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**Sovereign Asset and Liability Management  
in Emerging Market Countries: The Case of  
Uruguay**

by André Amante, Phillip Anderson, Thordur Jonasson, Herman Kamil,  
and Michael Papaioannou

**I N T E R N A T I O N A L M O N E T A R Y F U N D**

IMF Working Paper

Monetary and Capital Markets Department

Sovereign Asset and Liability Management in Emerging Market Countries: The Case of Uruguay

Prepared by André Amante, Phillip Anderson, Thordur Jonasson, Herman Kamil, and Michael Papaioannou<sup>1</sup>

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Abstract

This paper provides an overview of the strategic and operational issues as well as institutional challenges, related to the implementation of the Sovereign Asset and Liability Management (SALM) approach. Application of an SALM framework allows the authorities to identify and monitor sovereign exposure mismatches; increase resilience to foreign currency and interest rate risks; and thus, strengthen financial stability; and implement more cost-effective management of the public-sector debt. The analysis is based on emerging market (EM) countries and illustrated by the experience of Uruguay, using data as of end-2017.

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Author's E-Mail Address: [andre.amante@bcb.gov.br](mailto:andre.amante@bcb.gov.br), [phillip.r.d.anderson@gmail.com](mailto:phillip.r.d.anderson@gmail.com), [tjonasson@imf.org](mailto:tjonasson@imf.org), [hermankamil@mef.gob.uy](mailto:hermankamil@mef.gob.uy), [michaelgpapaioannou@gmail.com](mailto:michaelgpapaioannou@gmail.com)

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Contents	Page
I. Introduction .....	5
II. SALM Framework and the Stylized Sovereign Balance Sheet.....	7
A. SALM and Economic Policy .....	7
B. Practical Challenges of Applying an SALM Framework .....	9
C. Country Experiences in Applying SALM.....	10
III. The Case of Uruguay .....	13
A. Policy Objectives .....	13
B. Identifying Exposures in the Consolidated Public Sector Balance Sheet .....	15
C. Role of Institutional Entities' Arrangements in Supporting SALM .....	21
IV. Transactions Designed to Address Risk Exposure Across the Sovereign Balance Sheet in Uruguay.....	22
A. Role of Liability Management Operations in Managing Foreign Exchange Exposures .....	22
B. Hedging Foreign Currency Risk in State-Owned Non-Financial Enterprises .....	25
C. Developing Domestic Debt Market Instruments.....	26
V. Lessons Learned and Steps Forward.....	27
A. Adoption of SALM Framework.....	27
B. Institutional Coordination .....	27
C. Identification of Exposures .....	28
D. Risk-mitigation Measures .....	28
E. Implementation.....	29
F. Accountability.....	29
VI. Considerations for Sound Practices in Applying SALM.....	29
A. Data Requirements.....	29
B. Development of an Analytical Framework and Strategy .....	30
C. Policy and Coordination.....	31
D. Other Institutional Considerations .....	32
VII. Concluding Remarks .....	33
Tables	
1. Central Government's Balance Sheet .....	15
2. Central Bank's Balance Sheet.....	17
3. Public Enterprises' Balance Sheet .....	18
4. State-Owned Insurance Bank's Balance Sheet .....	19
5. Consolidated Public Sector Balance Sheet .....	20

## Figures

1. Balance Sheet Currency Mismatches across Public Sector Sub-Portfolios .....	20
2. Stage 1: Coordinated Issuance and Liability Management Operation by the MoF and the Central Bank .....	24
3. Stage 2: Coordinated Issuance and Liability Management Operation by the MoF and the Central Bank .....	24
4. Hedging Foreign Currency Risk in State-Owned Non-Financial Enterprises .....	26

## Appendices

1. Liability Management Operations .....	38
2. Countries Applying Elements of SALM.....	40

## I. INTRODUCTION

The SALM approach focuses on the identification<sup>2</sup> and management of the financial risk exposures of the public sector as a whole, so that a sound balance sheet is preserved in support of a sustainable policy path and economic growth. In general, the sovereign balance sheet includes the assets and liabilities of the general government (central government, municipalities, and public pension entities) or the public sector (general government, state owned enterprises, and the central bank). The SALM approach can encompass also off-balance sheet instruments and policy commitments. This approach entails monitoring and quantifying the impact of movements in economic and financial variables, including exchange rates, interest rates, inflation, and commodity prices, on sovereign assets and liabilities, and containing other asset- and debt-related vulnerabilities in an integrated way.

