress test. However, several key ingredients are missing. The following steps can be taken to apply this methodology.

- The Economic Planning Unit will first have to identify *valuation changes per type of asset and liability* and acquire an understanding of their dynamics. A way to do so is to compute a statement of other economic flows, detailed by type of instrument. The authorities can easily calculate the residual change in the balance sheet that is unexplained by the acquisition of assets or incurrence of liabilities. To identify the valuation changes, the authorities need to

¹⁷ For examples of fiscal stress tests, please consult the 2016 IMF Policy Paper referenced in the previous footnote, *Analyzing and Managing Fiscal Risks: Best Practices* (Iceland and Peru) and the following IMF papers: M/ Brede and C. Henn, *Finland's Public Sector Balance Sheet: A Novel Approach to Analysis of Public Finance*, IMF Working Paper No. 18/78, 2018; IMF African Department, *The Gambia: Selected Issues Paper*, 2018; and F. Gouguet and K. Hellwig, *Public Wealth in the United States*, IMF Working Paper No. 19/139, 2019.

clean the residuals from possible volume changes other than transactions (reclassifications, perimeter changes, etc.).

- Using this more granular breakdown of the evolution of each type of asset or liability, the Economic Planning Unit can develop simple methods to *project the balance sheet a few years forward* (typically two or three years forward in a fiscal stress test). This would enable the computation of both baseline and shock scenario projections of the balance sheet.
- Importantly, fiscal stress tests require a full-fledged PSBS, with complete coverage of institutions and instruments. Without it, the stress test might miss important risk transmission channels or deliver misleading results. In the case of Mexico, this means that the remaining holes in the coverage of the PSBS (see Section I.A), both in terms of institutions and in terms of instruments, should ideally be dealt with before embarking on this exercise.

C. Computing Fiscal Indicators for Fiscal Policy Making

18. Expanded fiscal indicators¹⁸ that go beyond gross public debt making use of the PSBS data, can provide useful insights on public finances and improve fiscal policy making.

Such broader indicators allow inclusion of public assets and liabilities, which, despite their size and possible associated risks, might only receive limited attention in traditional approaches. Computed as a complement and presented alongside traditional stock and flow fiscal aggregates, they provide a more transparent view of the situation and evolution of public finances. Expanded fiscal indicators are also useful in macroeconomic analysis by delivering a more accurate account of the role of public entities in the economy and the fiscal impulse. This is especially meaningful to analyze crowding-out of the private sector or to calibrate the fiscal-monetary policy mix. In a few countries, expanded fiscal indicators are explicitly used to guide or even anchor fiscal policy (see box 2).

19. The Mexican authorities report traditional and expanded fiscal indicators alongside their expanded PSBS (table 2 above). Building on its achievements in compiling an expanded PSBS, the SHCP has sought to develop indicators that can fully grasp the key drivers of public finances, with the possible view to use them ultimately as fiscal policy anchors or as bases for defining fiscal policy objectives. These expanded fiscal indicators are reported together with the traditional ones in the quarterly fiscal reports. They include PSBR (flow), HBPSBR (SHRFSP), and PFN (net financial position with and without employment-related pension liabilities). Conversely, the various traditional indicators comprise primary and overall balance (flow), net debt, and gross public debt.

20. To enhance transparency, further explanations and analyses on the expanded fiscal indicators currently reported by the SHCP are warranted. While the quarterly reports do provide methodological explanations and some bridge tables between traditional and expanded

¹⁸ In the case of Mexico, the terminology “expanded fiscal indicators” is meant to cover the PSBR (flow indicator), and the HSPSBR and PFN (both stock indicators). See paragraph 2 for a full description of these indicators.

indicators,¹⁹ the presentation remains quite opaque²⁰ for nonspecialists and, arguably, for those SHCP policy makers who do not use these indicators frequently. Yet, transparency could be enhanced by the publication of more detailed bridge tables and narrative elements on the most significant drivers behind the differences (beyond a simple reading of the bridge tables) as well as by the provision of a short explanatory note on the economic meaning of each expanded indicator, especially relative to more traditional ones. Presenting historical series for these expanded indicators (at least going back to 2014, since data are readily available), along with explanations of the drivers underlying their observed evolution, could also deliver an additional perspective on public finances, potentially revealing trends that would not stand out using the traditional measures.

21. Some other G-20 countries at different levels of development in this area can provide valuable insights for Mexico. For example, the United Kingdom has a long tradition of communicating reconciliations between traditional indicators (net debt, net worth) and the expanded indicator disclosure on its Whole of Government Accounts report. On the other hand, Brazil just released in April 2021 the first-ever report on reconciliation between the traditional fiscal balance, the indicator that responds to the existing fiscal rules and guides the fiscal debate, and the expanded GFSM-compliant net lending/borrowing indicator (see Appendix I for country examples).

22. Rather than prematurely considering the use of expanded fiscal indicators as firm policy anchors, the SHCP should first focus on enabling their role as a guide to fiscal decision-making. Increasing public wealth can be a smart fiscal policy objective for the medium to longer term, especially from the perspective of higher resilience or more efficient provision of goods and services to citizens.²¹ However, only a handful of countries have opted for fiscal frameworks and rules that are explicitly anchored to wider stock indicators such as net financial worth; these come after many years of experience in compiling a balance sheet and always in complement to more traditional objectives on debt and/or deficits (see box 2). Over the next few years, the SHCP's Economic Planning Unit should take the lead in gradually enhancing the reliability of the indicators and in acquiring a growing understanding of their dynamics. In particular, for decision-makers to gauge whether their policy proposals are consistent with a strong balance sheet, their effects on the expanded flow and stock indicators should be predictable. This implies developing the ability to carry out projections of these expanded indicators (and of the PSBS) over the medium term, including under a baseline scenario.

¹⁹ This includes a bridge table between the traditional fiscal balance and the PSBR, by institution; a bridge table between HBPSBR and PFN and of their evolution relative to the previous year, by type of instrument; and the presentation of the gross public debt, net public debt, and gross and net HBPSBR as memorandum items in the PSBS.

²⁰ The opacity is in part due to the inherent complexity of the delineation between the various subsectors of the public sector in Mexico as illustrated in figure 1.

²¹ As explained in the IMF *Fiscal Monitor* (October 2018), strengthening the balance sheet is not an end in itself. "the long-term aim of government is not to maximize net worth, but to provide goods and services to its citizens and possibly to create a buffer against uncertainty about the future. Current net worth should be seen in this context. Governments that believe their net worth is too low to ensure their current objectives of public policy may choose to improve their net worth as an operational goal."

23. Getting the expanded fiscal indicators right is a prerequisite to using them meaningfully to guide decision-making. As discussed in Section I.A., the institutional coverage of the PSBS is still incomplete. Further, some types of assets and liabilities are still either excluded from the PSBS or included but imperfectly classified. This may act as a serious limitation on the economic relevance of the current expanded indicators as a policy guide or anchor. In particular, given the size of their fiscal activities, expanding the coverage of indicators to include states seems of prime importance to measure the government's actual fiscal stance.

Box 2. Using Balance Sheets to Guide and Anchor Fiscal Policy: Country Examples

Both Australia and New Zealand aim to strengthen their balance sheets over time to improve national saving and provide a buffer against external shocks. Their medium-term fiscal policy objectives explicitly include improving net financial worth in addition to reducing net debt and achieving or maintaining surpluses. No explicit numerical target has been set for any given forward year regarding net debt or net financial worth; the anchor is defined as a direction (improvement) over the medium run.

- Before the COVID-19 pandemic, the Australian government was following a long-standing “budget repair” strategy, which aimed to build up fiscal buffers over time by achieving budget surpluses as soon as possible. This strategy was revised by pushing debt reduction objectives to the medium term in light of the need to support economic recovery. Australia’s medium-term fiscal strategy is focused on growing the economy to stabilize and reduce debt, including making use of its balance sheet to support productivity. Australia does not have legally binding fiscal rules in place but rather a strong political commitment to fiscal discipline.
- In its annual fiscal strategy report, the New Zealand government expresses short-term fiscal intentions and long-term fiscal objectives broken down by key fiscal aggregates—revenue, expenses, operating balance, debt, and net worth. Regarding the latter, short-term fiscal intentions include the use of net worth “as a way to fight COVID-19, cushion its impact and position the country for recovery.” For the long term, “the Government will use the [public sector] net worth to maintain a productive, sustainable, and inclusive economy, consistent with the debt and operating balance objectives.”

To operationalize their strategies, both countries project their balance sheets forward to demonstrate that policies are consistent with fiscal objectives. The balance sheet projections extend between 6 and 10 years and cover all key aggregates: assets, liabilities, and net (financial) worth. The Australian federal government presents 10-years-ahead projections of the general government balance sheet as part of the annual budget documents (Budget Strategy and Outlook) as well as in the Mid-Year Economic and Fiscal Outlook report. The New Zealand government presents five-years-ahead forecasts of the whole-of-government balance sheet in its biennial Investment Statement. The statement presents the balance sheet in terms of use, distinguishing between social, financial, and commercial assets.

A policy debate has been initiated in the United Kingdom regarding the use of an expanded fiscal indicator that is based on the PSBS as a policy anchor. Several U.K. think tanks—including the Resolution Foundation and the Tony Blair Institute for Global Change (TBI)—have raised the desirability of targeting the PSBS as a complement to more traditional fiscal measures. They recognize that such reform in the fiscal framework has been made possible by a decade of technical work to make balance sheet data comprehensive, timely, and reliable. Options weighed by various think tanks include targeting public sector net financial liabilities, public sector net worth, or the intergenerational balance (akin to the intertemporal public sector net worth). According to TBI (2021), the relevance of setting overarching fiscal policy objectives relating to net worth has not been diminished by the pandemic.

Sources: Government of Australia, *Budget Strategy and Outlook 2020–21, Budget Paper No. 1*. Government of New Zealand, *2018 Investment Statement* and *2020 Fiscal Strategy*. IMF, *Fiscal Monitor*, “Managing Public Wealth,” October 2018. Resolution Foundation, *Totally (net) Worth It: The Next Generation of U.K. Fiscal Rules*, 2019. TBI, *Fiscal Rules, OK? Managing the Public Finances After COVID-19*, 2021.

D. Summary of Recommendations

- **Recommendation I.1:** Expand the institutional coverage and improve consolidation practices to allow for a more comprehensive view of public finances. (Economic Planning Unit, short to long term)
- **Recommendation I.2:** Improve the coverage of stocks and flows and enhance stock-flow reconciliation to better understand the evolution of the PSBS. (Economic Planning Unit, short to long term)
- **Recommendation I.3:** Enhance understanding and narrative on the PSBS and its evolution, based in particular on the gradual development of balance sheet strength indicators and balance sheet projections for medium term. (Economic Planning Unit, short to long term)

II. CASH MANAGEMENT FRAMEWORK

A. Current Situation

24. The authorities have built a comprehensive cash flow forecasting infrastructure. At the start of each budget year, the Federal Treasury (*Tesorería de la Federación*, TESOFE) prepares a daily forecast for the whole of the year ahead. Each month, or as needed during the year, it updates the daily forecast for the rest of the year, but with a focus on the following month, which is forecast in finer detail. During the month, the TESOFE updates the forecast for that month.²²

25. The forecast is built from a range of sources. It starts with the monthly cash plans for revenue, budget expenditure, and financing, which are prepared after approval of the budget. They are elaborated into the daily forecast. But the TESOFE does not have any direct contact with spending units or the revenue authorities. For the most part, the sources are indirect, with projections supplied by other units within the SHCP, that is, the Tax Policy Unit (UPI) in the Revenue Sub-Secretariat (SSI), the Budget Policy and Control Unit (UPCP) in the Expenditure Sub-Secretariat (SSE), and the debt management unit (UCP) of the Sub-Secretariat of Finance and Public Credit (SSHCP). These units will have more direct contact with the underlying entity; thus, the UPI may discuss tax collection data with the tax administration (SAT). As necessary, the TESOFE elaborates the forecasts from these units into a projection of the available balances in the Treasury Single Account (TSA) (*Cuenta Única del Tesoro*, CUT). More details are in box 3.

26. The forecasts are submitted each month to the Working Group (*Comisión de Trabajo*), which supports the high-level Technical Committee (*Comité Técnico*). The Technical Committee was established under the Federal Treasury Law (*Ley de Tesorería de la Federación*, LTF) Article 31; it is chaired by the ministerial head of the SHCP and also comprises of the treasurer and the Under Secretaries of Finance and Public Credit, of Income, and of Expenditure. A Banxico representative attends as an observer. Its main role is to issue the applicable investment and liquidity management policies and guidelines. What these might cover

²² The TESOFE circulates a daily report with the forecast update and latest cash balances, but the projections are revised only monthly.

in terms of instruments, currencies, time horizons, and risks is spelled out in regulations made under the LTF Articles 34–35 (which also establish authority for the Working Group, with more details on functions set out in the Working Group’s Policies and Guidelines).

Box 3. Building the Cash Flow Forecast

Revenue

The daily projection of revenue is based on the requirements of the Federation Revenue Law and the calendars prepared by the UPI. The UPI prepares a daily estimate of revenue for the quarter ahead, which is updated monthly, with an update for the whole year if deviations are significant. Petroleum tax is transferred on a regular and known basis; however, to prepare a full daily forecast for other tax and nontax revenues, the TESOFE estimates the profile by projecting the patterns of previous years, using an exponential weighting technique together with a trend factor. If during the fiscal year, deviations are observed as a result of unanticipated factors affecting revenues, the projections are updated for the whole year, consistently with the updated estimates of outturns for the year.

Expenditure

Expenditure is based on requested cash release schedules of spending ministries sent to UCP, which in turn prepares monthly calendars. About 70 percent of expenditures fall into the “programmable” category in the sense that there are defined dates and amounts (covering salaries and pensions, social security contributions, debt servicing, and transfers to lower levels of government for example) and 30 percent into the “nonprogrammable” category with no daily schedule (primarily goods and services). In the latter case, exponential smoothing of historical data is again deployed. In addition, the TESOFE is able to draw on the daily update of the payment schedule for the next three business days that spending units register in the integrated financial management information system (SIAFF) as well as the spending units’ updated monthly schedules, also in SIAFF.

Financing

Most debt flow projections can be built from information provided by the UCP. Servicing payments can be projected accurately as to timing and amounts; the UCP has a well-defined quarterly issuance calendar to which it can add estimates of external flows. The UCP updates the projections weekly for the entire year, consistently with the updated estimates of outturns for the year.

Source: IMF mission team, drawing also on Annex A to the Working Group’s *Policies and Guidelines* (*Políticas y Directrices en materia de inversión y de administración de la liquidez*).

27. The Working Group is chaired by the treasurer, with representatives from the UCP, UCP, UPEHP, and others from the TESOFE. The TESOFE also supplies the secretariat (with the Coordinator of Banking Operations taking that role de facto). The group meets each month, although it can potentially meet more frequently. The Technical Committee meets in the first quarter of the year and sometimes in subsequent quarters, although may also meet more frequently if required. The submission prepared each month for the Working Group has extensive and impressive detail, with discussions of the recent outturn and analysis of deviations from the forecasts, of future forecasts extending some months ahead, and of the planned issuance. The Working Group, in support of the Technical Committee, has the executive authority to require actions related to investment and to ensure cash availability according to the policies and guidelines set by the Technical Committee.

28. The Working Group can potentially initiate a wide range of short-term responses to the forecast on both the expenditure and financing side. These include varying debt issuance, particularly of treasury certificates (*Certificados de Tesorería*, Cetes), imposing payment ceilings on

the flow of expenditure,²³ and borrowing from up to 50 percent of the balances of third-party funds that are deposited in the government's main account in the Banxico.²⁴ There may be some other flexibilities, for example, in undisbursed credit from international financial institutions. The government also has the legal authority to have an overdraft with the Banxico,²⁵ subject to a limit of 1.5 percent of annual budgeted expenditure, but it is very reluctant to draw on it for reputational reasons.

29. The policies and guidelines also seem to allow for the longer-term investment of temporary surplus cash. A distinction is made between short-term cash mismatches with a maximum term identified for deposits of 20 days and longer-term surpluses with a maximum term of 360 days. As discussed below, cash available for this longer-term period would normally be identified as a structural surplus and not be managed as part of the cash management function. No indication was given that this provision had ever been used in practice.²⁶

B. Improving Cash Forecasting

30. There is a marked seasonal pattern to the flows across the year.²⁷ From month to month, these mainly reflect debt redemptions, which until recently have been concentrated in June and December (to facilitate stripping of the underlying bonds). There also tends to be heavy expenditure at the end of the year as the spending units rush to spend before their appropriations lapse. Within the month, the profile is mainly associated with non-oil tax inflows, which arrive on the 19th or 20th of each month, with (slightly smaller) inflows from debt issuance and outflows from payment of salaries and pensions. Expenditure on goods and services is steadier. This profile is very apparent from figure 6, which shows the net daily flow over the last two budget years, and figure 7 shows the cumulative net cash flow each month over the same period. The particular challenge of December is very apparent.

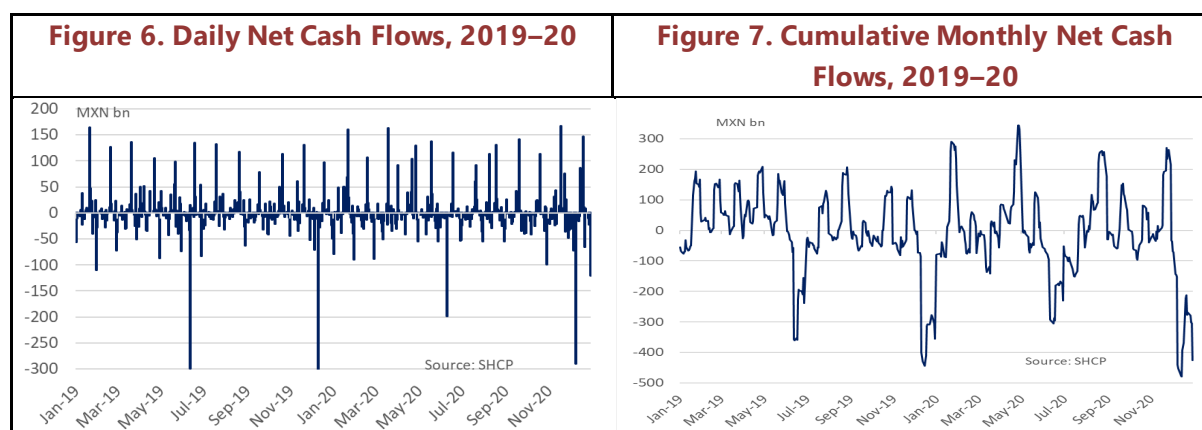
²³ Article 38 of the Treasury Law allows the TESOFE to take account of the availability of funds when making payments.

²⁴ Several third parties maintain deposits in the TESOFE's main current account, the TSA/CUT, to which the TESOFE passes their share of the interest that it receives from Banxico. If the TESOFE draws on the deposits, which it may do for up to 20 days, it nevertheless continues to pass to the account holders their share of the interest; in effect, the TESOFE is borrowing at that rate. The third parties include FEIP to whose deposits the TESOFE does not have access. The balance in the accounts of other third parties was MXN (Mexican peso) 78 billion at end March 2021.

²⁵ Article 12 of the Bank of Mexico Act.

²⁶ Day-to-day surplus cash can, of course, be used to process approved expenditures that are awaiting payment. In terms of the concept used here, such cash is not surplus, since it is defined as the surplus after all revenue, expenditure, and financing transactions. Of course, surplus cash should not be used on expenditures that are not authorized as part of the budget.

²⁷ The cash management data in all the charts are in Mexican pesos (MXN), including the MXN equivalent of any foreign currency flows and balances. Government cash management focuses on domestic currency; but there is a liquid foreign exchange market in Mexico, and in practice, the authorities can move between domestic and foreign currency if they need to. The discussion in this report therefore assumes fungibility.