A comprehensive SALM framework can have significant advantages over separate management of assets and liabilities (see Lu et al., 2007; Das et al., 2012; Koc, 2014). It allows analysis of the financial characteristics of the balance sheet, identification of sources of costs and risks, and quantification of the correlations among these sources. A financial risk management strategy can then be developed to manage exposures in a cost-efficient manner. Thus, when an SALM approach is applied to the consolidated public sector portfolio, overall sovereign risk exposures can effectively be analyzed and managed.

The SALM approach can also be adapted to facilitate the attainment of a country's long-term macroeconomic and developmental objectives, such as economic diversification, broadening of the export market, or reducing dependence on key imports. Further, the SALM approach can help identify long-term fiscal challenges, such as unfunded social security liabilities, implying a future claim on resources. Thus, an SALM framework can serve as a central element of an overall macroeconomic management strategy. Especially for commodity-exporting countries, the SALM approach can highlight the potential asset management challenges that stem from and in turn influence a medium-term debt management strategy.

Yet a comprehensive SALM approach is conceptually and operationally challenging for governments because (i) many governments do not compile a full statement of financial positions, thus making it difficult to directly observe all assets and liabilities; (ii) many government assets are tangible in nature (for example, land, buildings, plant), let alone off-balance sheet positions, that consequently do not lend themselves to analysis of financial risk; (iii) a government's main asset is its ability to tax, which is directly related to its discretionary fiscal policy and not to on balance sheet financial assets; and (iv) responsibility for various parts of the public sector balance sheet is typically divided across institutions,

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<sup>2</sup> For the purposes of this paper, "sovereign" equates with the public sector defined as those areas over which the government has financial control.

thus posing limitations on the implementation of an SALM framework. Despite these challenges, some governments have produced full statements of their financial stock position for many years,<sup>3</sup> only a few have moved beyond the consolidated reporting of the entities that make up the sovereign to the integration of risk management across those entities.

Based on the practice of countries that apply an SALM approach, we propose it as an effective policy innovation. We suggest guidelines and good practices for achieving optimal results. However, it is recognized that certain preconditions should be fulfilled, including availability of relevant sovereign asset and liability data, and the presence of the political will to undertake such a coordination-intensive project.<sup>4</sup>

The lessons and recommendations presented here mainly reflect the experience of Uruguay, though generalized from local conditions. Uruguay has made important advances in applying SALM principles to help shape integrated sovereign portfolio risk outcomes. In the context of still-high financial dollarization and wage indexation, the central government, the central bank, and financial and non-financial public sector enterprises have been coordinating to implement a SALM approach. Emphasis has been placed on the net currency risk position and the explicit tradeoffs (cost and risk considerations) of different borrowing options and hedging mechanisms, to manage exposures within a medium-term framework. Risk mitigation strategies have been based on attaining hedging gains within the consolidated public sector balance sheet. Attention has been focused on different categories of currency exposure identified from net balance sheet currency positions (both in terms of flow and stock risks). In addition, it takes into account the cyclical properties of macroeconomic variables and the risk-characteristics of the government's revenue base.

The paper is organized as follows: Section II provides an outline of the SALM framework and its objectives in the context of a stylized sovereign balance sheet. Sections III and IV discuss key aspects of the experience in Uruguay and the implementation of specific policies and transactions. Section V distills some key lessons from countries applying an SALM approach, and Section VI presents some guiding principles and good practices in applying an SALM model. Section VII offers some concluding remarks.

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<sup>3</sup> The IMF maintains the Public Sector Balance Sheet Database that shows comprehensive estimates of public sector assets and liabilities, that formed the basis for the analysis in the October 2018 Fiscal Monitor.

<sup>4</sup> SALM differs from private ALM, as the strategic goal of SALM is maximization of the overall social welfare, while that of private ALM is maximization of net worth or profitability (Claessens, 2017; ECB, 2004).