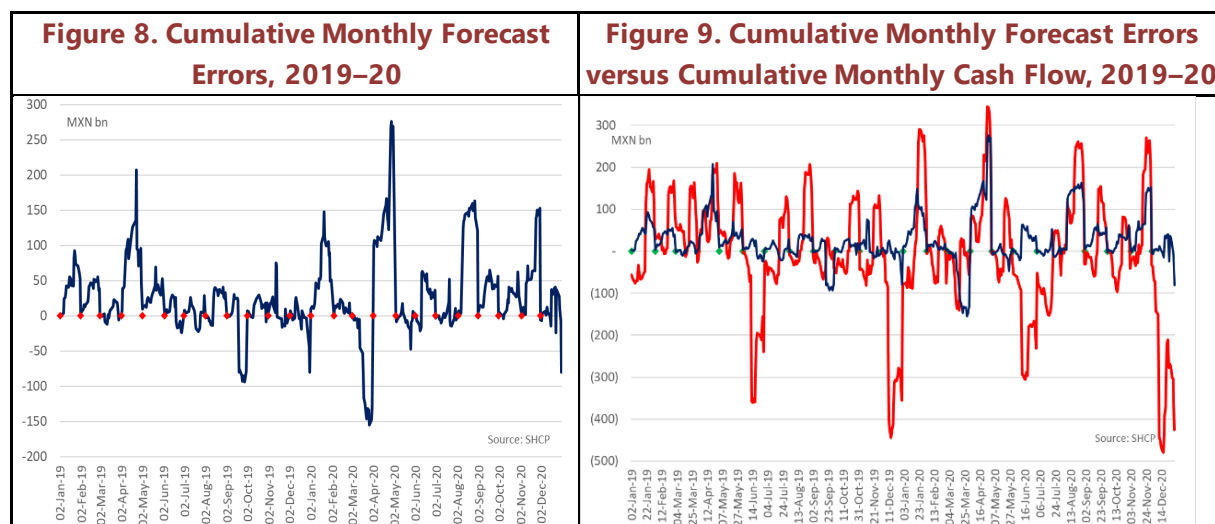


Source: SHCP.

31. The forecasting process is thorough and detailed, but the forecast errors have been nonnegligible. The TESOFE has properly drawn on a range of sources for inputs into the forecast data. As well as projections from others in the SHCP, the TESOFE has its own understanding of the calendar for other cash flows and has usefully drawn on past expenditure patterns.²⁸ In practice, the daily errors for the month ahead, although not huge, have been about 3–5 percent of each of the main cash flow streams (revenue, expenditure, and financing), with lower errors on debt servicing payments. A fuller discussion is in Appendix II. As explained there, a component of the error will reflect simply timing changes, with an error in one direction being reversed shortly afterward. The average cumulative monthly error was MXN (Mexican pesos) 24 billion over the period 2019–20, much less than the daily error might imply. Moreover, 2020 will have been an atypical year.

32. The sharp within-month pattern of cash flows (figure 6 above) does, however, create challenges. The TESOFE is well aware of the pattern, but it is substantially dependent on others for forecast inputs, and the pattern has not always been captured. Figure 8 presents the cumulative forecast error each month; the red dots on the chart show the start of each month where the cumulative forecast error will be low. For comparison with the actual cash flows, figure 9 imposes figure 8 onto figure 7, with the underlying cash flows. The large errors at the start of the COVID pandemic are perhaps to be expected; the difficulty of forecasting the extent of the end-year expenditure surge is also apparent and in part may reflect very late decisions on the reallocation of provision to ensure that the budget as a whole is not greatly underspent. For most other months the variation in the forecast is much less than that in the underlying cash flow—the first test of any forecast.

²⁸ The use of a Holt-Winters exponential smoothing model (as described in the annex to *Políticas y Directrices en materia de inversión y de administración de la liquidez*) is particularly interesting. Some other countries have usefully applied similar techniques: Peru has used an auto-regressive model linking the forecast for any month to the outturns for the same month in previous years. Other countries have, however, found them less useful. There are too many adjustments to be made to allow, for example, for whether a tax payment date falls on a weekday or weekend or for the variable dates of religious holidays.



Note: In Figure 9, Blue = Cumulative Monthly Forecast Errors, 2019–20; Red = Cumulative Monthly Net Cash Flows, 2019–20
Source: SHCP.

33. Less reassuring is the persistent tendency to overcaution. The cumulative cash flow errors are strongly positive in most months. This tendency was perhaps more apparent in 2020 with some anticipation of higher COVID-related expenditures that did not fully materialize. Financing flows were also higher than the forecast, possibly reflecting decisions to take advantage of successful debt issuance to further build cash balances somewhat.²⁹ There are further illustrations of the tendency in Appendix II.

34. The embedded caution or prudence in the forecast could increasingly become a problem as the move to more active cash management develops, together with the associated need to identify a cash buffer. These reforms require a central forecast, or if there is an allowance for caution, it should be explicit. Decision-makers may decide to be cautious and make an allowance for adverse events—for example, in deciding how much surplus can be invested or for how long. But if that allowance has already been made in the forecast, there will, in effect, be double counting, and opportunities for more efficient and cost-effective smoothing will be lost.

35. There seems to be a number of underlying factors influencing this cautious approach. There may be a general tendency, seen elsewhere, for revenue and spending agencies or those managing the budget to project what should happen, whereas forecasters need a view on what realistically will happen. The revenue authorities may be averse to deviating from the budget estimates until they are sure that they will be exceeded. Similarly, spending units will not want to suggest during the year that they might underspend in case their provision is taken away from them or take a chance that they will be at a disadvantage in the following year's budget negotiations. They may also enter forthcoming payments in the SIAFF before they need to, just to ensure that they are not further delayed in the event of any queue developing.

²⁹ Adding a trend line to figure 11 below would suggest an increase in the average cash balance approaching MXN200 billion over the two years.

36. Three related challenges need to be addressed:

- The forecasts of revenue and expenditure are mostly prepared and updated from those in the SHCP, primarily the UPI and UCP, who are in turn in contact with the relevant revenue and spending entities. That is likely to encourage game playing that weakens the usefulness of any forecast. For these reasons, cash forecasting units are often established completely separate from budget-related functions and build their own links with the main revenue and spending agencies, emphasizing that forecast data will not be used in budget discussions.
- The TESOFÉ seems well aware that much of the forecast material is too cautious. However, under the current policies, TESOFÉ officials are reportedly discouraged from using their discretion to make their own adjustments. The officials are required to use the data flows coming from others.
- There are delays reported in the recording of actual outturn data—particularly on the expenditure side—that is an essential input into updated forecasts.

37. The TESOFÉ should be given more authority to decide how best to build the cash flow forecasts and to use first-hand information from agencies. More authority should also include the ability to make adjustments to the forecasts supplied by others based on its own analysis of past trends, knowledge of the forecasting performance of individual entities, and flows of intelligence. As part of this, the TESOFÉ should be able to build direct links with the larger spending agencies and the SAT.

38. These agencies should prepare and regularly update rolling forecasts for submission to the TESOFÉ. The material submitted would not need to be detailed: accounting quality data are not required, and formal processes must be avoided if they imply delays. Some agencies may nevertheless have to develop their own internal forecasting capabilities, which may take some months, although in the meantime the TESOFÉ should be able to probe the profiles submitted through the UCP and UPI. Some countries have found it useful also to require early warning (potentially before their lodgment in the SIAFF) of all payments above a threshold, making that a condition of the later release of those payments. The TESOFÉ, with others in the SHCP, should also explore the use of incentives. Some countries deploy quite sophisticated schemes; the United Kingdom has a system of penalties deducted from future budgetary provisions with the proceeds recycled to those ministries with a good forecasting performance. Some countries, such as Turkey and Hungary, just impose penalties on poor forecasters, while others may grant greater virement authority to good forecasters or publish performance league tables to “name and shame”.

39. The forecasting infrastructure should cover the cash balances at Banxico of the third-party funds, where they are material, and of the social security funds. Active cash management will require projections of all cash balances to which the TESOFÉ potentially has access, whether because they are fully integrated into the TSA/CUT or are available as a safety

net. For third parties with smaller balances, the TESOFE will be able to make assumptions, and it may be possible to agree to early warning arrangements with some others.³⁰

40. In considering responses to the forecast, the focus on future cash flows should extend beyond the month ahead to at least three months ahead, with the forecast for that period updated and rolled forward at least monthly. An extended forecast is essential to plan the mix of maturities, whether for investments or securities issued, that best smooths future cash flows, taking account of other objectives. Even if some payment delays are likely to be required, the more notice that can be given to spending units, the less disruptive they will be. These requirements will imply some changes in the required frequency and horizon of in-year forecast updates from others within the SHCP and the entities beyond.

41. These changes to responsibilities and procedures would require the Working Group to modify its policies and guidelines somewhat.³¹ Changes would be needed to validate a more authoritative role by the TESOFE, which in the future would be based on a wider range of forecast inputs. The proposals are also likely to require some strengthening of the forecasting function within the TESOFE, which is not currently equipped for the role envisaged. Although the changes in responsibilities and procedures should be promulgated in the near future, in practice, the benefits of capacity building and experience will take some months to fully materialize.

C. Moving to Active Cash Management

Cash Flow Smoothing

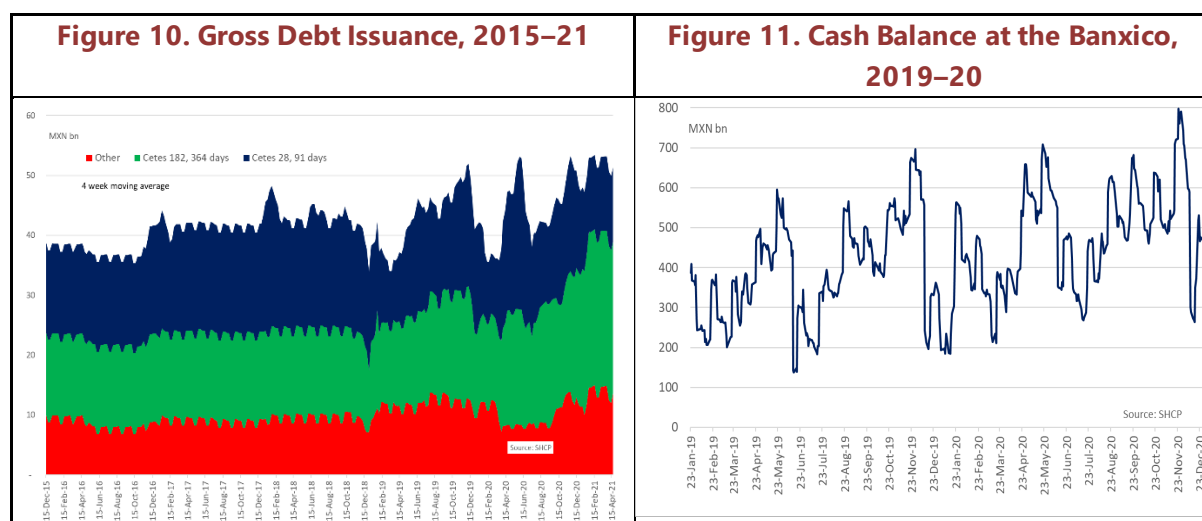
42. The authorities have the tools for more active cash management, but in practice, the Working Group's response to cash balance fluctuations has been somewhat passive. Some payment smoothing has been imposed, particularly at the end of the year, primarily to handle the end-year surge and debt redemptions (which may also require some payment smoothing in the middle of the year). The issuance of Cetes does vary somewhat. Figure 10 shows how issuance has varied more in the past two years, and the quarterly calendar indicates ranges for issuance of MXN5 to 20 billion, in part to take account of the seasonality of cash flows. Issuance also has to take into account a range of market-related constraints and portfolio objectives: thus, the sharp spike in the issuance of short-term Cetes in the second quarter of 2020 largely reflects a response to the sharp outflows as external investors sold government bonds in the early days of the COVID pandemic.

43. There has been negligible investment of temporary surplus cash. In the past, some modest investments have been made with development banks, but there has been no general attempt to smooth cash flows.³² The result can be seen in the volatility of actual cash balances at the Banxico. See figure 11 (which includes third-party deposits).

³⁰ The apparent permanency of some of these balances raises the question of whether they should be invested differently, although what that might mean will depend on the relevant legislation and the funds' other assets.

³¹ Possible changes in the Treasury Law and the internal SHCP regulations would also have to be considered.

³² TESOFE officials note that the flat short-term yield curve has recently implied a limited financial incentive.

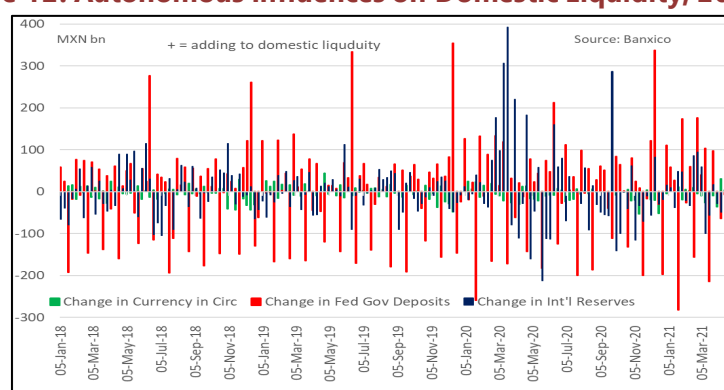


Source: SHCP.

44. There is no model for active cash management or what that might imply, nor a formal objective for cash balance smoothing. Subject to the overriding objective of ensuring that cash is available to facilitate the execution of the budget, the objective should be to smooth cash flows across the TSA. That allows the TESOFE to manage with a lower average cash balance, with savings in cost.³³

45. There are additional benefits both to the banking system and to the Banxico's monetary policy operations from reducing the volatility of the TSA balance. Changes in the government's balance at the central bank are mirrored, other things equal, by changes in banking sector liquidity. Figure 12 shows the impact of changes in the government's balance, along with that of other "autonomous influences" on domestic liquidity in recent years. There are periods when net foreign flows (proxied in the chart by changes in the international reserves) are important, but changes in the government's cash balance are consistently so. These fluctuations have to be offset, either by the banks themselves changing their deposits at the Banxico or by the Banxico through its open market operations.

Figure 12. Autonomous Influences on Domestic Liquidity, 2018–21



Source: Banxico.

³³ The cost saving is calculated by applying to the balance reduction the spread between the overnight interest rate that the Banxico pays on the balance in the TSA/CUT (*la tasa ponderada de fondeo bancario*, 4.0 percent in mid-May 2021) and the interest rate on SHCP's marginal borrowing (for example, on a five-year bond, it stands at 6.0 percent).

46. There is no formal cash buffer. Instead, the policies and guidelines identify a range of forecast deviations, particularly those that negatively impact cash flows, that might trigger action. This is set in the policies and guidelines at two standard deviations of the mean deviation in the previous two years. In addition, to reduce the risk of cash balances falling below acceptable levels, mechanisms to protect them should be triggered when deviations reach the mean plus three standard deviations (plus MXN5 billion). This range is set annually at the beginning of the year; for 2021, two standard deviations are MXN40 billion. In practice, it has only infrequently triggered a response.

47. The move to more active cash management will require a clearer specification of a cash buffer. A buffer can be defined as 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. In principle, once that is identified, and policies are in place to sustain it, all cash above the buffer should be invested back into the banking system (at maturities reflecting the future cash flow requirements) to meet both smoothing and return objectives. There is no need, as in the current policies and guidelines, to impose a limit of only 50 percent of deposits being available for investment.

48. Identification of the buffer is not straightforward. The current technique of identifying unusually large forecast errors as a possible trigger to action can provide a useful early warning of problems, but it is not defined as a buffer and potentially allows the cash balance to fluctuate within a wide range. Many of the factors that should be taken into account in developing the buffer have been identified by the TESOFE,³⁴ in particular, that the underlying errors cannot be assumed to be normally distributed. Many errors will reflect timing changes; it is the cumulative unanticipated drain of cash that is more concerning than one-off errors. Appendix III has a fuller discussion of the issues that need to be addressed in calculating the buffer. It includes some pointers for what they might mean for Mexico, although a firm recommendation would require further work.

49. The size of the buffer should be kept under review. That is needed both to allow for changes in the drivers of the cash flows and to take into account seasonal factors. It would, for example, be sensible to build-up the cash balance ahead of the end-year surge in expenditure when the outflow is highly uncertain. Cash balances will also need to take account of the heavy redemptions in June and December, although since these are well known a preferable strategy might be to deploy a range of investments that all mature on the redemption date. It would be good practice for the Working Group to review the buffer every quarter, with the secretariat both updating the calculations and testing its recommendations against different scenarios.

50. Cash managers should only manage the cash needed for cash management purposes. Any structural surplus—a cash balance over and above the needs of in-year management—should either be managed separately with its own objectives, governance framework, and strategic asset allocation, or it should be used to reduce debt. A useful indicator is the degree of persistence. If cash flows are higher than expected over a sufficiently long period—for example, a few months—and the cash managers are persistently able to maintain the

³⁴ In Annex A to the *Políticas y Directrices en materia de inversión y de administración de la liquidez*.

cash buffer and invest cash for more than three to six months, then the situation is more likely to reflect a permanent shock. If the shock is transitory, the cash balance will fall back to lower levels. In this context, the identification in the policies and guidelines of a maximum investment duration of 360 days (Policy 22) is inappropriate; if there are opportunities for that, the cash balance in the TSA/CUT is too high.

51. In the current context in Mexico, any identified structural surplus could best be run down through lower debt issuance. There are no other obvious pools of liquidity managed by the SHCP to which the surplus could be passed, and it is unlikely to be so great that it would justify establishing a separate savings fund with all that is required in terms of legislation, governance, and management. Debt buy-back operations may not be cost-effective. There would be no difficulty in shading the issuance program to run off MXN100–200 billion (see Appendix III) over a few months.

Smoothing in Practice

52. A more active approach to the management of government cash flows should build over time. Tentative steps can be taken to rough tune cash flows without necessarily seeking to keep the cash balance in the TSA at or close to the cash buffer. As confidence in the forecast grows and the internal procedures get established, the way will open for larger or more frequent transactions to maintain balances closer to the buffer. The Working Group should guide this process as capability develops.

53. The management of cash flow fluctuations should primarily be through financing transactions. Imposing any delay on expenditures should only be a last resort. The developed money market in Mexico and the active issuance of treasury bills (T-bills), that is Cetes, of a range of maturities, provides an excellent opportunity to vary their issuance in such a way as to offset fluctuations in the government's cash flows. In practice, the focus should be on short-term Cetes, especially 28-days but also 91-days, with the mix of maturities depending on the profile of cash flows. Some countries rely almost entirely on varying T-bill issuance as a way of rough tuning cash flows; some (Italy, New Zealand, for example) also issue T-bills with specific maturity dates, geared to days of known cash inflow.

54. The UCP points out that it has to take a number of other portfolio- and market-related factors into account in deciding its Cetes issuance program. That must remain the case. But it should be stressed that it is not being proposed here that there is any increase in the reliance on Cetes to finance the annual borrowing requirement, only that the stock should potentially fluctuate more during the year. That would be entirely consistent with the portfolio objective of lengthening the duration of the stock of government debt. Moreover, the variation in issuance suggested here works with the grain of the market: when the government is short of cash, the market will be long, and other things being equal, more willing to purchase extra Cetes—and vice versa.

55. Any shift to using Cetes more actively in this way should be fully explained to the market. Doing so removes any risk that the greater use of Cetes might be interpreted as a deterioration in the fiscal position or of difficulty in selling securities further up the yield curve. Similarly, a lower average cash balance would not imply a short of liquidity, but rather better cash

management. Transparency about the policy objective also allows the SHCP an opportunity to explain to the market the benefits of the new approach.

56. The UCP and the TESOFE should also come to an understanding with the Banxico about their intentions. By reducing the fluctuations of balance in the TSA, smoothing not only takes some of the pressure off monetary policy operations, but by making a clearer separation between the SHCP's and the Banxico's operations it can help to buttress the Banxico's independence. Both institutions also have an interest in an active and efficient money market. But there may nevertheless be some scope for misunderstanding between them.³⁵ A memorandum of understanding (MoU) or similar document should specify the flow of information between the institutions (for example, the government's target balance, not only for the following day on which the Banxico currently receives information but also for a period beyond that), the respective timing of auctions or other operations, and the nature of market announcements. All cash flow forecasts should also be passed to the Banxico so it can take them into account in its own liquidity forecasts.³⁶

57. There are several possibilities for the investment of short-term cash surpluses.³⁷ The policies and guidelines currently identify (in Article 17) a list of eligible investments.³⁸ In national currency or UDLs,³⁹ they may comprise:

- Deposits in sight or on time at the Banxico, development banks, or multiple banks; in the case of the latter, such deposits may be [*podrán estar*] guaranteed with collateral instruments;
- Government securities and credit securities issued by the federal government;
- Securities issued by the Banxico;
- Debt instruments issued by development banks and multiple banks; and
- Other financial instruments authorized by the committee.