## II. SALM FRAMEWORK AND THE STYLIZED SOVEREIGN BALANCE SHEET

### A. SALM and Economic Policy

The objective of SALM is to improve the efficiency of policy implementation in terms of reducing risk and/or cost, consistent with the objectives and policy frameworks of monetary and fiscal policies, conventional public debt management, state-owned enterprises (SOEs), and publicly managed financial-asset portfolios.<sup>5</sup> Effective SALM therefore requires coordination at the policy level, e.g., levels and composition of foreign-currency reserves and foreign-currency debt. Each policy area will shape the nature of a sovereign’s financial assets and liabilities, while, at times, policy conflicts may arise:<sup>6</sup>

- *Monetary policy objectives* have an impact on SALM strategies, by affecting either market—interest rate and exchange rate—risk management or directly the size of the sovereign balance sheet. On the liability side, debt management strategy aims at minimizing debt service cost subject to a prudent level of risk (see also bullet on debt management objectives).<sup>7</sup> On the asset side, strategic asset management aims primarily at accumulating an adequate level of net foreign assets, including foreign exchange reserves, to be used for conducting effective monetary and foreign exchange policies, as well as a buffer against external shocks.<sup>8</sup> Also, it may involve the management of “excess” foreign currency assets (e.g., reserves above an adequate level), including through the design and management of investment portfolios, e.g., sovereign wealth funds (SWFs), so that returns on international assets can be enhanced and passed on to future generations, or help offset the impact of domestic and external shocks on the fiscal position.
- *Fiscal policy objectives* that aim at limiting the size, or volatility, of annual debt service costs may put forward policies that affect SALM objectives, including constraints on the duration and currency composition of public debt, e.g., high shares of short-term debt are perceived to lead to greater volatility of service costs.
- *Debt management objectives* that aim at minimizing debt service cost subject to risk provide the basis for the integration of the public debt management (PDM) and the

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<sup>5</sup> Typically, an SALM framework concentrates on financial assets and financial values of other assets, while it does not take into consideration “fiscal” assets (e.g., tax-collection ability).

<sup>6</sup> See for example Togo, Eriko (2007). A discussion of the coordination challenges among sovereign participating entities is also presented in Section II C.

<sup>7</sup> Sometimes, the debt servicing cost excludes exchange rate valuations.

<sup>8</sup> The determination of an appropriate level of international reserves depends on domestic economic conditions. For example, in a dollarized economy, in which an important share of commercial bank liabilities is dollar-denominated, the level of reserves will be higher, because of the role of the central bank as a lender of last resort.

SALM strategies. Maintaining robust formal institutional arrangements in developing the PDM strategy provides investors and the public with a greater degree of assurance about the management of the sizable risks in the government's balance sheet. A well-articulated PDM strategy, which has as much specificity as possible and clearly explains the analysis and rationale for the chosen approach is essential for such purpose.

- *International and domestic capital market structure* also affects the SALM implementation. Some developing countries cannot issue domestic debt because of illiquid and/or shallow domestic debt capital markets and a lack of a reliable local investor base. Their attempts to issue domestic-currency debt externally have also not been well-received in international markets owing, in part, to their vulnerability to shocks, restrictions on foreign investors to buy local-currency debt (e.g., on type of instruments, minimum holding period), poor transparency, and/or a lack of interest rate and exchange rate hedging instruments.
- *The governance of publicly managed financial asset portfolios (such as SWFs, pension funds, and insurance companies)* tends to emphasize granting boards and fund managers independence to pursue agreed objectives.<sup>9</sup> This is designed to address historic underperformance in the sector caused by, among other factors, a lack of contestability, imposition of non-commercial objectives, and political interference in asset allocation. Prima facie, this independence could constrain the scope of SALM from including such entities, as their objectives typically are framed to maximize returns subject to agreed risk constraints, which generally would reflect the nature of their own liabilities. Yet the central government may have a legitimate interest in their activities: the public sector as a whole may be over-exposed to particular assets (concentration risk), or, conversely, individual entities may have asset allocation strategies that negate each other.
- *Sound practice in the governance of (SOEs)* also places an emphasis on an arm's-length relationship with the central government in order to strengthen accountability and improve commercial performance. For example, the OECD's guidelines on governance of SOEs state that the "government should allow SOEs full operational autonomy to achieve their objectives and refrain from intervening in SOE management."<sup>10</sup> Nevertheless, as is the case with publicly-managed funds, the central government may have an interest in their financing activities, e.g., if the borrowing strategies of SOEs, when viewed collectively, are in conflict with and undermine the debt management strategy of the central government. This has heightened relevance when the government is a direct lender to, or guarantees the debt of, SOEs, and in the event of default may need to assume all or some of their debt.