³⁵ In this context, the Banxico is able to issue government securities for monetary policy purposes and also trigger government bond swaps. The use of government securities avoids fragmenting the market and is to be welcomed, and there is some consultation with the SHCP at quarterly meetings. However, the securities are a liability of the federal government, and the volumes may affect the UCP's own issuance strategy.

³⁶ The TESOFE already passes some forecast information to the Banxico. It informs the Banxico every day of the expected flows the next day and also releases its forecasts extending two months ahead. The Banxico has indicated that it would welcome forecasts to the end of the fiscal year to inform its projections of the structural liquidity balance.

³⁷ There are also some potential quick wins. The build-up of cash following tax receipts on the 19th of the month is followed by a drain of cash at the end of the month. That could be smoothed by lending the excess cash for one week or until the day that salaries come to be paid. Alternatively, the SHCP would follow the example of Romania, a country also with a sharp within-month profile, which borrows every month for two weeks from a panel of commercial banks to cover the time lag between paying salaries and receiving tax revenues.

³⁸ Article 17. The list includes government securities. Usually, that would not be appropriate unless they were being bought back to be cancelled. If different parts of government are holding securities, they will potentially overhang the market, complicating any issuance or secondary market operations by the UCP.

³⁹ A similar list is available in foreign currency, except that it also includes debt instruments issued by foreign governments with investment grade rating (Article 18).

58. As indicated in the policies and guidelines, high-quality, low-risk investments should be given priority. The list above properly excludes bonds issued by SOEs or other enterprises that could, depending on the circumstances, circumvent budgetary procedures and leave the government exposed to moral hazard. Ideally, all investments with financial institutions should be collateralized, although very short-term deposits with highly rated banks would probably be acceptable. Some countries in the first instance auction deposits to a preapproved list of banks. For example, Chile has an electronic platform where it periodically auctions deposits with the bidders also identifying the collateral, and China's first step toward cash flow smoothing was to auction bank deposits, rather than varying T-bill issuance.

59. It would not usually be appropriate to include government securities in the list of eligible investments unless they were being bought back to be canceled. If different parts of government are holding securities, they will potentially overhang the market, complicating any issuance or secondary market operations by the UCP. Purchase of securities off the market, to be canceled or redeemed in the near future, is a more usual action associated with liability management (for example, a bond exchange or smoothing a redemption profile) or the run down of a structural excess of cash, not with the investment of temporary surplus cash. As noted above, in practice only modest and infrequent short-term investments have been made with development banks.

60. Reverse repo could be a useful instrument for active cash management, and the TESOFE should develop the capacity to invest in it. Repo is provided for in the current policies and guidelines, but the function has not been developed. Repo is flexible as to maturities; in the event of the bankruptcy of the counterparty, it is more secure than a collateralized deposit since, in the latter case, the TESOFE would rank equally with other creditors. It would take some time (maybe a few months) to establish the capacity. Some of the issues to be addressed are summarized in box 4. In practical terms, the most challenging may be the management of the collateral, which potentially includes a daily revaluation and remargining. That service can sometimes be offered by the Central Securities Depository (CSD) for government bonds (Indeval in Mexico), but the TESOFE may instead decide to contract out the back-office operation to the Banxico.⁴⁰ In establishing the necessary front- and middle-office functions, the TESOFE will want to liaise with the UCP to take advantage of its knowledge of the money market and potentially draw on the UCP's functional capacity on a quasi-agency basis. Alternatively, the Banxico may be able to run auctions as a fiscal agent, as it does for government securities.

⁴⁰ In principle, U.S. dollar repo contracts could be agreed to with counterparties, but they would probably require additional custody arrangements for U.S. dollar securities and are likely to be a lower priority.

Box 4. Establishing Repo Capacity

Policy Decisions

- **Eligible collateral and its handling:** Preferred collateral is likely to be government and the Banxico securities, but decisions will need to be made about required haircuts, remargining, acceptable maturities, and the management of collateral.
- **Acceptable counterparties and credit risk:** It may be that these are initially the primary dealers and/or the Banxico repo counterparties. Credit risk metrics will need to be established, although repo will “score” very much less than an unsecured deposit.
- **The management of transactions:** Decisions would include bilateral or by auction and the auction process and platform.

Prior Tasks

- **Preparing and agreeing to contracts with counterparties:** Contracts would probably be based on the Global Master Repo Agreement as amended locally.
- **Contracts or service-level agreements:** Agreements would be with agents such as the Banxico.
- **Confirming accounting and tax treatment:** Repos are treated as collateralized loans under international accounting best practice. Tax problems can arise if “sales” of securities trigger a taxable event or result in transfers, sales, or turnover taxes. Withholding taxes add friction to the transactions.
- **Capacity building:** This includes identifying operational risks, establishing procedures, data management, and training.

Source: IMF mission team.

61. In some countries in the region, the central bank has been very reluctant for the government to invest in the market.⁴¹ That might be acceptable, but only if the central bank is struggling to manage a buildup of liquidity. The memorandum of understanding noted above should address such circumstances; the SHCP transactions should not undermine the effectiveness of the monetary policy. But when the money market is closer to equilibrium, the central bank should recognize that investment in the market of temporary cash surpluses is an intrinsic part of modern cash management and indeed, supports monetary policy. If there were times that the Banxico did require the TESOFE to maintain cash in the TSA, it should have been prepared to offer an interest rate that reflected the maturity of the agreed additional investment. This might simply be the interbank rate for that maturity; in Colombia, the rate on any deposit beyond the very short term is linked to rates in the fixed-income market.⁴²

62. There are other cash flow smoothing techniques that should be used. Issuance maturity dates should be chosen to avoid weeks, and especially days, of heavy cash outflow (such as salary payments) and should instead target days of cash inflow (the due date for tax payments

⁴¹ Colombia is an example. For this and other examples, see I. Fainboim, S. Saxena, and M. Williams, *How to Develop a Framework for the Investment of Temporary Government Cash Surpluses*, IMF FAD, December 2020, <https://www.imf.org/en/Publications/Fiscal-Affairs-Department-How-To-Notes/Issues/2020/12/21/How-to-Develop-A-Framework-for-the-Investment-of-Temporary-Government-Cash-Surpluses-49954>.

⁴² The Banxico indicated that, in principle, it might be prepared to offer a market-related rate.

to reach the TSA). The concentration of redemption dates to facilitate the stripping of bonds is fully justifiable, but to identify June and December, the latter coinciding with the end-year expenditure surge is a choice that might have been avoided; the SHCP has recognized this as it increasingly moves to March and September as the preferred redemptions dates. More frequent liability management operations (LMOs) can mitigate the cash management problems that potentially arise when large bonds come to maturity; it should also be possible to buy bonds off the market through the primary dealers in the last months before maturity. Some countries spread salary payments across several days of the month to avoid concentrating them in any one week. Another suggestion that has been made is that payments on goods and services during the month be delayed until after the main tax receipts on or about the 19th of the month, but this would not be desirable if it implied any delay beyond contracted terms. Alternatively, contracts could specify payment periods coinciding with periods of tax receipts.

Governance and Institutional Arrangements

63. The split responsibilities under current legislation for short-term cash investment (under the TESOFE) and short-term debt issuance (under the UCP) are far from ideal. The international trend is for cash and debt management operations to be integrated into the same unit, which has benefits in terms of policy making and administrative savings (with a common skills base and systems). Moreover, once cash comes to be managed more actively, there is a risk that the market will see the two sides of the SHCP failing to coordinate effectively, with a consequent impact on the interest rates achieved.

64. The SHCP will want to consider different institutional options, although since most are likely to require primary legislation, the objective is for the medium or longer term. It would be, for example, in line with practice elsewhere for the forecasting function, at least for above-the-line transactions, to remain with the TESOFE but for other front-, middle-, and back-office functions to be fully integrated. That would minimize some of the internal coordination costs while ensuring a single point of contact with the market, but there are other approaches.⁴³ In current circumstances, and for the immediate future, coordination structures will remain essential. The Working Group should move to weekly meetings, at which it can judge the parameters for the following week's operations, whether in terms of investment or Cetes issuance. That will have implications for the forecast preparation, with a full submission each week, ideally also rolling forward the three-month forecast each week or certainly each month.

65. The secretariat should also give more detailed advice to the Working Group on the policy response to the forecast advice. This should include forecast sensitives or scenarios with possible implications for issuance, investment, or other policy response (for example, other financial asset transactions or changes in the profile of payments). Advice should be coordinated between the TESOFE secretariat and its counterparts in the UCP before meetings of the Working Group.

⁴³ Some of the models and issues arising are discussed in I. Fainboim, M. Pessoa, and M. Williams, "Cash and Debt Management: Interaction, Coordination, and Integration," Chapter 3 in *Public Financial Management in Latin America: the Key to Efficiency and Transparency*, Carlos Pimenta and Mario Pessoa, eds. IDB, 2015. <https://publications.iadb.org/handle/11319/7123>.

66. The recommendations set out here would, like those concerning cash flow forecasting, require some amendments to the policies and guidelines relating to investments.⁴⁴ They would need to go further than the existing articles applying to eligible securities and counterparties to cover such things as delegations, reporting, and a wider range of risks. A summary of the suggested coverage is in box 5.

Box 5. Governance of the Investment of Temporary Surplus Cash

In a conventional fund management context, there is a clear distinction between the Board that sets the high-level policies and the Investment Committee that makes those policies operational. In the SHCP, those roles are, in practice, taken by the Technical Committee and Working Group (*Comité Técnico* and *Comisión de Trabajo*) respectively.

In setting policies for the management of surplus cash (which will be agreed to by the Technical Committee), the Working Group will need to establish:

- Risk tolerance (market, credit, operational), investment horizon, eligible instruments, and currencies.
- Performance objectives: It is difficult to measure performance against a smoothing objective, but several treasuries identify an objective for short-term investment in terms of a spread above the overnight rate (that is, *la tasa ponderada de fondeo bancario*) or a "do nothing" counterfactual.
- Delegations of authority: The Working Group might set parameters for the week ahead within which the TESOFE would be able to transact; it should also identify the requirements for clearance or consultation for anything outside those parameters, including any new policy initiatives.
- Reporting requirements to the Working Group, within the wider SHCP, and externally.

Source: IMF mission team.

D. Summary of Recommendations

- **Recommendation II.1:** In relation to cash flow forecasts: (Working Group, by the end of the third quarter, 2021 and beyond)
 - a. The TESOFE should be given more authority to decide how best to build the cash flow forecasts, including by making its own judgments.
 - b. The TESOFE should widen its sources of information and lengthen the primary forecast horizon.
 - c. A capacity-building program should be established accordingly.
- **Recommendation II.2:** In relation to government cash management (Working Group, by the end of the third quarter, 2021 and beyond):
 - a. The Working Group should agree upon a cash smoothing objective and a program to manage cash more actively accordingly.
 - b. As part of this, it should establish a cash buffer target to be reviewed every quarter.
 - c. It should meet more frequently, and in due course weekly, identifying policy responses to the forecast.

⁴⁴ Potential amendments to the Federal Treasury Law (LTF) and internal SHCP regulations would also need to be considered.

- **Recommendation II.3:** The UCP should further develop Cetes as a cash management instrument, in coordination with the TESOFE (SHCP/UCP by the end of the third quarter, 2021 and beyond).
- **Recommendation II.4:** The Working Group should amend its policies and guidelines and associated governance arrangements, in line with the above recommendations for endorsement by the Technical Committee (Working Group, by the end of the fourth quarter, 2021).
- **Recommendation II.5:** The TESOFE should develop its capacity to invest through reverse repo, in coordination with the UCP (TESOFE, end of the first quarter, 2022).
- **Recommendation II.6:** The SHCP should consider institutional options for better integration of debt and cash management functions (SHCP, 2023).

III. MANAGEMENT OF FINANCIAL ASSETS AND LIABILITIES

A. Introduction

67. The authorities aim to strengthen the management of financial assets of central public sector entities, including the corresponding legal and regulatory framework. While the debt management capacity is high and the SHCP exerts strong control over borrowing of central public sector entities, the management of financial assets is decentralized, and the SHCP's control over investment decisions is limited. The authorities want to identify opportunities to manage financial assets more actively and to increase the SHCP's understanding of how financial assets are managed at other central public sector institutions; they have drafted an asset law intended to harmonize asset management across the central public sector.

68. The authorities also intend to put in place an SALM framework in a phased manner. The UCP and some public sector institutions⁴⁵ are considering balance sheet mismatches, particularly in developing their financing strategies, but no SALM framework for the wider public sector exists.

69. While PSBS analysis, financial assets management, and SALM framework are closely linked to each other, there are important distinctions as regards their respective objectives, required expertise, and practical arrangements at the SHCP. PSBS compilation and analysis is focused on accounting and the use of balance sheet information for fiscal policy making. Financial asset management aims at ensuring liquidity while maximizing the value of long-term capital given a moderate risk level. On the other hand, the SALM framework discussed here focuses on the identification and mitigation of financial risks from mismatches in assets and liabilities. These three areas build on each other with information derived from the PSBS being critical to strengthening financial asset management and identifying balance sheet mismatches in

⁴⁵ Among the institutions the mission met, CFE, NAFIN, and BANCOMEXT pursue asset and liability management (ALM) strategies.

an SALM framework, and sound financial asset management facilitating the implementation of an SALM framework. PSBS compilation and analysis primarily requires expertise in accounting and the balance sheet's macrofiscal implications; financial asset management requires expertise in financial management and markets, and SALM requires expertise in financial risk analysis and management and financial markets. At the SHCP, the Economic Planning Unit leads PSBS compilation and analysis, and no institutional responsibility has yet been assigned for the management of public sector financial assets beyond the TESOFE's mandate for cash management; however, the UCP has started taking into account SALM considerations in its financing strategy. This report highlights the interlinkages among financial asset management, SALM, and PSBS analysis but treats them differently (in Sections III.B, III.C, and I, respectively).

70. The mission's analysis and recommendations focus on the financial assets of central public sector entities, the corresponding legal and regulatory framework, and an SALM approach. Section III.B. includes a discussion as to how the SHCP's understanding and monitoring of financial assets of central public sector institutions, such as trust funds and nonfinancial and financial public corporations, can be strengthened. The wider financial oversight regime is outside the scope of analysis and not discussed in detail beyond the legal and regulatory framework. However, reforms to the SHCP's analysis and monitoring of financial assets of central public sector institutions should be viewed as part of a broader financial oversight framework for the respective institutions. The broader financial oversight of public corporations and extrabudgetary funds (EBFs) should extend beyond short-term budgetary considerations⁴⁶ and include an explicit ownership policy, the analysis and mitigation of fiscal risks, and reporting by the government on the sector's performance.⁴⁷ In line with sound international practice, reforms to the SHCP's oversight regime for financial assets should be considered as part of a more comprehensive framework of financial oversight to be introduced progressively.

B. Managing Central Public Sector Financial Assets

Current Situation

71. In Mexico, the management of public sector financial assets at the budgetary central government (BCG) level is straightforward. Financial assets from the BCG⁴⁸ are managed by the SHCP⁴⁹ through the TESOFE. Under the LTF, the investment policies of financial

⁴⁶ Currently, SHCP's oversight of central public sector institutions outside the central government is focused on budgetary processes (through the Budget Department) and borrowing (through UCP). No dedicated function or unit exists at the SHCP to review their long-term financial position and performance. The SHCP views its representatives on the institutions' boards as an oversight channel.

⁴⁷ Two publications by the IMF and dedicated to the financial oversight of public corporations and extrabudgetary funds contain detailed suggestions for strengthening financial oversight by the central government and international sound practices. They can be found at <https://www.imf.org/external/pubs/ft/howtonotes/2016/howtonote1605.pdf> and <https://www.imf.org/external/pubs/ft/tnm/2010/tnm1009.pdf>.

⁴⁸ According to Article 2 of the Federal Public Administration Law (LOAPF) and Article 2 of the LFPRH, the federal central public administration is composed of the executive branch (line ministries, deconcentrated entities, energy regulatory agencies, and the Legal Counselor of the Republic), legislative and judicial branches, autonomous organs, administrative tribunals, and the Attorney General's office.

⁴⁹ Articles 31, XIV, XVI, XVII of the LOAPF.

assets held in the current account of the TSA are approved by the Technical Committee composed of the Secretary of Finance and Public Credit, the treasurer, and the Under Secretaries of Finance and Public Credit, of Income, and of Expenditure. Further, LTF regulation establishes that the investment policies should include, at a minimum, authorized securities and other financial instruments, currency, portfolio ceilings per issuer, type of instrument and currency, maximum maturities, custody, risk management policies and practices, valuation rules, etc. Current investment policies of a sample of institutions are discussed below.

72. However, outside of the BCG, the legal framework for financial asset management mirrors the complex landscape of a myriad of central public sector institutions. There is a wide variety of public entities that fall under many legal statutes, have a distinct legal personality from that of the state, and, in most cases, enjoy substantial budgetary and financial autonomy, including discretion over the management of their financial assets and risk exposure related to their mandate and policy objectives. They are commonly overseen or supervised by a line ministry, which will exercise the tutelage and define an entity's policies, coordinate its planning and budgeting, controls, and performance evaluation. Under Mexican administrative law, these entities are (i) "*parastatals*" composed of decentralized bodies, organic trust funds, state-owned productive companies, and companies with a majority state ownership, or (ii) *nonorganic trust funds*. Both of these categories are analyzed below. Table 3 provides a detailed legal classification of central public sector entities outside the BCG.

Table 3. Mexico: Classification of Central Public Sector Entities Outside the Budgetary Central Government by Legal Nature

Type of Entity		Nonfinancial		Financial
		Noncommercial	Commercial	
Parastatals	Decentralized Entities	<ul style="list-style-type: none"> 19 entities (2 of which are under SHCP's oversight) 10 entities without LM oversight 10 entities considered research centers 13 entities considered national health institutes 3 social security entities (ISSFAM, ISSSTE, and IMSS) 	<ul style="list-style-type: none"> 12 entities (3 of which are under SHCP's oversight) 1 entity without LM oversight 1 entity considered research center 	<ul style="list-style-type: none"> 3 entities (2 of which are under SHCP oversight) 1 entity without LM oversight
		Total 55	Total 14	Total 4
	Organic Trust Funds	<ul style="list-style-type: none"> 8 trusts 2 trusts considered research centers 	<ul style="list-style-type: none"> 1 trust 	<ul style="list-style-type: none"> 6 trusts part of the banking system (5 of which are under SHCP's oversight)
		Total 10	Total 1	Total 6
	State-Owned Productive Company	...	<ul style="list-style-type: none"> 2 companies (PEMEX-CFE) 14 subsidiaries 	...
			Total 16	

Classification of Central Public Sector Entities Outside the Budgetary Central Government by Legal Nature (Concluded)

Type of Entity		Nonfinancial		Financial
		Noncommercial	Commercial	
	Companies with a Majority State Ownership	<ul style="list-style-type: none"> • 5 companies • 17 considered research centers 	<ul style="list-style-type: none"> • 28 companies • 3 without LM oversight • 1 considered research center 	<ul style="list-style-type: none"> • 6 considered development banks (all under SHCP oversight) • 2 considered national health insurance institutes (under SHCP oversight)
		Total 22	Total 32	Total 8
Nonpara-statals	Nonorganic Trust Funds	<ul style="list-style-type: none"> • 242 trusts at the federal level, 66 of which are under SHCP's oversight 		

Note: ISSFAM = *Instituto de Seguridad Social para las Fuerzas Armadas Mexicanas* (Institute for Social Security for Military Personnel); ISSSTE = *Instituto de Seguridad y Servicios Sociales para los Trabajadores del Estado* (Institute for Social Security and Social Services for Workers of the State); IMSS = *Instituto Mexicano del Seguro Social* (Mexican Social Security Institute)

Source: SHCP and legal classification of Federal Public Administration Law (*Ley Orgánica de la Administración Pública Federal*, LOAPF) and *Ley Federal de Entidades Paraestatales* (LFEP).

73. The *parastatal* category encompasses a diverse pool of entities with different financial and budgetary relations with the central government. They are regulated by a framework law (*Ley Federal de Entidades Paraestatales*, LFEP) and their constitutive legal instruments, which establish their more specific governance arrangements and financial and budgetary regime. In addition, the financial asset management framework for some of these entities may also be subject to sectoral regulation, such as those operating in the financial sector (banking and insurance), energy sector, etc. Box 6 classifies parastatals and describes key characteristics.

Box 6. Classification of Parastatals Under Mexico's Legal and Regulatory Framework

The parastatal category encompasses four types of entities with diverse legal natures and different levels of financial and budgetary relations with the BCG.

Decentralized Bodies

Decentralized bodies are created by law or presidential decree. Their governing body (Board or Technical Committee) is responsible for the preparation of their investment policies and management of financial and nonfinancial assets, budget preparation and approval, and borrowing (if granted by their constitutive instrument). As of August 2020, there were 108 decentralized entities, of which only 7 were under the oversight of SHCP. Specific regimes among these entities also coexist. For example, the investment regimes of the three social security institutions (ISSFAM, ISSSTE, and IMSS) are defined by their own laws¹ and aligned with their mandate as well as subject to Mexico's pension system regulator (*Comisión Nacional del Sistema de Ahorro para el Retiro*, CONSAR). Other examples include decentralized financial entities such as the deposit insurance institution for the banking system (IPAB).

Organic Trust Funds

Organic trust funds are contracts authorized by the SHCP, wherein the central government or other public entity (the grantor) constitutes an autonomous patrimony with assets and property rights. The trust funds are dedicated to the execution of a specific mandate (strategic or priority areas of state activity) entrusted to a trustee (usually a financial institution) on behalf of a designated beneficiary. The distinction from a decentralized body is that the public trust lacks legal personality, even after having been formally constituted. It is "organic" in the sense that it has a governing body, usually called a Technical Committee or Board, which will have, among other mandates, decision-making authority on investment policies and management of the financial assets. The specific powers and financial regime of the public trust are defined in the legal instrument that creates it, thus, the proliferation of very heterogeneous entities. The majority of these entities are noncommercial and receive most of their funding through central government budgetary transfers and, thus, do not hold significant cash balances. Some others are financial, mostly under the tutelage of the SHCP, and are dedicated to providing financing and guarantees to specific sectors of the economy. These latter trusts form part of the Mexican banking system and are subject to the supervision of the National Banking and Securities Commission (CNBV).²

State-Owned Productive Companies

State-owned productive companies are composed of CFE, PEMEX, and their subsidiaries. These entities have a constitutional basis³ and each has a special regime⁴ related to acquisitions, leases, services and works, budgetary regime, public debt, administrative responsibilities, salaries, hiring, and others. PEMEX and CFE's budgets are consolidated by the SHCP in the federal budget. Both companies have a well-defined corporate governance structure where the Board (*Consejo de Administración*), the highest decision-making body, has the authority to approve the investment guidelines and policies.

Companies With a Majority State Ownership

Companies with a majority state ownership are any company in which the federal government (or one or more of its entities) owns more than 50 percent of the shares, controls the appointment of the majority of the members of the governing bodies or its president/director general, or has veto power on the governing body's resolutions. This category includes commercially-run companies in the sector of port administration, tourism, and education. However, a large number of these companies do not operate on a commercial basis, and they are mostly classified as research centers, receiving funding through central government transfers. The rest of the companies under this category are financial, six development banks, and two health insurance institutes and are, therefore, under the close supervision of the CNBV and National Insurance Regulator (*Comisión Nacional de Seguros y Fianzas*, CNSF) respectively. The supervisory agency determines specific reserve and capital requirements and restrictions on the types of investments these companies can make.

¹ For example, ISSSTE law.

² Some of these entities include the Guarantee and Promotion Fund for Agriculture, Livestock and Poultry; Special Fund for Technical Assistance and Guarantee for Agricultural Credits; Housing Bank Financing and Operation Fund, etc.

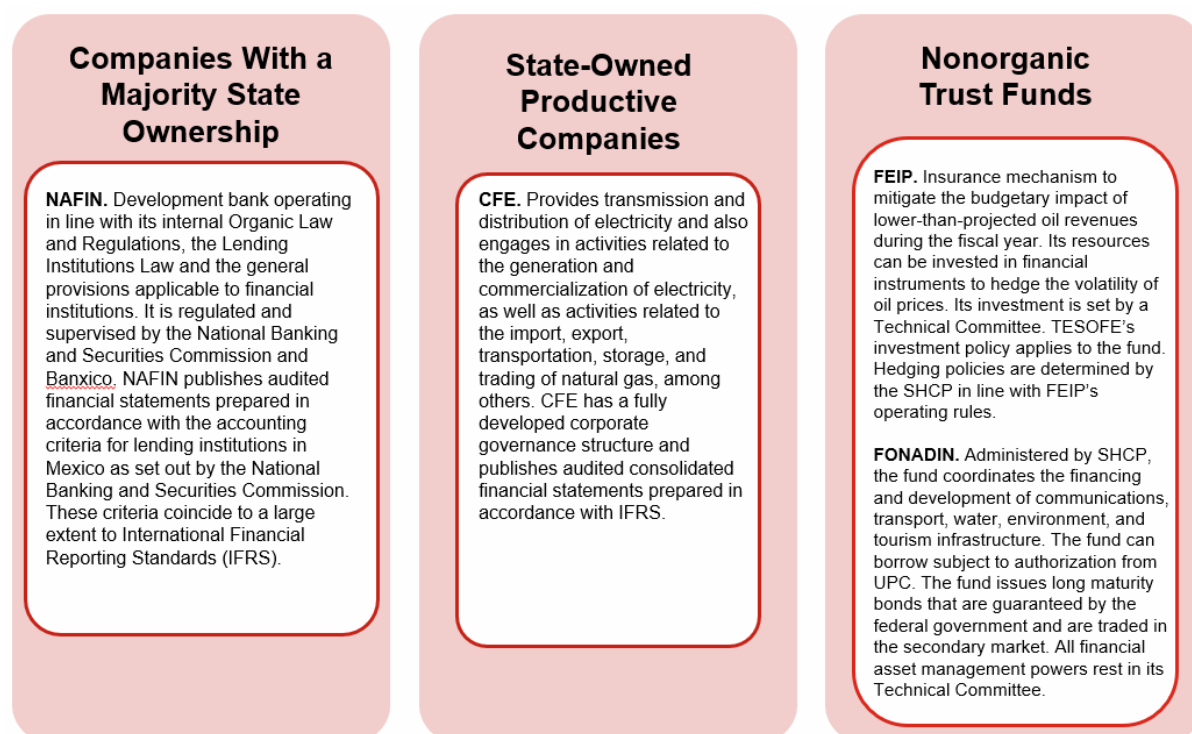
³ Article 25 of the Mexican Constitution.

⁴ Provided by the Organic Law of Mexican Petroleum and the Federal Electricity Commission Law.

74. However, aside from parastatals, substantial federal financial assets are managed through nonorganic trust funds that lack an overarching framework for financial oversight. With a total of 242 trusts at the federal level,⁵⁰ they comprise essentially a set of accounts owned by a line ministry or public entity that processes transactions but do not have a separate legal personality nor governance or corporate structure. They also operate as EBFs. Further, the management of assets and liabilities relating to nonorganic trust funds is largely undisclosed, as indicated in Section I. The objectives are also varied, including, for example, budget stabilization, public infrastructure, financial support, pensions and employment benefits, and subsidies. Management of the financial assets in these trusts is solely defined in their constitutive legal instrument, trust contract, and operating procedures established by the grantor.

75. For analysis, the mission, in coordination with the SHCP, chose to examine a subset of entities representative of the various governance structures and based on the size of their financial assets. In addition to the BCG, the subset includes the nonorganic trust funds FEIP and FONADIN, the commercial state-owned productive company CFE, and the development bank NAFIN. These entities were created as vehicles for the government to pursue specific objectives of its social and economic policy for the long-term benefit of the country. Figure 13 has a succinct description of their mandate, structure, and operations.

Figure 13. Selected Central Public Sector Entities Within the Scope of Analysis



Source: SHCP.

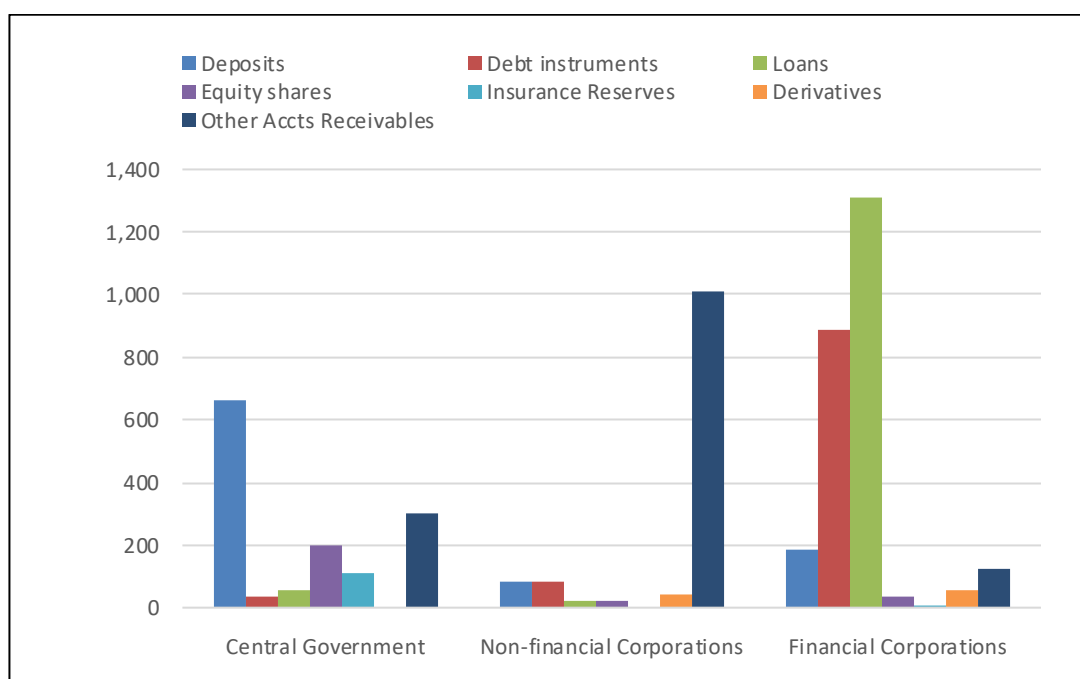
⁵⁰ The largest trusts are FEIP; Federal Entities Income Stabilization Fund (*Fondo de Estabilización de los Ingresos de las Entidades Federativas*, FEIEF); State Infrastructure Trust Fund (*Fideicomiso para la Infraestructura en los Estados*, FIES); FMP; FONADIN; Investment in Infrastructure of PEMEX Stabilization Fund (*Fondo de Estabilización para la Inversión en Infraestructura de Petróleos Mexicanos*, FEIPEMEX); and Pension Restructuring Fund (*Fondo de Apoyo para la Reestructuración de Pensiones*, FARP).

Understanding the Central Public Sector Financial Assets and their Management

76. The BCG's financial assets consist primarily of cash managed by the TESOFE in the TSA at the Banxico. The cash is managed according to a set of policies and guidelines set forth in the *Políticas y Directrices en Materia de Inversión y Administración de la Liquidez*. Section II addresses the current framework for cash management and potential improvements thereof. If there are surpluses over the predetermined cash buffer that could be invested for a period beyond the three-month forecast horizon, these guidelines would still apply to the investment of those funds. If, however, a persistent significant structural cash surplus is identified, which does not seem to be the case currently, the SHCP would have to make a policy decision on how to utilize this surplus in the most economically effective manner, including the reduction of debt given the government's significant net debt position.

77. Aside from liquidity holdings, the nature and composition of the financial assets of central government entities outside of the BCG largely reflect their policy objectives and the legal and regulatory regimes under which they operate. Some of these entities, such as FEIP and other nonorganic trust funds, are directly managed by the SHCP either by statutory mandate, ownership rights, or as stipulated in the trust fund contract, and they hold mostly cash. Those that hold long-term investments in debt securities manage their financial assets with some degree of autonomy under their own internal rules and investment framework. The financial assets of the central public sector were reported at MXN5,214.7 billion (figure 14). Of the total, the central government held MXN1,356.2 billion primarily in deposits, Nonfinancial corporations held MXN1,262.7 billion mostly in receivables, and financial corporations, mainly development banks, held the rest—MXN2,595.9 billion—in loans and investments in securities, for the most part.

Figure 14. Summary of the Central Public Sector Financial Assets (as of Dec. 2020)
(In MXN billions)



Source: SHCP.

78. The FEIP is a short-term budget stabilization mechanism but does not address longer-term fiscal sustainability. The FEIP uses financial derivatives, primarily Asian-style options on oil price, to mitigate the budgetary impact of lower-than-projected oil revenues during the fiscal year. It is funded primarily through annual transfers from the *Fondo Mexicano de Petróleo* (FMP). Other inflows consist of returns on its financial assets, hedging proceeds from derivatives, and contributions from the SHCP in instances of surplus income and according to the provision of the fiscal responsibility law (*Ley del Presupuesto y Responsabilidad Hacendaria*, Article 19). Table 4 shows the sources of changes in the fund's balance over the three most recent fiscal years. The UCP is in charge of defining the parameters of the annual hedging program based on the oil price used as the basis for the federal budget and the funds available in the FEIP's accounts. The same unit is then responsible for implementing the approved hedging program by opportunistically transacting in the international financial markets over a period of time.

Table 4. Mexico: Budgetary Revenues Stabilization Fund Flows and Balance Over the Past Three Fiscal Years
(In MXN millions)

Fiscal Year	Interest Earned	FMP Transfers	Other Inflows	Oil Hedge Proceeds	Outflows	Foreign Currency Effect	Net Change	Year-End Balance
2017	...	...	...	...	...	...	...	220,971.5
2018	18,484.4	10,049.5	52,271.3	0.0	-23,488.9	1,483.0	58,799.3	279,770.9
2019	21,627.9	11,454.6	0.0	2,399.8	-156,473.7	-235.5	-121,226.3	158,543.9
2020	7,420.2	9,081.5	0.0	47,454.7	-214,376.2	1,373.8	-149,046.0	9,497.9

Source: SHCP.

79. The FEIP's cash balances could be managed more actively given the predictable timing of outflows. At any given point in time, FEIP assets will consist of two types of financial instruments: cash balances denominated in U.S. dollars and Mexican pesos held with the Banxico and in derivative contracts whose value depends on the market price of the underlying risk factor, namely the price of Mexican crude oil. As of the end of March 2021, the total balance amounted to the equivalent of MXN16 billion with 50.2 percent or MXN8 billion in domestic currency, and 49.8 percent in U.S. dollars or US\$382 million. The strategy to manage these cash balances has been to keep them in deposit at the Banxico where they earn the overnight interbank rate. While this is a very conservative approach, the SHCP should explore a more flexible strategy given the predictability of the quarterly budget support outflows. The same techniques and instruments described in Section II to more actively invest the BCG's cash could be applied by FEIP to generate additional income while continuing to meet its liquidity objectives.

80. The FEIP manages its financial assets conservatively to minimize exposure to financial risks. Although the cash balances it maintains in deposits at Banxico are nominally exposed to the fluctuation of overnight interest rates, that exposure is relatively low compared to the potential loss it could face on its derivatives positions in case of a counterparty default. To manage that exposure to credit risk, the FEIP's derivatives contracts are fully collateralized with a zero threshold, thereby requiring its counterparties to post collateral daily to cover any change in the value of its derivatives. While this arrangement does not completely eliminate credit risk, it effectively mitigates FEIP's exposure to any potential losses due to a counterparty default.

81. The SHCP should explore opportunities for investing more actively in the trust funds' cash balances held in the BCG's account at the Banxico. Several entities of the central government,⁵¹ such as the FEIP, maintain deposits with the TESOFE, which has the authority to draw upon them temporarily in case of a liquidity shortfall in the BCG's account (although not the FEIP's). The SHCP should conduct a detailed analysis of the variability of those balances and the patterns of liquidity expenditure by the entities that hold them to explore if there is scope to invest them more actively in order to generate higher returns than what they currently earn in the TSA account at the Banxico. As for the FEIP, some of the same techniques and instruments described in Section II to more actively invest the BCG's cash could be used to that effect.

82. FONADIN's primary mission to finance and facilitate infrastructure development projects is reflected in its financial assets, which primarily consist of illiquid instruments. These include credit instruments, guarantees, and capital participation in infrastructure projects. In addition, FONADIN manages cash balances for its operational needs and debt service payments. It also maintains a line of credit with BANOBRAS on which it can draw in the event of temporary liquidity shortfalls resulting from timing mismatches. The illiquid nature of most of its financial assets and the idiosyncratic risk factors to which they are exposed makes it difficult to estimate their market value and their aggregated risk profile. The reported value of FONADIN's financial assets as of the end of the 2020 fiscal year was MXN112.6 billion, of which MXN46.3 billion was in bank deposits and MXN66.4 billion was in accounts receivable. The value of its other financial assets is not reported.

83. CFE's financial assets consist primarily of cash and cash equivalents as well as derivatives-based financial instruments. As of the end of September 2020, CFE held MXN90,022 million in cash on hand and in banks as well as MXN59,986 million in short-term investments, mainly overnight repos (table 5). CFE is exposed to interest rate and foreign currency risks, which it mitigates through a hedging program that includes using derivative financial instruments, mainly foreign exchange cross-currency swap and forwards, to hedge foreign currency risk and interest rate swaps to hedge interest rate risk. Although some of these derivative positions appear on the asset side of the balance sheet for accounting purposes, they are primarily used to hedge financial liabilities. CFE uses fair value methods to account for its derivatives as prescribed under International Financial Reporting Standards (IFRS) and computes a credit valuation adjustment to reflect its exposure to counterparty credit risk.

Table 5. Mexico: Summary of Federal Electricity Commission's Financial Assets (as of Sep. 2020)

Financial Asset	Millions of MXN
Cash and Cash Equivalents	150,016.8
Accounts Receivable	102,588.7
Loans to Employees	14,804.0
Derivative Financial Instruments	37,538.7

Source: CFE's financial statements.

⁵¹ Central government and federal government are used interchangeably.

84. The financial assets of the NAFIN are typical of banks. These include cash and cash equivalents, investments in securities, repos, derivatives instruments, and a portfolio of loans (table 6). The institution's policies allow it to use derivatives for hedging risks as well as for trading to generate revenues that support the institution's profitability. For those purposes, the NAFIN uses a wide array of derivative instruments, including interest rate and currency swaps, consumer price index and interest rate futures, as well as foreign exchange rate forwards. These activities, along with its investment activities, are subject to a robust framework of control processes overseen by the institution's Integrated Risk Management Committee and implemented through a dedicated risk management function.

Table 6. Mexico: Summary of *Nacional Financiera* Financial Assets (as of Dec. 2020)

Financial Asset	Millions of MXN
Cash and Cash Equivalents	76,799
Investment Securities	254,564
Repos	180
Derivative Financial	9,372
Loan Portfolio	213,341
Accounts Receivables	37,392

Source: NAFIN's financial statements.

85. While direct control and centralized management of all financial assets of central government entities are not warranted, the SHCP should strengthen its monitoring of those assets. The composition of the financial assets of FONADIN, CFE, and NAFIN reflects the heterogeneity of their structures and policy mandates. Within the central government, the entities that manage financial investments other than short-term liquidity are those with long-term liabilities, including social security and pension schemes and the deposit insurance fund. They do so under their own investment and risk management regimes, which are in line with their policy objectives and the profile of their liabilities. Therefore, expanding the SHCP's direct control over financial asset management of entities outside the BCG may not be legally feasible, nor advisable. The SHCP should instead focus on developing a comprehensive financial assets monitoring framework for all central public sector entities that receive transfers from or otherwise pose fiscal risks.