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<sup>9</sup> See, for example, principles 6 and 9 in "Santiago Principles: Sovereign Wealth Funds Generally Accepted Principles and Practices" (2008), International Working Group of Sovereign Wealth Funds.

<sup>10</sup> OECD (2015): "OECD Guidelines on Corporate Governance of State-Owned Enterprises."



## **B. Practical Challenges of Applying an SALM Framework**

### **Data Requirements and Contours of the Sovereign Balance Sheet**

The term “asset liability management” (ALM) is well understood in the context of financial institutions, where it is a core element in managing risks across their balance sheets. The application of an asset and liability management (ALM) framework is typical of financial intermediaries. The main objective of an ALM framework is to contain risks by matching the financial features (e.g. interest rate or currency) of assets and liabilities, so that one side of the balance sheet will be hedged—or immunized—by the other side. To oversee and manage the financial risks resulting from their activities, financial intermediaries have asset liability committees that periodically review the features of their assets and liabilities, analyze currency and interest rate mismatches, and decide on possible adjustments to the balance sheet structure based on associated risk exposures and their level of risk tolerance.

While drawing on the insights from private sector practice can support more effective risk-management for governments, there are conceptual differences and practical difficulties in doing so. First, most governments do not compile a full statement of their financial position in assets and liabilities, as a standardized information base is typically lacking and accounting treatment can differ among various entities, e.g., central banks and ministries of finance. Second, many governments’ assets are tangible in nature (for example, land, buildings, plant), which do not readily lend themselves to analysis of financial risk. Third, the government’s main asset is its capacity to tax and the financial features of this asset are not easy to determine.

Even if consistent financial reporting is available across sectors, it may not be of sufficient granularity for SALM. For example, if the authorities wish to manage currency risk it would require information on assets and liabilities in each foreign currency, including their maturity profile and interest rate/revenue profile. The main financial statements may report only aggregated information, e.g., the amount of foreign-currency debt in total. The same limitation would apply when managing interest-rate and credit risks across the sovereign as a whole. In these circumstances, entities would be required to provide supplementary reporting to the center based on associated risk exposures and their level of risk tolerance.

Given that applying these insights to the risk analysis of a sovereign balance sheet is challenging, a common approach is to consider the major financial assets on the government’s balance sheet such as international reserves, cash balances and other sovereign funds such as sovereign wealth or pension funds, in tandem with major financial liabilities.

### **Institutional Coordination**

The nature of the policy objectives and the institutional arrangements in a country will shape the implementation of an SALM framework. The level of coordination and how it is implemented will vary from case to case and will depend on the main policy goals that are

expected to be achieved through SALM. The fact that the participating institutions are managing parts of the consolidated balance sheet may enjoy statutory independence, such as a central bank, or operate under independent boards, such as SoEs or sovereign wealth funds, can make the process of coordination challenging. For example, to take a relatively simple case where foreign reserves are managed by the central bank while the Ministry of Finance (MoF) is responsible for the government foreign-currency debt portfolio, each institution may set different objectives and evaluate risks over different time horizons. Developing an SALM approach to better manage currency risk would require the two institutions to negotiate in order to establish common ground within their respective frameworks and mandates, i.e., respecting accountability and governance structures.

The challenge of coordinating independent entities could be eased either by limiting interventions by the central government strictly to support the SALM framework, without compromising independent governance arrangements, or by an overlay strategy. Grimes (2001) presents the view that in the interest of efficient ALM at the sovereign level, mechanisms could be developed to lessen the risk of undue political interference when investment mandates (for example, for particular asset classes) are provided by the center. These could include legislative and institutional structures that set limits on such actions and require transparency.<sup>11</sup> However, the risk remains that the full accountability of the managers of the participating sovereign funds could be undermined. An alternative approach would be for the center to aggregate the positions of all participating entities that form the sovereign and offset risks that are not consistent with the SALM strategy. While this has the advantage of not interfering in the management of funds, it would incur additional transaction costs and be limited to more liquid asset classes and risk instruments. Also, monitoring the performance of SALM may be difficult if the accounting principles used in the sovereign funds differ from that in the center.