86. The SHCP's financial assets monitoring framework can be developed and implemented incrementally. It should start with the effective monitoring of compliance with existing guidelines for liquidity management. The scope of the framework can then be expanded to cover the management of all types of central public sector financial assets and be guided by a set of general prudential principles and guidelines⁵² to which every central public sector entity would have to demonstrate compliance. The compliance review process could be anchored to the existing budget review process for which central public sector entities have to present their financial plans for the upcoming fiscal year. This would entail additional reporting requirements that the SHCP would evaluate against its prudential principles and request corrective action when it identifies gaps in compliance. To exercise its monitoring role effectively, the SHCP would need

⁵² An example of these principles for Canada's Crown Corporations is included in box 7.

highly skilled staff with expertise in financial planning and analysis plus knowledge of the industry and economic sector in which the entity operates.

87. The SHCP should establish a process to monitor the compliance of concerned central public sector entities with the current liquidity management guidelines. A set of official guidelines for the management of liquidity by parastatals was issued in 2006 and later amended in 2010 and 2020: *"Acuerdo por el que se expiden los lineamientos para el manejo de disponibilidades financieras de las entidades paraestatales de la Administración Pública Federal"*. While these guidelines address all the main areas of risk mitigation for managing short-term liquidity, there appears to be no mechanism in place at the SHCP to systematically monitor compliance. The SHCP should put in place the processes to periodically collect the required information to evaluate whether concerned entities are managing their liquidity in compliance with the guidelines. The SHCP should also develop the necessary software and systems infrastructure to process the data it receives from the entities. It should also seek to automate the compliance verification process and the reporting of cases of noncompliance for follow-up corrective action. In addition to compliance monitoring and the analysis of noncompliance trends over time, the SHCP should review the guidelines annually to ensure they are relevant and up to date with new market developments such as new financial products.

88. The SHCP does not have sufficiently granular information to analyze the risk exposures of the central public sector's financial assets. The UCP systematically collects detailed information on central public sector debt to facilitate its mandatory approval process and its debt management function. However, no equivalent process exists to collect instrument and position level information for central public sector financial assets. Furthermore, it appears that there is no explicit mandate within the SHCP to collect such data. The SHCP does receive accounting and budget information on financial assets but that, while necessary, is not granular and rich enough for risk analysis and monitoring. Accurate, timely, and complete data on financial assets would allow the SHCP to perform various analyses to quantify the central public sector's aggregate exposure to risk factors such as foreign exchange risk, interest rate risk, inflation, as well as its credit exposure to the domestic and foreign private banking systems. Over time, the SHCP can accumulate sufficient historical data to use econometric models to analyze trends and develop indicators to help it identify unanticipated concentration or level of risk exposures. In turn, this information would give it the tools to proactively elaborate proposals for policy or regulatory action to mitigate risks and avert potential crises. Appendix IV shows an example from Peru of the types of analysis the SHCP could perform using the data collected on public sector financial assets.

89. The UCP should build on its pilot initiative to collect detailed information on the financial assets of certain central public sector entities. The UCP middle office has identified a subset of central public sector entities from which they have requested detailed information on financial assets. This subset mainly includes entities administered by the SHCP, such as nonorganic trust funds that rely entirely on budget transfers from the central government to finance their operations. This effort could serve as a starting point to build a set of data requirements by analyzing the types of financial assets these entities carry and identifying the data elements that need to be collected. The objective of defining data requirements for any financial instrument (table 7 illustrates a list of common financial assets) is to identify all the

contractual parameters that determine its future cash flows (for example, interest rate, currency, payment schedules, and early redemption clauses) and the relevant characteristics of its counterparty (such as issuer, bank, borrower, and derivative counterparty). This set of data requirements can then be used to build data templates to facilitate and eventually automate the data collection process. The SHCP should seek to leverage its existing data collection and management processes for liabilities and gradually expand them to include financial assets. It is also essential that the data on financial assets and liabilities be consistent in the sense that they should reflect the state of an entity's balance sheet at the same point in time. Therefore, the data on both financial assets and liabilities should be collected at the same time and with the same frequency, ideally monthly.

Table 7. Mexico: List of Common Financial Assets

Currency	Loans	Guarantees
Deposits	Loan participations	Other accounts receivable
CDs	Financial leases	Forward contracts
Bills	Repos	Swaps
Bonds	Bills of exchanges and acceptances	Futures
Structured notes	Equity shares	Options
Promissory notes	Investment fund shares or units	Other financial derivatives

Source: *IMF Monetary and Financial Statistics Manual and Compilation Guide* (4. Classification of Financial Assets and Liabilities).

90. The process of data collection could be progressively expanded and automated to facilitate its utilization for multiple analytical purposes. The responsibility for the data collection process should be transferred to an operational unit such as the UCP back office to allow the middle office to focus on analytical modeling. Ideally, the financial asset data collection process should be automated, and the information should be warehoused in the same system as liabilities data to ensure consistency and allow for streamlined reporting and analysis. The objective should be to build a complete and accurate data warehouse that can be leveraged to support multiple functions using the same source of information. Ideally, the resulting data snapshots of each entity's assets and liabilities should be reconcilable to the accounting information the entities already provide to the SHCP regularly. Such a data repository would be instrumental in enabling the SHCP to effectively perform its financial risk monitoring role.

91. For this function to be institutionalized, the SHCP's mandate could be broadened to include: (i) analysis and monitoring of central public sector financial assets; and (ii) setting guidelines on financial risk management. It is appropriate that the UCP middle office take the lead during the pilot phase given its staff's analytical capabilities and familiarity with the corresponding data for debt. However, dedicated resources will have to be allocated and organized within the SHCP to effectively execute the responsibilities under this mandate. In addition to being adequately resourced, the importance of this function should be recognized and communicated by the SHCP's senior management to ensure institutional buy-in internally and with the central public sector entities.

Legal and Regulatory Framework for Managing Central Public Sector Financial Assets

92. The SHCP's legal powers over the management of central public sector financial assets vary widely depending on the asset pool owner.

- For the BCG, financial assets are administered by the TESOFE through the TSA, without limitations. TESOFE can determine the investment policies and decisions through the Technical Committee, as described above in Sections II and III.B.
- For parastatals, under the authority granted by the Federal Public Administration Law (*Ley Orgánica de la Administración Pública Federal*, LOAPF) and the LTF, the SHCP has the power to set general principles and guidelines for sound management of financial assets and investment policies, these latter instruments to be adopted by the governing bodies of the respective entities.⁵³ The current guidelines⁵⁴ regulate i) the type of authorized investments (government securities, deposits with commercial banks for a maximum of 10 percent of available cash, deposits at the TESOFE, and equity in investment companies with an investment-grade rating); ii) conditions for repo operations; and iii) custody of government securities. The guidelines also foresee the monitoring and supervision powers of TESOFE for verifying compliance and a sanctions regime. It is unclear how these guidelines coexist in the case of regulated entities that include banking, insurance, and social security institutions.
- Finally, for nonorganic trust funds, the powers of the SHCP seem to be, in principle, the same as those for parastatals. Legal habilitations under the LOAPF and the LTF do not differentiate powers per type of central public sector entity. However, in practice, the SHCP has not made use of its prerogatives in this regard. Rather, the SHCP has exercised its influence, to the extent possible, through its powers defined in the constitutive laws, decrees, or trust fund contracts.

93. To improve the management of federal financial assets in this fragmented legal environment, the authorities have prepared a draft “Asset Management Law.” The draft law proposes an integrated financial asset management framework under which certain assets of the central budgetary government entities, parastatals, and nonorganic trust funds, regardless of their legal nature, would be subject to a set of requirements, including:

- Principles for financial asset management: All investments must aim at providing strategic and priority goods and services and/or infrastructure.
- Coverage: Coverage includes financial assets such as equity in commercial companies and those derived by the capitalization of profits, reserves, revaluation of assets, debt securities, loans from development banks and funds, equity participation in PPPs, and others. In addition, the draft law also covers certain nonfinancial assets such as ownership rights over real estate.
- Governance structure: An Investment Committee is created, among others, to i) approve investment policies that would include the definition of financial intermediaries, financial

⁵³ Central government and federal government are used interchangeably.

⁵⁴ *Acuerdo por el que se expiden los lineamientos para el manejo de disponibilidades financieras de las entidades paraestatales de la Administración Pública Federal* 2020.

instruments, authorized issuers, limits on investments, maximum maturity; ii) define the classification criteria for financial assets; iii) approve processes for custody; iv) approve individual acquisitions and disposals of financial assets of covered entities; and v) approve the credit risk ratings for financial investments. The committee would be composed of the Secretary of Finance and Public Debt, Treasurer, Undersecretary of Finance and Public Debt, and the Undersecretary of Expenditures.

- Investment planning: Entities' budgets submitted to the SHCP should cover all proposed financial investments for the fiscal year.
- Preauthorization for individual financial assets operations: Covered entities would require authorization from the Investment Committee, prior consent of TESOFE or the Undersecretary of Expenditure, and would be based on a cost-benefit analysis.
- Monitoring: Monitoring of compliance rests in the SHCP.

94. Compatibility of this proposal with the individual constitutional and statutory legal mandate of some central public sector entities is questionable and ultimately not desirable.

First, any proposal aimed at implementing guidelines for robust financial asset management should take into account the different levels of financial control and relations between the center and autonomous entities. While some entities, because of their predominantly fiscal support funding, are subject to a tighter financial oversight by the SHCP, others may need to operate at more of an arm's-length relationship, subject to robust governance frameworks and accountability mechanisms. Second, it is unclear how such a prescriptive fragment could provide sufficient flexibility to the entities to comply with their legal mandates and policy objectives. For example, the proposed framework could restrict an entity's ability to tailor its risk management policies and practices to its scope of activities and the size and nature of its risk exposure. Finally, such a framework could conflict with the regulatory and supervisory powers of the CNBV for development banks or other financial institutions or with CONSAR in the case of social security entities.

95. Recognizing the different relations between center and autonomous public entities, some countries have established general guidelines for financial risk management per type of entity.

This approach aims at implementing a comprehensive, entity-wide approach to risk that allows each entity to identify and manage financial risks on a timely basis across all business lines and areas under corporate control. Under such a framework, entities are expected to tailor their risk management policies and practices to take into account their mandate, scope, size, and the nature of their risk exposures. Some exemptions to the application of such a framework are needed as some entities are subject to specific financial risk management requirements by their respective supervisory authorities, for example, banking, insurance, pensions, etc. Box 7 illustrates an example of Financial Risk Management Guidelines for SOEs⁵⁵ adopted by the Ministry of Finance in Canada.

⁵⁵ Please note that the term SOE includes state-owned productive companies and companies with majority state ownership on a commercial basis.

Box 7. Canada's Financial Risk Management Guidelines for Crown Corporations

Under the Financial Administration Act, the MoF is responsible for the supervision, control, and direction of all matters relating to the financial affairs of Canada. With this legal basis, the Ministry of Finance issued a *"Financial Risk Management Guidelines for Crown Corporations."*¹ Below, the key elements:

Governance Arrangements

Risk management and internal control processes rest with the Board of Directors, overall risk philosophy, and risk tolerance. The guidelines specify other responsibilities for senior management, risk management functions (including if a standalone committee exists), and audit.

Scope

The guidelines cover treasury management activities, including raising financing, managing investments, and using derivatives.

Types of Risks

- Credit risk (including settlement risk)
- Liquidity risk
- Market risk (including foreign currency and interest rate risk and other market value-related risks such as equity risk and commodity risk)
- Operational and legal risks related to risk-generating activities

Risk-Related Reporting Requirements

- Timely and regular risk-related reporting to appropriate committees and the Board.
- All public reporting should provide a comprehensive, clear understanding of the entity-wide financial risks.
- Existence of risk financial risk management guidelines should be reported in the annual report or other public documents.

Review of the Guidelines

Every three years or as frequently as needed.

¹ <https://www.canada.ca/en/department-finance/programs/guidelines/financial-risk-management-guidelines-crown-corporations.html>

Source: Department of Finance, Canada.

96. The authorities should consider whether a more tailored and targeted approach to the current guidelines for parastatals is needed rather than creating an all-encompassing framework for financial asset management across the entire central public sector. This approach would promote the standardization of good practices for financial asset management across the central public sector, strengthening individual governance arrangements for financial investment decision-making across institutions, while allowing sufficient flexibility to the entities to identify and manage their risk across diverse business lines and be accountable for outcomes. In practice, this would mean adopting differentiated guidelines for decentralized entities, SOEs, organic trust funds, and nonorganic trust funds. The commercial and noncommercial nature of these entities will be considered when tailoring the respective regulations; certain categories of entities will need to be exempt from the applicability of the regulations, such as financial SOEs, social security entities, etc.

97. For the case of nonorganic trust funds, issuing general guidelines for sound financial asset management may prove ineffective in some cases and others would demand changes in their regulatory framework. Lacking legal reform, general guidelines issued by SHCP may not be enforceable against some trust funds if they contradict the patrimony's

financial regime established by their constitutive legal instrument. In other cases, implementation of the guidelines would only require modification of trust contracts and operational procedures. Further, for some trust funds, the application of the guidelines is not needed—for example, trust funds that operate only as pass-through vehicles or guarantee transactions. This assessment would need to be done on a case-by-case basis.

98. However, even with improved financial asset management, the more structural issue related to the lack of a comprehensive framework for financial oversight of entities outside the BCG would not be fully addressed. In this complex institutional setup, the powers of the SHCP for financial oversight and control are ill-defined and therefore difficult to enforce. In particular, the widespread of heterogeneous institutions with independent budgetary and financial authority dilute accountability and weaken fiscal control. These institutions tend to be subject to ad hoc financial management procedures, and centralization of their fiscal data for reporting purposes is difficult. Coordination of the overall financial reporting of trust funds (organic and nonorganic) and SOEs is lacking, and there is no centralized review of these entities' strategic plans and financial performance. While the SHCP exercises strong control over borrowing operations, the lack of comprehensive data and ongoing monitoring of financial performance of these institutions renders these safeguards less effective.

99. The authorities should consider strengthening the legal framework for financial oversight under a multistep approach. First, they could undertake a comprehensive review of the legal framework applicable to each category of central public sector entity for financial oversight. This would inform whether, within the SHCP's current legal powers, gaps or weaknesses would hinder the implementation of a sound financial management framework. Next, the authorities could issue regulations for strengthening reporting requirements and standardizing accounting standards. Third, in the medium term, the authorities could explore legal reform opportunities to support key elements of the overall financial oversight legal framework for public entities outside the central government (parastatals and nonorganic trust funds) in line with their constitutional and statutory autonomy, such as differentiated controls on borrowing, guarantees, performance management, corporate governance, audit, and others. See box 8 on specific recommendations made by the FTE for Mexico on the implementation of a financial governance and oversight framework for nonfinancial corporations. A similar framework for the rest of the public entities could be designed with an emphasis on the nonorganic trust funds. See Appendix V for good practices for a sound legal framework for the financial control and oversight of EBFs and Appendix VI for selected country examples of good practices on financial oversight elements for decentralized entities and EBFs.

Box 8. Recommendations of the Fiscal Transparency Evaluation for a Comprehensive Framework for the Financial Governance and Oversight of Nonfinancial Public Corporations

The FTE for Mexico made the following recommendations strengthening the financial governance and oversight of nonfinancial public corporations apart from PEMEX and CFE, which already have their own corporate governance and financial supervision regimes.

- Establish a list of nonfinancial public corporations that complies with the GFSM definition, namely commercial entities selling goods and services in the market and controlled by the government.
- Develop a framework for the financial oversight of these companies that would include inter alia an ownership policy, a corporate governance framework, procedures for financial reporting based on key performance targets, publication of quarterly and annual performance reports, and the analysis and reporting of quasi-fiscal activities.
- Publish a consolidated report of nonfinancial and financial public corporations in the budget documents and SHCP's quarterly reports.
- Set up a unit in the SHCP responsible for implementing and enforcing the financial oversight regime and for developing a monitoring system that provides early warning if any corporation is underperforming or in financial difficulties.
- Enact modifications to the LFPRH and operational regulations, as required, to implement the new arrangements.

Source: Section III, Recommendation III.3; *Fiscal Risk Analysis and Management, Mexico*, Fiscal Transparency Evaluation, October 2018.

C. Sovereign Asset and Liability Management

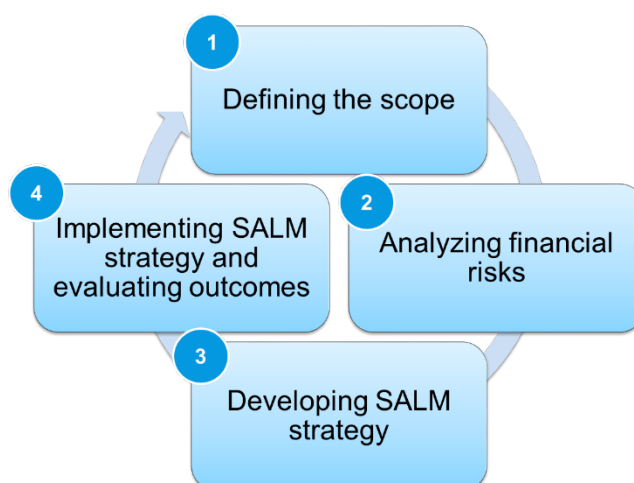
100. The SALM framework aims at identifying and mitigating financial risks stemming from mismatches in the risk exposure of assets and liabilities of the public sector. In isolation, public debt management is usually focused on financing the budget at the lowest cost (subject to acceptable risk) and financial asset management on ensuring liquidity while maximizing the purchasing power of long-term capital given a moderate risk level. SALM recognizes that managing individual asset and liability portfolios in isolation can lead to suboptimal results and create mismatches in the public sector's exposure to financial risks. The SALM framework presented here is not aimed at strengthening the management of (individual types of) assets and liabilities separately but rather to identify and mitigate financial risks from asset and liability mismatches at the level of the sovereign balance sheet.

101. An SALM framework can be implemented in four stages (figure 15). First, the scope of public sector entities and types of assets and liabilities to be included in the analysis need to be defined.⁵⁶ Second, the exposure of individual entities and the PSBS to financial risks (for example, currency risk, interest rate risk, liquidity/refinancing risk, inflation risk, commodity price risk, credit, and counterparty risk) are analyzed to identify natural hedges and mismatches. Third, an SALM strategy is developed that takes into account the government's ability and willingness to bear risks and typically includes a mix of risk avoidance, risk transfer, and risk retention. Fourth,

⁵⁶ Usually, nonfinancial assets are not included in SALM frameworks.

the SALM strategy is implemented and evaluated. An appropriate institutional framework and reporting mechanisms should support the SALM strategy.

Figure 15. Four Stages of a Sovereign Assets and Liabilities Management Framework



Source: IMF mission team.

102. Implementing an SALM framework poses some common challenges. They include the institutional framework and challenges in coordinating the balance sheet management of autonomous public sector institutions with their respective mandates and objectives; the availability of data at a sufficiently granular level; the difficulty in valuing assets; and the typical structure of PSBS.⁵⁷ Hence, examples of fully integrated SALM frameworks are rare. More commonly, countries adopt partial or ad hoc SALM strategies for subportfolios.⁵⁸ In a federal context, an SALM strategy often focuses on the federal/central government or central public sector, while taking into account the fiscal risks arising from the balance sheet of subnational governments.

103. The SHCP has started to reflect SALM considerations, particularly in its debt management operations. The UCP has identified SALM as a tool to strengthen the resilience of the PSBS. In developing its financing strategy, the UCP considers the currency composition of revenues.⁵⁹ As a result, the UCP has aimed at increasing issuance in domestic currency and has reoriented the foreign currency portfolio toward U.S. dollars. The domestic debt portfolio seems balanced with respect to exposure to refinancing risk, interest rate risk, and inflation risk, with the UCP issuing a mix of instruments, including T-bills, fixed-rate nominal bonds, and inflation-linked

⁵⁷ Including large nonfinancial assets, off-balance sheet items, and the ability to tax as a government's main asset.

⁵⁸ Examples are discussed here:

<https://www.imf.org/en/Publications/Policy-Papers/Issues/2016/12/31/Sovereign-Asset-Liability-Management-Guidance-for-Resource-Rich-Economies-PP4876>;

https://blog-pfm.imf.org/files/fatos-salm_final-edited.pdf;

<http://documents1.worldbank.org/curated/en/818281540481513145/pdf/WPS8624.pdf>;

<https://www.imf.org/en/Publications/WP/Issues/2019/12/27/Sovereign-Asset-and-Liability-Management-in-Emerging-Market-Countries-The-Case-of-Uruguay-48598>.

⁵⁹ Recognizing that the share of foreign currency inflows related to the sale of oil will decrease over time.

bonds with maturities of 3 to 30 years, as well as floating-rate bonds with maturities from 1 to 5 years.

104. Individual public sector entities outside the BCG have a good understanding of and ability to manage their balance sheet mismatches. The CFE, NAFIN, and BANCOMEXT analyze exposures to financial risks (including liquidity risk, currency risk, interest rate risk, and credit risk), report on them, and pursue active strategies to mitigate risks through borrowing strategies and the use of financial derivatives.⁶⁰ To a limited degree, public sector entities have started exploring asset and liability management (ALM) strategies among them. For example, the CFE and PEMEX have entered into discussions, facilitated by the UCP, to explore opportunities to transfer foreign currency risk exposure between the entities using arm's-length financial transactions.⁶¹

105. To progress with the development of an SALM framework, the authorities can build on existing functions and capabilities. They include:

- A PSBS expanding in coverage (Section I);
- A well-developed debt management framework for the BCG;
- High analytical capacity at the UCP;
- Strong oversight over borrowing decisions by central public sector entities (EBFs, nonfinancial and financial public corporations) combined with detailed knowledge of their respective debt portfolios;⁶²
- Experience in ALM at the level of individual public sector entities outside the BCG, particularly the CFE, PEMEX, and development banks; and
- Relatively well-developed domestic capital markets and ample experience in transacting in international capital markets.

106. However, some other functions and capabilities supporting an SALM framework need to be put in place. They include:

- An explicit mandate for SALM within the SHCP;⁶³

⁶⁰ For an initial analysis, the mission focused on the BCG, FEIP, FONADIN, CFE, and NAFIN/BANCOMEXT (Section III.B.). Other entities such as PEMEX and other development banks may follow similar ALM practices.

⁶¹ PEMEX's revenues are linked to U.S. dollars while about 60 percent of CFE's liabilities are denominated in foreign currency. While CFE has been able to hedge some of its U.S. dollar exposure using financial derivatives, about 25 percent of liabilities remain unhedged. Hence, CFE is short foreign currency, and PEMEX is potentially long foreign currency; a transfer of currency risk between the two institutions could result in more resilient balance sheets for both.

⁶² The back office at the UCP maintains a detailed database of central public sector debt that allows for granular analysis of financial risk exposures.

⁶³ The UCP's mandate focuses on the management of the government's debt portfolio and the oversight of borrowing activities of federal public sector entities.

- A formal coordination mechanism that allows for the discussion and negotiation of potential SALM strategies among independent institutions with distinct mandates, policy objectives, and governance frameworks;⁶⁴
- Granular information on financial assets outside the BCG, including those of organic and nonorganic trust funds and public corporations (Section III.B.);
- Potentially sufficient resources at the middle office of the UCP to conduct the additional analytical work identifying PSBS mismatches and developing strategies to mitigate them, including the necessary functionality of analytical tools; and
- A process for developing, implementing, and monitoring an SALM strategy, including reporting mechanisms and integration with the UCP's financing strategy.

107. The authorities should consider a phased approach to developing an SALM framework composed of four principal elements. A phased approach helps to gradually explore what SALM strategies are possible to implement given legal and regulatory constraints and policy conflicts among independent institutions. It allows building political commitment over time and to adjust strategies as experience with an SALM approach is gained. The authorities may consider three phases from the short term (implementable within one year) to the medium term (two to three years) and long term (more than three years). The principal elements phased include (i) the coverage of public sector entities,⁶⁵ (ii) the institutional framework, (iii) the identification and analysis of risk exposures, and (iv) the design, implementation, and monitoring of SALM strategies.

108. For SALM, the coverage of public sector entities should expand from the BCG to the central public sector and could over time include the Banxico. The inclusion of central public sector institutions should be based on materiality (for example, the size and risk exposure of their respective balance sheets) and practicality (the likelihood that an SALM strategy would be implemented given policy constraints and the legal environment). Initially, the authorities may focus on the BCG, organic and nonorganic trust funds holding significant assets and/or liabilities; PEMEX and the CFE; and (selected) development banks. Subsequently, the coverage may be expanded to other central public sector institutions, including other relevant trust funds, SOEs, financial public corporations, and social security funds. In this second phase, the authorities should also consider contingent liabilities, such as those stemming from PPPs or debt guarantees and intertemporal effects.⁶⁶ For contingent liabilities, their financial characteristics (for example, the currency for guaranteed debt) should be identified and the sensitivity of their realization to financial risks (e.g., the termination of a PPP due to commodity price changes is one example)

⁶⁴ While the SHCP can exert direct control over some parastatal institutions, including trust funds, others, such as PEMEX, the CFE, development banks, and social security funds are more independent in formulating and executing financial management strategies. Beyond the central public sector, the Banxico and subnational governments operate at a high level of independence from the SHCP.

⁶⁵ The proposed phases for expanding the coverage of public sector institutions differs between PSBS and SALM purposes. For PSBS purposes, the expansion aims at increasing transparency and providing the necessary information for macrofiscal management. For SALM purposes, the expansion aims at managing balance sheet mismatches more holistically over time.

⁶⁶ The intertemporal PSBS is discussed in Section I. For SALM purposes, the authorities would need to understand the exposure of future revenues and expenditures to financial risks (e.g., the sensitivity of revenues to oil price changes).

should be understood. The inclusion of contingent liabilities in the risk modeling may affect net exposures of the balance sheet, and SALM considerations may inform the government's decision on new explicit contingent liabilities.⁶⁷ Eventually, the Banxico's balance sheet should be considered in the SALM framework without encumbering its autonomy (see paragraph below).⁶⁸ Taking into account the Banxico's significant foreign currency reserves will have a bearing on balance sheet considerations given the natural hedges to foreign currency liabilities of the BCG or SOEs offered by foreign currency assets.⁶⁹ Given Mexico's federal structure, subnational governments may not be directly included in the SALM framework. However, potential fiscal risks stemming from them should be considered.

109. A sound institutional framework should include an explicit SALM mandate, over time an SALM committee, and appropriate analytical resources. The UCP is perhaps in the best position to take a leading and coordinating role in the introduction of an SALM framework and to advise the Minister of Finance on the implementation of SALM strategies.⁷⁰ To do so, the UCP may need to be assigned an explicit mandate to consider ALM aspects in its financing decisions beyond its current debt management mandate.⁷¹ This mandate can help align incentives, set and monitor the UCP's performance objectives, and mitigate risks of civil or administrative liabilities. As the coverage of public sector entities extends beyond those whose investment and borrowing decisions the SHCP directly controls, an SALM committee should be instituted. The SALM committee's role is to foster negotiations and decisions among independent institutions to mitigate potential mismatches in the financial characteristics of the PSBS and not to centralize decision-making of balance sheet management. The UCP may serve as the committee's technical secretariat, and its membership may include relevant units at the SHCP⁷² and public sector entities covered by the SALM framework. Such a committee may be established through a memorandum of understanding among the participating institutions and not require any legal changes. It is important that an institution's ability to meet its respective mandates and comply with regulatory requirements is unencumbered, and any transactions among independent institutions are at arm's length. The SALM committee should strengthen transparency with respect to for any SALM strategies implemented, including the transfer of risks among entities and any role of residual risk-taker of the UCP. The middle office at the UCP seems

⁶⁷ For example, the government may adopt a policy to only guarantee debt with certain characteristics—for example, debt in certain denominated currencies.

⁶⁸ Given significant foreign currency reserves, an earlier inclusion of the Banxico in an SALM framework is desirable, but this may be difficult to achieve practically.

⁶⁹ An example is Mexico's liability management operation in 2006 where the government and the Banxico entered into a market-based transaction to reduce the government's exposure to foreign currency debt, as described in G. Ortiz, "A Coordinated Strategy for Assets and Liabilities: the Mexican Experience," in *Sovereign Wealth Management*, J. Johnson-Calari and M. Rietveld (eds.), Central Bank Publications, 2007.

⁷⁰ In many other countries where the government is a net debtor, the respective debt management units play a leading role in the adoption of an SALM framework. Examples include Brazil, Peru, Uruguay, South Africa, among others. Koc (2014) discusses in more detail the role of debt management offices in implementing SALM frameworks (https://unctad.org/system/files/official-document/gdsddf2014misc1_en.pdf).

⁷¹ The assignment of such a mandate may be sufficient on a regulatory basis. However, the need for any amendments to the federal budget and Financial Accountability Law may be reviewed.

⁷² Such as the UCP, Economic Planning, and the TESOFE.

best placed to conduct the necessary analyses and lead the development of SALM strategies. This requires expanding capacity and resources (staff, models) for balance sheet risk analysis.

110. Granular analysis of financial risk exposures builds on but goes beyond the compilation of the PSBS. Based on information currently available in the PSBS, the authorities need to define the missing (granularity of) information for a quantitative risk assessment.⁷³ A subsequent risk assessment may initially focus on priority risks⁷⁴ (for example, currency risk and liquidity/refinancing risk) and expand to other risks over time (these include interest rate risk, inflation risk, credit/counterparty risk, concentration risk). Understanding vulnerabilities of the balance sheet is facilitated when using consistent valuations—ideally marked-to-market—of assets and liabilities, and across institutions (see Section I).⁷⁵ The (net) exposure to financial risks should be assessed at both the entity and aggregate level and include the identification of liquidity and currency mismatches as well as natural hedges discussed in Section I. Appendix VII illustrates a qualitative assessment of the exposure of financial assets and (contingent) liabilities to financial risks for the BCG,⁷⁶ FEIP, FONADIN, CFE, and NAFIN. The preliminary analysis suggests a net exposure particularly to currency risk as well as interest rate and inflation risks. Over time, this risk assessment should be fully quantified and integrated into the UCP's existing debt models. Box 9 illustrates an SALM strategy in Uruguay, including the quantification of priority risks.

⁷³ This definition of data requirements for SALM purposes should also help inform the data requirements for a database of public sector financial assets discussed in Section III.B. Examples of missing data may include the composition of financial assets by currency, their maturity structure, counterparties on an instrument level, the sensitivity to interest rates, and other risks (such as from any indexation, for example, to inflation).

⁷⁴ The gradual implementation of the risk assessment is meant to keep modeling requirements manageable and to facilitate the interpretation of results.

⁷⁵ Consistently valuing debt securities at nominal instead of face values as recommended in Section I improves the comparability and transparency of financial accounts. However, assets and liabilities valued at nominal values do not show the same sensitivity to changes in financial variables, such as interest rates, as market values do. Hence, for SALM purposes, market valuations will support the identification of balance sheet vulnerabilities.

⁷⁶ Financial assets and liabilities for the BCG includes liquid assets managed by the TESOFE and the government's debt portfolio managed by the UCP.

Box 9. Sovereign Assets and Liabilities Management in Uruguay

The authorities in Uruguay decided to adopt an SALM framework extending to the central government, the Central Bank, four major nonfinancial public corporations, and the state insurance bank to reduce vulnerability (especially to foreign currency shocks) at the aggregate level and reap efficiency gains by redistributing exposure among institutions.

Analysis has shown that the public sector is short foreign currency, inflation-linked local currency, and wage-indexed local currency with exposures varying across institutions as shown below.

Assets		Liabilities	
Financial Assets	20.3	Financial Liabilities	48.4
CP-Indexed Local Currency (LC-UI)	0.8	CP-Indexed Local Currency (LC-UI)	10.2
Nominal Uruguay Pesos (UYU)	0.6	Nominal Uruguay Pesos (UYU)	14.2
Wage-Indexed Local Currency (LC-UW)	1.4	Wage-Indexed Local Currency (LC-UW)	2.2
Foreign Currency (FX)	17.5	Foreign Currency (FX)	21.8
Other Assets	12.9	Net Financial Worth	-28.1
Property, Plant and Equipment	8.0	Other Liabilities	4.29
Other	4.9		
Total Assets	...	Total Liabilities and Net Worth	...

GENERAL GOVERNMENT

 Exposed to Real Depreciation of Exchange Rate

CENTRAL BANK

 Exposed to Real Appreciation of Exchange Rate

NON-FINANCIAL SOEs

 Exposed to Real Depreciation of Exchange Rate

STATE-OWNED INSURANCE BANK

 Exposed to Increase in Real Wages

Supported by a broad definition of public sector debt, the setup of the Public Debt Coordination Committee—including the Debt Management Office and Central Bank—and consistent marked-to-market valuations, the authorities have been able to implement several SALM measures, including:

- A liability management operation between the Ministry of Finance and Central Bank to reduce the cost of carrying foreign currency reserves and the government's exposure to currency risk;
- Currency forwards between the Central Bank and public corporations; and
- The issuance of treasury notes indexed to wages to match state-owned insurers' liabilities.

Source: A. Amante, among others, *Sovereign Asset and Liability Management in Emerging Market Countries: The Case of Uruguay*, IMF Working Paper No. 19/290, 2019.

111. The SALM strategy for each phase should comprise a mix of risk avoidance,

transfer, and retention. The authorities and individual public sector entities already apply a suite of tools to avoid risks (for example, borrowing limits and development of local currency capital markets) and transfer risks (these could include financial derivatives to hedge oil price, currency, and interest rate risks, for example) that may be geared toward SALM objectives. Given the BCG's and central public sector's net debt position, balance sheet mismatches may be reduced but cannot be eliminated. Also, given the dominance of the government's debt portfolio in phases 1 and 2, the government's financing program is likely to be the most significant lever for implementing an SALM strategy. Box 10 illustrates examples of mostly partial and subportfolio SALM strategies implemented in selected countries. In particular, potential components of an SALM strategy for each phase may include:

- **Phase 1:** Continue managing the BCG's exposure to foreign currency through increased issuance in domestic currency or hedging foreign currency risks through derivatives as the UCP is considering; within the foreign currency portfolio, shift toward exposures in U.S. dollars; set an explicit cash buffer to support more active liquidity management (Section II); consider increases in risk exposure (and expected return) in investment portfolios of trust

funds to match financial risks to (debt) liability portfolio; and explore options to transfer risks among SOEs through arm's-length transactions.

- **Phase 2:** Expand phase 1 activities to other institutions of the central public sector; negotiate among independent institutions; consider residual risk-taker function of the UCP (for example, related to matching social security fund assets and liabilities or risk exposures of public sector entities that cannot manage them); provide advisory and capacity from the UCP to lower-capacity institutions.
- **Phase 3:** Take into account the size and composition of foreign currency reserves in the financing strategy of the government and other public sector borrowers; consider balance sheet profiles of subnational entities in the central government's investment and borrowing decisions.

Box 10. Sovereign Assets and Liabilities Management Strategies in Selected Countries

- Decision-making authority with one entity (such as the Ministry of Finance in Canada)
- Coordination mechanism (Hungary, Switzerland, the United Kingdom, and Uruguay)
- Stress testing consolidated balance sheet (New Zealand)
- Keeping a minimum level of cash/liquidity buffer (South Africa, Turkey, Uruguay, among others)
- Currency composition (and duration) of foreign debt and foreign currency reserves (Canada, Denmark, Hungary, New Zealand, Turkey, Sweden, among others)
- Managing central government debt and cash reserves on a net basis (Finland, Greece, Turkey, for example)
- Offsetting on-lending against debt (Denmark and New Zealand are examples)
- Manage risk on a consolidated basis where government funds (such as pension funds) hold government debt (see the interest rate risk in Denmark)
- Debt buybacks or prepayments financed by reserves (Brazil, Mexico, Russia)
- Developing domestic debt markets based on qualitative understanding of characteristics of revenues (many emerging markets and developing countries)
- Guidelines for government-guaranteed entities on foreign currency risk (as in Denmark)
- Providing derivative transactions to government entities (New Zealand, for example)
- Intentionally maintain debt when assets are significant (Australia and Norway are examples)
- Pool deposits of public sector entities at Central Bank and allow the central government to borrow from the account (South Africa)

Source: Respective governments, IMF.

112. The SALM strategy should be communicated and monitored. Initially, an SALM strategy may be communicated as part of the government's financing strategy.⁷⁷ Over time, a

⁷⁷ As expressed in an annual borrowing plan as seen here:

https://www.finanzaspublicas.hacienda.gob.mx/work/models/Finanzas_Publicas/docs/ori/Espanol/Otros/2020/ABP_2021.pdf.

separate SALM strategy may be published. The implementation of any strategy should be monitored and evaluated ex-post, deviations from the original objectives explained, and lessons drawn should inform subsequent iterations consistent with a phased and iterative approach.

D. Summary of Recommendations

- **Recommendation III.1:** Analyze and explore opportunities to invest more actively trust funds' liquidity currently deposited at the Banxico to enhance profitability while maintaining an appropriately prudent risk profile consistent with their policy objectives. (SHCP/UCP middle office; short term)
- **Recommendation III.2:** Start collecting detailed granular information on central public sector financial assets to complement what exists for debt. Take a phased coverage approach starting with entities currently directly administered by the SHCP, then expand to the entire central government, and lastly to state-owned corporations (excluding the Banxico). (SHCP; short to medium term)
- **Recommendation III.3:** Create a function in SHCP (or expand the mandate of an existing unit within the SHCP) to be responsible for the analysis and monitoring of central public sector financial assets. The function should start by implementing a monitoring program for the management of liquidity, based on existing official guidelines, and gradually expand to cover comprehensive monitoring of financial assets of the central public sector (except the Banxico). (SHCP; short to long term)
- **Recommendation III.4:** Explore within the existing legal powers whether the SHCP could issue guidelines for prudent financial risk management policies and practices per category of legal entity, which would guide each entity's governing body to develop their own financial risk policies. Exceptions for financial entities and other regulated institutions are advisable. (SHCP; short to medium term)
- **Recommendations III.5:** Issue regulations for strengthening reporting requirements for parastatals and nonorganic trust funds. In the medium term, the authorities could explore legal reform opportunities to strengthen the legal power of the SHCP for the financial oversight and control of these entities in line with the constitutional and statutory autonomy of some public entities. (SHCP; short to medium term)
- **Recommendation III.6:** Expand the coverage of central public sector institutions in an SALM framework in phases starting with the BCG, priority trust funds and development banks, and CFE and PEMEX, followed by the central public sector entities, other than the Banxico but including contingent liabilities and intertemporal effects; and, over time, the full central public sector, including the Banxico. (SHCP; short to long term)
- **Recommendation III.7:** Establish an institutional framework for a phased implementation of an SALM approach, including an explicit ALM mandate for the UCP, an SALM coordination committee to foster negotiations among independent institutions, and adequate resources and capacity at the middle office of the UCP. (SHCP/UCP; short to medium term)

- **Recommendation III.8:** Assess net exposures to financial risks and natural hedges for individual public sector entities and in aggregate, building on the compilation of the PSBS (but at a more granular level), ensuring the consistent valuation of assets and liabilities and eventually integrating the analysis in existing debt models. (UCP in cooperation with Economic Planning; short to medium term)
- **Recommendation III.9:** Develop, implement, and monitor SALM strategies composed of a mix of risk avoidance, transfer, and retention for each phase. (SHCP/UCP; short to long term)

Appendix I. Enhancing Transparency on Reconciliation of Traditional and Expanded Fiscal Indicators: Country Examples

A. United Kingdom

1. The Whole of Government Accounts (WGA) is the wider report on the financial position and performance of the public sector in the United Kingdom, the accounts being prepared under International Financial Reporting Standards (IFRS). The report is published on an annual basis four months after the end of the reference period, contains extensive information on government fiscal performance. Conversely, the more traditional public finance indicators apply the national accounts rules (European System of National and Regional Accounts) and are available within a much shorter timescale than WGA.

2. The WGA contains a comprehensive annex describing the several bridging tables with a corresponding narrative on the main explanatory elements that drive the following comparisons with the traditional indicators, among others:

- Public sector net debt (traditional) and WGA net liabilities.
- Public sector current budget deficit (traditional) and WGA net expenditure.

3. The reconciliation provides illustrative figures (figure I.1) as well as detail bridging tables together with an adequate narrative on the main drives behind the differences.

I.1 Comparison of National Accounts and Whole of Government Accounts Measures for Public Sector Financial Position

	National Accounts measures			WGA
	Public Sector Net Debt	Public Sector Net Financial Liabilities	Public Sector Net Worth*	WGA Net Liabilities
Assets			Non-financial assets	Non-financial assets
		Illiquid financial assets	Illiquid financial assets	Illiquid financial assets
	Liquid financial assets	Liquid financial assets	Liquid financial assets	Liquid financial assets
Liabilities	Government borrowing	Government borrowing	Government borrowing	Government borrowing
		Other financial liabilities	Other financial liabilities	Other financial liabilities
		Funded public sector pensions	Funded public sector pensions	Funded Public sector pensions
			Unfunded Public sector pensions*	Unfunded Public sector pensions
			PFI contracts*	PFI contracts
				Provisions

* Unfunded public sector pensions and PFI contracts will be included in the Government Financial Statistics Manual measure of PSNW, but not in the European Statistics Agency 2010 based measure

Note: PFI = Private Finance Initiative

Source: www.gov.uk/government/collections/whole-of-government-accounts.

B. Brazil

4. The monthly Central Government Primary Balance Bulletin, widely used for fiscal policy discussions, reports on revenues, expenditures, and the traditional balance indicator of the federal government, which is ultimately the main fiscal indicator for fiscal policy analyses. More recently in 2016, the treasury started producing and disseminating quarterly general government data in line with the GFSM 2014.

5. Reconciliation between the traditional Central Government Primary Balance Bulletin data and GFS expanded indicators has been recently addressed with the publication of the first report on reconciliation (table I.1). The report provides for the following comparisons, including bridge tables and textual explanation:

- Traditional and expanded central government revenues and expenditures.
- Traditional central government balance and expanded net lending/borrowing.

6. For example, the table shows all detailed steps the analyst should take to come from the total expenditure figure reported by the traditional fiscal statistics to reach the total expenditure figure reported under international standards. The steps are grouped by a different block of adjustments, namely, methodological changes, differences in the basis of recording (cash versus accrual), and adjustments in institutional coverage.

Source:

https://sisweb.tesouro.gov.br/apex/?p=2501:9::9:P9_ID_PUBLICACAO_ANEXO:12772.

Table I.1. Mexico: Traditional Central Government Primary Balance Bulletin Expenditures Compared to GFS

2M	Despesa (2+31)	
2	Gasto	
2.1	Transferências e Despesa RTN, dos quais: ^{1/}	2,210,934
	Transferências por repartição de receitas	263,798
	Despesa total	1,947,136
2.1.1	Ajustes nas Transferências e Despesa RTN, dos quais:	91,252
	Diferenças metodológicas ^{2/}	
	(-) Compensação ao RGPS pelas desonerações da folha	-9,407
	(-) Operações intraorçamentárias	-1,599
	(-) Operações financeiras de subsídios e subvenções	-14,423
	(-) Receitas de retorno de subsídios e subvenções	2,239
	(-) Aquisição de ativos financeiros	-59,243
	(-) Fundos Constitucionais	-8,553
	(-) Registro FIES	2,762
	(-) Aquisição de ativos não financeiros ^{3/}	-24,531
	(+) Contribuição social imputada	97,765
	(+) Contribuição patronal intraorçamentária - RPPS	21,739
	(+) IRRF Governos Regionais	71,074
	(+) Consumo de capital fixo ^{3/}	38,782
	Diferenças de registro ^{2/}	
	(+) Registro contábil - Competência x Pagamento Efetivo	4,400
	(+) Equalização de passivos 2010 a 2014	0
	(-) Equalização de passivos 2015	0
	Ajustes de abrangência ^{2/}	
	(-) Despesas do Banco Central	-5,111
	(-) Fabricação de Cédulas e Moedas	-1,048
	(-) Complemento para o FGTS	-36
31	Investimento líquido ^{3/}	
	(+) Aquisição de ativos não financeiros ^{3/}	24,531
	(-) Venda de ativos não financeiros ^{3/}	-7,476
	(-) Consumo de capital fixo ^{3/}	-38,782
	Discrepância não explicada	-1,833
2.2	Despesa primária GCO (2.1 + 2.1.1) ^{4/}	2,302,186
2.2.1	Gasto de juros ^{4/}	430,626
2.3	Despesa (2.2 + 2.2.1) ^{4/}	2,732,812

Appendix II. Forecast Performance: Some Observations

1. This appendix identifies some characteristics of TESOFE's cash flow forecast and performance. It is based on a file helpfully sent to the mission (Estadística_CashM_FMI, 29-Abr-2021). The file includes a full breakdown for cash flow outturns and forecasts in 2019–20. The forecasts are those made at the beginning of each month for the month ahead; that specificity qualifies some of the comments below.

2. The daily forecast errors for each of the major cash flow streams are far from negligible (see table II.1).¹ As would be expected, the errors for COVID-affected 2020 are greater. Debt servicing (interest plus principal payments) shows, as would also be expected, the lowest error. More surprising is the significant positive error for debt financing; it may be that the debt issuance forecasts persistently included an element of caution. The errors in the net cash flow are proportionately very large, as would be expected when the average figure is small.

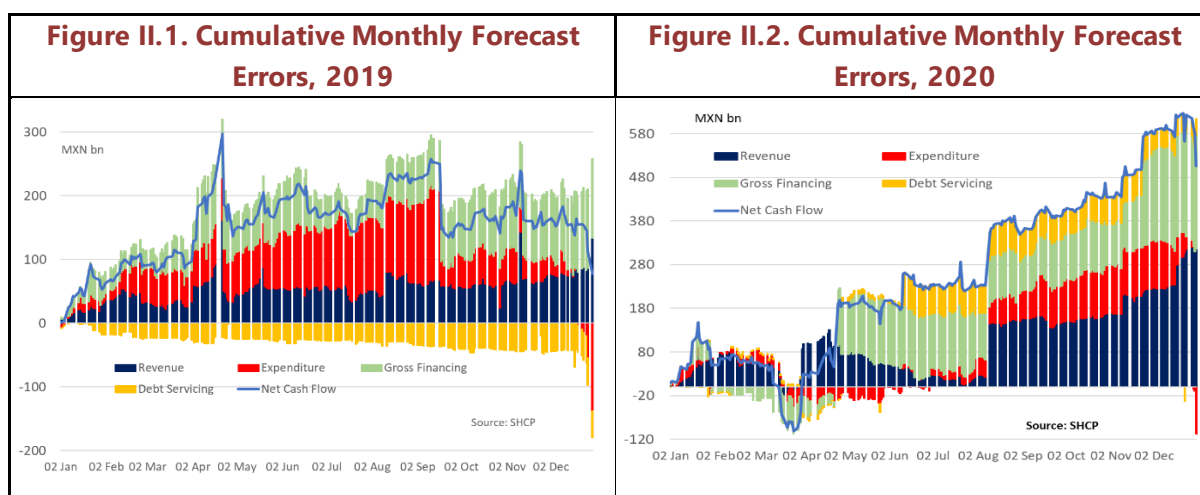
Table II.1. Mexico: Average Daily Cash Flow and Forecast Error, 2019–20

<i>Daily Data</i> <i>MXN bn or %</i>	2019			2020			Total 2019–20		
	Average	Error	Percent	Average	Error	Percent	Average	Error	Percent
Income	15.94	0.53	3.30	15.98	1.26	7.8	15.96	0.89	5.6
Expenditure	15.60	0.55	3.50	16.11	0.43	2.7	15.85	0.49	3.1
Debt Servicing	12.83	–0.15	1.20	13.90	0.17	1.2	13.37	0.01	0.1
Gross Financing	12.76	0.50	3.90	14.17	1.02	7.2	13.47	0.76	5.6
Total	00.27	0.31	114.80	0.14	2.01	1435.7	0.21	1.16	552.4

Source: IMF mission team based on SHCP data.

3. The excessive caution embedded in the forecasts is further illustrated in figures II.1 and II.2. They show the cumulative forecast errors for each of the two years which, except for debt servicing in 2019, are uniformly positive (with all three other main flow categories being significantly so). The figures accumulate each of the accumulated monthly errors, and in practice, the forecast will have been rebased each month, so the charts are not a reflection of a large, unanticipated buildup in cash balances (although they have increased somewhat over this period). The charts do, however, indicate the difficulty of predicting expenditure in December where the errors reversed. More surprising is the large underestimation of revenue flows (primarily non-oil tax revenue) following COVID, again probably a reflection of caution, in this case from UPI.

¹ In summing the total of each column, expenditure and debt servicing should be subtracted from income and gross financing. In figures II.1 and II.2, the sign has been reversed on both expenditure and debt servicing to indicate their contribution to the total cumulative error.



Source: SHCP.

4. Also relevant is the variability of the errors, with their standard deviations summarized in table II.2. Much of the variation will reflect timing changes, but even the errors for debt servicing payments are surprisingly large. The standard deviations of the errors for expenditure, over which TESOFE has a degree of direct control, are less than those for revenue, but also substantial.

Table II.2. Mexico: Average Daily Forecast Errors and Their Standard Deviations, 2019–20

Daily Data MXN bn	2019		2020		Total 2019–20	
	Average Error	Standard Deviation	Average Error	Standard Deviation	Average Error	Standard Deviation
Income	0.53	12.72	1.26	11.59	0.89	12.17
Expenditure	0.55	10.20	0.43	9.67	0.49	9.94
Debt Servicing	–0.15	4.27	0.17	8.85	0.01	6.95
Gross Financing	0.50	5.97	1.02	12.51	0.76	9.81
Total	0.31	16.64	2.01	20.52	1.16	18.71
Standard Deviation of Total If Components Independent		17.88	...	21.51	...	19.78

Source: IMF mission team based on SHCP data.

5. Table II.2 also calculates the standard deviation of the error of the total if the errors of the four cash flow streams were completely independent.² The figures are close to (although slightly less than) the standard deviation of the total. That suggests very little attempt to gear expenditure to actual revenue flows (which is a characteristic of countries that are rationing cash). However, it also suggests that there is no attempt at using the financing program to offset errors in other cash flows. This is illustrated more fully in table II.3, which juxtaposes gross financing and all other flows. There is only a very slight suggestion that financing flows have been used to offset forecast errors.

6. Table II.3 shows the standard deviation of the daily cash flow error over the two years at MXN18.71. If the daily cash flow errors were independent of each other over a month

² The standard deviation of the sum of a number of independent series is equal to the square root of the sum of the squares of the standard deviations of each series.

of, say, 25 working days, the standard deviation of the cumulative error would be MXN80 billion. In fact, the average monthly cumulative error is just MXN24 billion. This difference is evidence of serial correlation, that is, the errors are not independent of each other and are highly likely to reflect timing changes as an expected flow materializes on a different day than originally expected.

Table II.3. Mexico: Gross Financing and Other Flows: Forecast Errors and Standard Deviations, 2019–20

<i>Daily Data</i> <i>MXN bn</i>	2019		2020		Total 2019–20	
	Average Error	Standard Deviation	Average Error	Standard Deviation	Average Error	Standard Deviation
Gross Financing	0.50	5.97	1.02	12.51	0.76	9.81
Other Flows	0.19	15.91	0.98	17.00	0.40	16.48
Total	0.31	16.64	2.01	20.52	1.16	18.71
Standard Deviation of Total if Components Independent		16.99	...	21.11	...	19.17

Source: IMF mission team based on SHCP data.

Appendix III. The Cash Buffer

A. The Determinants

1. There is no one-size-fits-all arithmetical technique to determine the right size of the cash buffer. Depending on various factors, including the levels of risk exposure and risk tolerance of the government, the levels of buffers vary considerably across countries. The optimal level depends on a country's financial maturity, economic flexibility, and access to financial markets as well as exposure to natural disasters. There is a wide range of practices in different countries, with buffers variously defined as a simple rule of thumb to those based on sophisticated statistical analysis.¹

2. It is useful to distinguish between two components of the cash buffer. A "transactions" buffer must be sufficient when taking into account emergency credit or other borrowing facilities to meet daily treasury payments and transfers under most circumstances but should otherwise be as low as possible to save costs. In addition, a "safety" or "precautionary" buffer is needed to tide over times of financial stress or crisis, however generated (for example, by a market sudden stop, cybercrime, a new global financial crisis, or another pandemic).

3. There are other analytical approaches. Some have identified a buffer needed for cash management (to cover cash flow volatility, periods of extended outflow, and forecast errors) and a buffer for debt management that is focused more on debt servicing requirements in the period ahead and the risk of market disruption causing a failure to meet issuance targets. However, the building blocks of these different approaches are essentially the same and the transactions/safety distinction arguably has the advantage of a more integrated approach to debt and cash management, and the mitigants or safety nets are mostly available independent of whether the problem is related to debt or cash management.

4. Several variables need to be considered in deciding the size of the cash buffer. They are summarized in box III.1.

¹ For examples, and discussion of analytical techniques, see Y. Hürçan, F. Koç, and E. Balıbek, *How to Set Up a Cash Buffer? A Practical Guide to Develop and Implement a Cash Buffer Policy*, IMF FAD, Dec 2020, <https://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>; P. Cruz and F. Koç, *The Liquidity Buffer Practices of Public Debt Managers in OECD Countries*, OECD, 2018, <http://dx.doi.org/10.1787/3b468966-en>; and M. Williams, "Targeting the Cash Balance," Presentation at PEMPAL Treasury Community of Practice 2016, https://www.pempal.org/sites/pempal/files/event/attachments/pempal-mike_williams_targeting_the_cash_balance_mar16.pptx.

Box III.1. Determining the Cash Buffer: The Building Blocks

- Volatility of daily cash flows: In general, the greater the volatility the more difficult it will be to forecast flows accurately and plan borrowing and investment, in turn requiring a larger buffer.
- Reliability of the available cash forecasts: The more reliable the forecasts, the more borrowing and investment can be planned with greater confidence, with the reliance on the cash buffer mainly for unforeseen shortfalls.
- Scope for smoothing the forecast profile with transactions in the market (and therefore, on the liquidity of the market): The greater the access to the market and scope for smoothing, the lower the reliance on the cash buffer; the buffer will then be used mainly for times of tighter liquidity or market stress.
- Ability to manage unanticipated fluctuations and the timescale over which they can be managed: The quicker the treasury can respond, the lower will be the reliance on cash buffer.
- Risk of market disruption affecting the ability to raise finance: An appropriate allowance should be included in the cash buffer.
- Existence of safety nets (for example, emergency credit facilities from the central bank or commercial banks, contingent credit facilities or other short-term assets): Such facilities can reduce the size of the cash buffer to that extent.
- Cost of carrying an unnecessarily high buffer is usually expensive: The interest earned on any cash is usually much less than the cost of financing the buffer, which at the margin will be represented by the interest on a treasury bond. There is a familiar trade-off between cost and risk.

Source: IMF mission team.

5. It is the combined effect of these factors that needs to be considered. In principle, there would be no need for any cash buffer at all if the forward forecasts were perfect, the money market sufficiently liquid at all times with little or no risk of market disruption, cash managers had access to a variety of money market instruments and the flexibility to design their borrowings and investments to perfection, and there was recourse to safety nets in case of emergencies.

6. In practice, ministries of finance and treasuries face considerable uncertainty. Forecasts are never perfect, and most countries do not have daily access to borrowing instruments. Many countries, including Mexico, also have a marked cash profile within a month, reflecting the timing mismatch between tax receipts and salary payments, for example. There may be other seasonal patterns or uncertainties to take into account. Such variability may necessitate periods of a higher cash buffer. Historical variation in cash flows is relevant, but statistical measures of past fluctuations may not be a reliable future guide. The combined supply and demand shock from COVID-19 and the responses from governments and markets mean that past cash flow data will have been a poor guide; many countries are considering whether, or have already decided, to prudently increase their buffer accordingly.

7. This uncertainty leaves some countries unable to determine the required cash buffer. Some adopt simple rules of thumb—for example, linking the size of the buffer to the quantum of debt servicing or other anticipated expenditure flows over the next month, quarter, or longer. However, with a degree of macroeconomic stability, improved forecasting, and some scope to smooth cash flows, countries can refine their approach to the cash buffer.

B. The Cash Buffer in Mexico

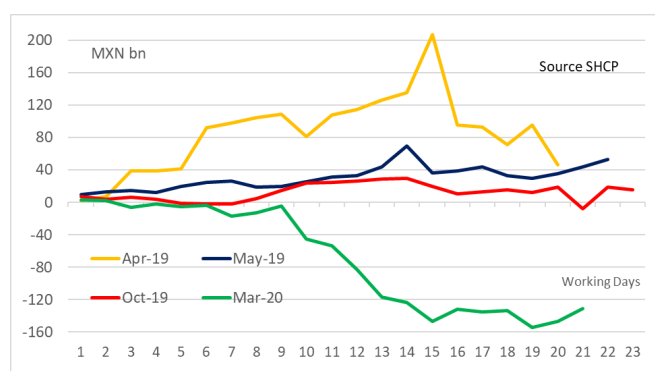
8. Daily cash flows are volatile (as summarized in Appendix II). But it is not the volatility in actual cash flows that is relevant but the extent to which those flows can be forecast; thus, the most important factor for the determination of the target or optimal balance is the errors in the cash forecast. However, summary statistical measures on their own are potentially misleading when there is no clear understanding of the underlying distributions, and there is anyway clear evidence of serial correlation (Appendix II). Moreover, conventional confidence limits are of little value unless there are also mechanisms in place to deal with the 1 percent or 5 percent of fluctuations that exceed the statistically calculated requirement.

9. A more promising approach is to look at the maximum unanticipated fall over any period where intervention is no longer practical. In this context, the timescale over which unanticipated fluctuations can be managed is important. In Mexico at present that is probably somewhere between one and two weeks. Cetes auctions are held weekly but announced a week in advance. A timetable of this order is normal practice, but some countries have override provisions that allow them to issue T-bills with an additional auction to a shorter timescale (perhaps targeted specifically at market professionals). Alternatively, a compressed timetable might be acceptable for 28-day Cetes. It might also be possible to hold some deposits on a call basis, which would guarantee a degree of liquidity but on average pay a rate above the overnight rate (as do money market funds in developed markets).

10. On the assumption of a lag of up to two weeks, then the maximum forecast error that is likely to accumulate over that period is a relevant indicator. In the 24 months of 2019–20, there were a few periods when the cumulative negative error was significant, although in some of these cases a significant negative error followed a significant positive error, suggesting a timing change. Figure III.1 identifies four months of interest:

- In April 2019, expected non-oil tax revenue was much less than expected, but that followed an unanticipated extra inflow the previous day; despite the size of the fall, it is perhaps not a useful example.
- In May 2019, there were also some revenue falls following an unexpected increase; the shortfall totaled about MXN40 billion over five working days.
- In October 2019, the fall of a cumulative MXN40 billion over seven working days was less spectacular but with a range of forecast errors (although a large one at the end of the period when expected oil revenues were delayed by a day).
- The massive cumulative fall in March 2020 of about MXN130 billion over 12 working days is likely to have been related to COVID. There were lower-than-expected financing receipts (both internal and external), falls in non-oil revenue over a number of days, and some unanticipated expenditure increases.

Figure III.1. Cumulative Forecast Errors in Selected Months



Source: SHCP.

11. These results are partial at best. A review of a longer period of forecast errors is needed to come to a firmer judgment on the required transactions balance. The data used were also based on monthly forecasts for the month ahead and were thus rebalanced at the end of every month and did not necessarily give a good guide as to what might have happened across the end of a month. That would be for further investigation, but the results suggest that a transactions balance of at least MXN40 billion should be required. An allowance should be added to this for the fact that it will not have been possible to fully smooth the cash flow even if the forecasts had been perfect. On the other hand, TESOFE does have access to a range of safety nets, as described in the main text.

12. To this estimate should be added a precautionary or safety buffer. Mexico's monthly bond and Cetes issuance is in the order of MXN50 billion and MXN150 billion, respectively. Domestic market disruption is less likely than the closure of the external markets, and Mexico is no longer reliant on external issuance. In the event of domestic market turbulence and a failure of bond auctions, it is very unlikely that it would be impossible to sell Cetes. Indeed, auction data over the last five to six years suggest an extremely strong performance, with a bid to cover ratios averaging three times for Cetes and nearly that for other securities. That does not of course preclude occasional difficult periods.

13. To take a cautious illustration, if the domestic bond market were to close for a month and it was possible to sell only three-quarters of the normal volume of Cetes, a reserve of MXN80 billion would be needed, in addition to the transactions buffer. It should be noted that even at the peak of the global financial crisis, Mexican bond and Cetes markets remained open, though the authorities did need to shift their funding mix to some extent. Similarly, at the start of the COVID pandemic, the authorities were able to issue extra Cetes when the bond market was distorted by an outflow from nonresident bondholders.

14. This analysis has been only illustrative. It suggests the need for a cash buffer in normal circumstances on the order of at least MXN125 billion, possibly closer to MXN150 billion. The TESOFE should further develop the analysis.

Appendix IV. Example of Public Sector Financial Assets Analysis: Peru

The following is an excerpt from the document "Strategy for Asset and Liability Management 2019 – 2022", published by Peru's Ministry of Economy and Finance. It illustrates the types of analysis that can be done for public sector financial assets provided sufficient data is available.

1.1. FINANCIAL ASSETS

1.1.1. Position of the Nonfinancial Public Sector (NFPS) Financial Assets

At July 2018, the total NFPS financial assets reached S/ 115,746 million (16% of GDP), a slight increase of 1.6% against the December 2017 result. By ownership, the resources of the public entities deposited at the Public Treasury and the Private Financial System correspond to 50.4%; the allocated and committed funds to 23.1%, and the Public Treasury own resources to 21.1%.

NFPS Financial Assets by Ownership and Source

(In Million Soles)

By Ownership and Source	Dec.-17		Jul.-18		Usage Consideration
	Balance	PCT.	Balance	PCT.	
	(%)		(%)		
1. Public Treasury Own Resources	27,419	24.1	24,393	21.1	They are resources coming from tax collection (RO) and debt operations (ROOC). They are mainly aimed at covering budgeted expenditures, paying debt service, and covering expenses for investment projects.
1.1. Ordinary Resources (RO)	13,426	11.8	14,403	12.4	
1.2. Resources by Credit Operations (ROOC)	13,993	12.3	9,989	8.6	
2. Funds, Allocated and Committed Resources	27,501	24.1	26,760	23.1	They come from different sources and, by Law, they have their own accumulation and spending rules. The FSF and the RSL are to keep liquidity reserves to face instability. Additionally, there are other funds for public investment, technological innovation and others.
2.1. Fiscal Stabilization Fund (FSF)	20,718	18.2	20,896	18.1	
2.2. Secondary Liquidity Reserve (RSL)	0	0.0	0.1	0.0	
2.3. Other funds	3,578	3.1	3,338	2.9	
2.4. Allocated and Committed Resources	3,205	2.8	2,525	2.2	
3. Resources in Public Entities in the Public Treasury	20,295	17.8	25,948	22.4	They mainly come from public entities own resources and from Public Treasury transfers. Depending on funding sources, they are aimed at covering investment plans and the current expenditure of the own entities. Most of these resources are found in the Treasury's Single Account (CUT).
3.1. Specified Resources (RD)	9,632	8.5	12,797	11.1	
3.2. Directly Collected Resources (RDR)	4,310	3.8	4,935	4.3	
3.3. Donations and Transfers (DyT)	3,862	3.4	4,502	3.9	
3.4. Other Resources	2,491	2.2	3,714	3.2	
4. Resources in Public Entities in the Private Financial System	32,134	28.2	32,412	28.0	These resources mainly come from intangible assets. For instance, the resources from the FCR are to fulfill the obligations related to pension schemes managed by ONP. Regarding EsSalud, the resources correspond to revenues to cover expenditures on health benefits.
4.1. Consolidated Reserve Fund (FCR)	16,350	14.3	17,108	14.8	
4.2. Companies - FONAFE	5,097	4.5	5,070	4.4	
4.3. EsSalud	4,200	3.7	4,511	3.9	
4.4. General Government	6,487	5.7	5,723	4.9	
5. Accounts Receivable	6,589	5.8	6,233	5.4	They are resources collected by the central government through debt operations to be transferred to a public entity in charge of debt service.
TOTAL	113,937	100.0	115,746	100.0	

Source: MEF – DGETP.

Of the total of the financial assets in the NFPS Funds, Allocated and Committed Resources represent 51.1%, being all ruled by their own Law, in addition to Resources in Public Entities in

the Financial System, which demonstrates the presence of rigidities that makes it difficult to establish a true global management of the treasury.

1.1.2 FINANCIAL ASSETS PORTFOLIO ANALYSIS

a. Instrument-based structure

With respect to the assets managed by the Public Treasury (S/79,838.0 million), term deposits are the main instrument for capitalization (54.4%), and they can be mainly found at the Central Reserve Bank of Peru (BCRP). Part of this is capitalized through auctions of term deposits in the private financial system conducted by the BCRP, in conjunction with the Public Treasury, to handle the monetary policy conducted by the central bank.

NFPS Financial Assets by Instruments

(In Million Soles)

<u>By Type of Instrument</u>	<u>Dec.-17</u>		<u>Jul.-18</u>		<u>Change</u>	
	<u>Balance</u>	<u>PCT. (%)</u>	<u>Balance</u>	<u>PCT. (%)</u>	<u>Balance</u>	<u>Var. (%)</u>
<u>1. Resources Managed by the Public Treasury</u>	<u>78,400</u>	<u>68.8</u>	<u>79,838</u>	<u>69.0</u>	<u>1,438</u>	<u>1.8</u>
1.1. Current Account	<u>12,637</u>	<u>11.1</u>	<u>10,279</u>	<u>8.9</u>	<u>-2,358</u>	<u>-18.7</u>
1.2. Term Deposits	<u>58,770</u>	<u>51.6</u>	<u>62,917</u>	<u>54.4</u>	<u>4,147</u>	<u>7.1</u>
1.3. Investments in Securities	<u>404</u>	<u>0.4</u>	<u>409</u>	<u>0.4</u>	<u>5</u>	<u>1.1</u>
1.4. Account Receivables	<u>6,589</u>	<u>5.8</u>	<u>6,233</u>	<u>5.4</u>	<u>-356</u>	<u>-5.4</u>
<u>2. Resources Managed by Public Entities</u>	<u>35,537</u>	<u>31.2</u>	<u>35,908</u>	<u>31.0</u>	<u>370</u>	<u>1.0</u>
2.1. Current and Savings Account	<u>10,485</u>	<u>9.2</u>	<u>11,575</u>	<u>10.0</u>	<u>1,090</u>	<u>10.4</u>
2.2. Term Deposits and Others	<u>9,329</u>	<u>8.2</u>	<u>8,166</u>	<u>7.1</u>	<u>-1,163</u>	<u>-12.5</u>
2.3. Investment in Securities	<u>15,723</u>	<u>13.8</u>	<u>16,167</u>	<u>14.0</u>	<u>444</u>	<u>2.8</u>
<u>TOTAL</u>	<u>113,937</u>	<u>100.0</u>	<u>115,746</u>	<u>100.0</u>	<u>1,809</u>	<u>1.6</u>

Source: MEF – DGETP

Regarding the assets managed by public entities in the private financial system (S/ 35,908.0 million), investment in securities is seen as the main capitalization instrument (14.0 %). The intangible assets from the Consolidated Reserve Fund (CRF) and EsSalud, managed in accordance with their policies and investment regulations, are highlighted. Public entities specifically keep their balances in current accounts and term deposits, under the legal regulation in force¹.

b. Currency-based structure

In the currency-based structure of the resources managed by the Treasury, it is seen that the prominent currency is the local currency, followed by the U.S. dollar with resources coming mainly from the FSF. The local currency is also the main currency for resources managed by public entities, followed again by the U.S. dollar, coming basically from the CRF resources. Both groups keep an important part of the assets in dollars. Nevertheless, their exposure to the foreign exchange risk is explained by the fact that as they are reserves, they must be denominated in a convertible foreign currency.

NFPS Financial Assets by Currency

(In Million Soles)

By Currency	Dec.-17		Jul.-18		Change	
	Balance	PCT (%)	Balance	PCT (%)	Balance	PCT (%)
1. Resources Managed by the Public Treasury	78,400	68.8	79,838	69.0	1,438	1.8
1.1. Soles	44,420	39.0	48,750	42.1	4,330	9.7
1.2. Dollars	32,945	28.9	30,286	26.2	-2,659	-8.1
1.3. Euros	205,76	0.2	157,56	0.1	-48,2	-23.4
1.4. Yen	829	0.7	643,99	0.6	-185	-22.3
2. Resources Managed by the Public Entities	35,537	31.2	35,908	31.0	370	1.0
2.1. Soles	24,424	21.4	24,099	20.8	-325	-1.3
2.2. Dollars	11,106	9.7	11,804	10.2	698	6.3
2.3. Euros	7	0.0	5	0.0	-2,3	-33.7
TOTAL	113,937	100.0	115,746	100.0	1,809	1.6

Source: MEF – DGETP

Source: [Strategy for Global Asset and Liability Management 2019–2022](#).

¹ Directoral Resolution N° 016-2012-EF/52.03 and the EGIAP.

Appendix V. Key Elements for a Sound Legal and Regulatory Framework for Extrabudgetary Funds' Financial Oversight

1. While there might be in some cases a satisfactory economic, governance, and political economy case for the establishment of extrabudgetary funds (EBFs), their proliferation may hinder the soundness of fiscal policy and control, fiscal discipline, flexibility, and transparency. This, in particular, occurs when a robust central financial oversight function is not in place.

2. Countries pursuing a systematic review of their EBFs' financial oversight legal and regulatory framework should take into account the following elements:

- Consistency of the EBFs' legal nature with classification and sectorization guidelines in GFSM 2014.
- Legal underpinnings for sound internal governance arrangements to manage their business planning and operations subject to strong accountability mechanisms on performance, including to the legislature.
- Requirements in the legal framework to include information on EBFs in the budget documentation.
- Robust legal basis for certain financial controls and approvals such as borrowing and government guarantees' authorizations and/or limits; comparability of expenditure, revenue classification, and accounting standards to budgetary entities; and sound budget execution controls.
- Timely and transparent financial reporting requirements.
- Rigorous procedures for internal controls and auditing.
- Definition in the legal framework of a centralized function for analysis and mitigation of fiscal risks steaming from EBFs.

Appendix VI. Good Practices for a Robust Legal Framework for Financial Oversight

Table VI.1. Mexico: Selected Country Cases on Key Elements for a Robust Legal Framework for Financial Oversight of Extrabudgetary Funds and Decentralized Entities

Financial Oversight Mechanism	South Africa (Public Bodies)	United Kingdom (Nondepartmental Public Bodies) ¹	France (<i>Etablissement public</i>) ²	Bulgaria (Extrabudgetary Funds)
Sound Governance Structure	...	New nondepartmental public bodies (NDPBs) are authorized by HM Treasury including governance structure and financial regime.	<i>Etablissements public</i> (EPs) have a Board or Chief Executive Officer. All EPs have two supervisory authorities (<i>tutelle</i>): (i) the technical supervisory authority (line ministry for example) and (ii) the financial supervisory authority, that is the Ministry of Finance. ³	...
Budget Formulation and Budget Approval	<ul style="list-style-type: none"> The budget is submitted to the Executive Authority (for example, Line Ministry). Deficits and accumulation of surpluses require prior written approval of the National Treasury. 	<ul style="list-style-type: none"> Budget presentation must be in line with common standards established by the HM Treasury. 	An annual circular is issued with instructions for budget formulation.	...
Information in Budget Documentation	...	...	Only the financial contributions and transfers from the state budget to public entities are submitted for parliamentary approval. However, information on the entities' performance objectives, employment, and their budgets are documented in appendices to the State Budget Act.	EBF information is included in the budget documents submitted to parliament.
Revenues and Expenditure Classification	...	...	...	EBFs use the same chart of accounts as budgetary entities.

¹ NDPBs cover a variety of functions, including advisory bodies, Royal Commissions, tribunals (quasi-legal bodies), and executive (service delivery) organizations. Their legal status varies: i) Advisory bodies are normally set up by administrative (ministerial) action; ii) Royal Commissions are established by a Royal Warrant issued to the Commissioners; iii) Tribunals are statutory bodies established by an act of Parliament; iv) Executive NDPBs are normally established by an act of Parliament or Royal Charter.

² The *Cour de Cassation* has defined five criteria to identify an EP: i) it must be a separate, legal entity from the entity that created it; ii) it must be a public law entity, even in the case of an EP operating under the private law system and engaged in manufacturing and distribution; iii) it must have a specific object that justifies its existence (any business not within the scope of an EP's object is unlawful); iv) it must be autonomous from an administrative and financial standpoint, have separate governing bodies and its own budget; and v) it must be under the supervisory authority of the national government or a regional or local government.

³ Two directorates within the Ministry of Finance: budgetary control by the Ministerial Budget and Accountant Controller and the economic and financial control by the General and Economic Financial Control Department.

Financial Oversight Mechanism	South Africa (Public Bodies)	United Kingdom (Nondepartmental Public Bodies)¹	France (<i>Etablissement public</i>)²	Bulgaria (Extrabudgetary Funds)
Borrowing	<ul style="list-style-type: none"> • Borrowing is approved by the Ministry of Finance. • Issuance of a guarantee, indemnity, or security is approved by the executive authority in concurrence with the Ministry of Finance. 	<ul style="list-style-type: none"> • Loans from the National Loans Funds need to be voted upon. • Exceptionally, loans from the private sector can be authorized by Treasury to cover short-term requirements by way of bank overdraft. • Treasury only approves borrowing if transactions will lead to improved value for money.	...	...
Oversight of Staffing and Personnel Costs	...	...	Ceiling on hiring and staffing is determined annually by entity.	...
Accounting Standards	...	...	...	EBFs follow the same accounting standards as budgetary entities (International Public Sector Accounting Standards, IPSAS).

Financial Oversight Mechanism	South Africa (Public Bodies)	United Kingdom (Nondepartmental Public Bodies) ¹	France (<i>Etablissement public</i>) ²	Bulgaria (Extrabudgetary Funds)
Budget Execution Controls (not only on state contributions but on overall expenditure)	<p>Public bodies must ensure:</p> <ul style="list-style-type: none"> • Effective, efficient, and transparent systems of financial and risk management and internal control. • Appropriate procurement and provisioning systems. <p>The following transactions require Treasury's approval:</p> <ul style="list-style-type: none"> • Creation or participation in a company. • Participation in a significant partnership, trust, unincorporated joint venture, etc. • Acquisition or disposal of a significant shareholding in a company. • Acquisition or disposal of a significant asset. • Commencement or cessation of significant business activity. 	NDPBs are not required to hold monies with the Office of Paymaster General unless there is a specific statutory requirement. However, the benefits to the Exchequer of using the Office of Paymaster General should always be considered in determining the NDPB's banking arrangements.	Commitment authorizations and payment quotas are defined by expenditure envelop (personnel, investment, operations, etc.)	EBF head is responsible for implementing adequate operating and reporting control systems. EBFs must transact through the Treasury Single Account (TSA).
Reporting In-Year and Year-End Financial Reports	Public entities must submit an annual report, financial statements, and a report of auditor's statements to the Treasury, Executive Authority, and the Auditor General.	...	EPs must report i) financial statements, ii) balance sheet, and iii) statement of cash flows.	EBFs are subject to the same reporting requirements as budgetary entities.
External Audit	Office of Audit General audits public entities.	Audited by the Comptroller and Auditor General (National Audit Act)	Subject to internal and external audit.	EBFs are subject to audit by the State Audit Institution

Source: Bulgaria (Public Finance Act 1996); France (*Decret* N° 2012-1246 Budget and Public Accounting Management aligned with the organic budget law (*loi organique relative aux lois de finances*)); South Africa (Public Financial Management Act 1999); United Kingdom (Set of guidance issued by the Cabinet Office).

Appendix VII. Preliminary and Qualitative Assessment of Financial Risks in Stylized Balance Sheet for Sovereign Assets and Liabilities Management

Table VII.1. Mexico: Illustration of Stylized Balance Sheet of Selected Public Sector Entities for the Identification of Financial Risk Exposures

Component of Public Sector	Selected Public Sector Entities	Types of Financial Assets	Where Financial Risks, Financial Assets Are Exposed	Types of Liabilities and Contingent Liabilities ¹	Financial Risks Contingent—Where Liabilities and Contingent Liabilities Are Exposed
Central Government	TESOFE	<ul style="list-style-type: none"> • Cash and overnight at the Banxico • Commercial paper issued by development banks 	<ul style="list-style-type: none"> • Interest rate risk (low) • Credit risk 	<ul style="list-style-type: none"> • None 	...

¹ The analysis of contingent liabilities is highly preliminary and focuses on key contingent liabilities the BCG is exposed to. A more thorough analysis should be performed of the contingent liabilities institutions outside the BCG should be undertaken.

Component of Public Sector	Selected Public Sector Entities	Types of Financial Assets	Where Financial Risks, Financial Assets Are Exposed	Types of Liabilities and Contingent Liabilities ¹	Financial Risks Contingent—Where Liabilities and Contingent Liabilities Are Exposed
	UCP	<ul style="list-style-type: none"> • None 	...	<ul style="list-style-type: none"> • Treasury bills • Fixed-rate bonds • Inflation-linked bonds • Floating-rate bonds • Eurobonds in U.S. dollars, euros, and Japanese yen • Foreign loans • Foreign currency loans from international financial institutions • Government-guaranteed debt: loans • Debt of public private partnerships 	<ul style="list-style-type: none"> • Foreign currency risk • Interest rate risk • Inflation risk • Refinancing risk • Credit risk for contingent liabilities
	FONADIN	<ul style="list-style-type: none"> • Cash • Infrastructure-backed debt • Loans • Equity 	<ul style="list-style-type: none"> • Interest rate risk • Credit risk 	<ul style="list-style-type: none"> • Long maturity, inflation-linked bullet bonds • Contingent credit line with BANOBRAS 	<ul style="list-style-type: none"> • Inflation risk • Refinancing risk
	FEIP	<ul style="list-style-type: none"> • Cash and overnight at the Banxico • Derivatives (for hedging oil price) 	<ul style="list-style-type: none"> • Interest rate risk (low) • Counterparty risk 	<ul style="list-style-type: none"> • None 	...

Component of Public Sector	Selected Public Sector Entities	Types of Financial Assets	Where Financial Risks, Financial Assets Are Exposed	Types of Liabilities and Contingent Liabilities ¹	Financial Risks Contingent—Where Liabilities and Contingent Liabilities Are Exposed
Nonfinancial Public Corporations	CFE	<ul style="list-style-type: none"> • Cash • Short-term investments • Derivatives for hedging interest rates and foreign currency 	<ul style="list-style-type: none"> • Interest rate risk • Foreign currency risk • Credit risk • Counterparty risk 	<ul style="list-style-type: none"> • Mostly long-term foreign currency loans and bonds • Nominal foreign currency loans and bonds • Inflation-linked bonds • Accounts payable and other long-term liabilities • Leases • Defined benefit pension liabilities 	<ul style="list-style-type: none"> • Foreign currency risk • Interest rate risk • Inflation risk • Refinancing risk
Financial Public Corporations	NAFIN	<ul style="list-style-type: none"> • Deposits • Bonds and notes • Derivatives • Repos • Loans 	<ul style="list-style-type: none"> • Interest rates (domestic and foreign) • Foreign currency risk • Credit risk • Counterparty 	<ul style="list-style-type: none"> • Deposits • Interbank loans (domestic and foreign) • Repurchase agreements • Other payables 	<ul style="list-style-type: none"> • Interest rate risk • Foreign currency risk • Refinancing risk • Credit risk

Source: SHCP, FONADIN, FEIP, CFE, NAFIN, IMF mission team.