### **C. Country Experiences in Applying SALM**

A number of governments apply some form of SALM in which they try to identify risks and vulnerabilities of the sovereign assets and liabilities, without necessarily identifying an economic form of the sovereign balance sheet or establishing formal SALM objectives (Appendix 2). In these cases, governments often determine specific debt management or reserve management strategies that reduce certain exposures and reduce balance sheet vulnerabilities, without always quantifying the risks. Further, they may use a balance sheet in conceptual terms to visualize the interrelationships between different assets and liabilities to determine the direction in which these assets and liabilities need to be changed.

Cangoz, Boitreaud and Dychala (2018) provide detailed information about various approaches to the SALM framework with regard to balance sheet production, objectives,

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<sup>11</sup> In particular, an overlay strategy could entail a legal or institutional framework that requires investment objectives, strategic asset allocations etc. of different entities to take account of aggregate SALM objectives.

priority areas and challenges associated with integrated management. Their survey confirms that the number of countries that have developed a comprehensive SALM framework is limited. However, most of the respondents indicate that they regularly produce an accounting balance sheet with the objective of monitoring sovereign assets and liabilities, rather than determining mismatches between them. Also, there are observed significant differences in practices across countries, e.g., while most countries include state-owned enterprises in the sovereign balance sheet, only a minority includes central banks (in some cases only international reserves and sovereign funds). Among the challenges cited are inadequate institutional arrangements, uncertain or lacking mandates, coordination between institutions, data availability and valuation of assets.

Therefore, some countries have embarked on some form of coordinated ALM, which typically involves integrated management of the net position on central government debt and other financial liabilities, and international reserves from a currency composition perspective.

If the scope of SALM covers all entities that make up the sovereign, assembling the data can become even more challenging. As noted earlier, more governments are producing balance sheets that consolidate the assets and liabilities of the various parts of the sovereign on a consistent reporting basis. It is only in recent years that governments have started compiling a full statement of financial position (balance sheet) and, while the number of countries that do so is growing, the practice has still to gain momentum.<sup>12</sup> Thus, most countries would need to gather manually the information from individual entities, which may also provide it in different forms. A case can be made for a gradual expansion as data coverage improves over time.

Given the policy coordination and implementation considerations described in Section III, the implementation of a comprehensive approach to SALM has yet to materialize among sovereigns. While some governments have produced full statements of financial position (balance sheets) for many years, moving from consolidated *reporting* of the entities that make up the sovereign to integrated *risk management* across those entities is a major step. For example, the government of New Zealand has been producing a consolidated statement of financial position since the early 1990s, which provides detailed information on the overall position with regards to assets and liabilities.<sup>13</sup> While there has been some coordination between the government and the central bank on managing financial risk across their individual balance sheets, the remainder of the consolidated position is a result of decisions taken by separate entities in accordance with their objectives.<sup>14</sup> The government of New Zealand acknowledges that, while it is a leader in fiscal transparency and financial

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<sup>12</sup> A survey by the IMF states that by 2015, 41 governments have completed a transition to full accrual accounting, including a balance sheet. This is up from 20 in 2013 and 9 in 2004 (see Cavanagh et. al., 2016).

<sup>13</sup> Financial Statements of the government of New Zealand (2016), <http://www.treasury.govt.nz/government/financialstatements/yearend/jun16/fsgnz-year-jun16.pdf>

<sup>14</sup> Anderson (1999).

reporting, the understanding of financial risk information could be improved.<sup>15</sup> In order to address this, a potential adjustment to the balance between devolution and coordination is foreshadowed.

There has been an increasing awareness among governments that improved financial risk management is necessary to protect public finances and the delivery of services. For example, the U.S. Department of the Treasury appointed a chief risk officer for the first time in 2014, partly in response to the impact of the 2008–2009 financial crisis on the balance sheet of the federal government.<sup>16</sup> While the role is focused on implementing an integrated risk management framework for the department, it also extends to cross-agency risk management efforts. An outcome of the latter has been the production of the Playbook: Enterprise Risk Management (ERM) for the U.S. Federal Government (2016), which provides guidance to departments and agencies on establishing ERM within their entities. Since the early 2000s the government of the United Kingdom has provided central guidance for risk management by departments and other entities, which was recently refined based on experience of its application.<sup>17</sup> But this framework largely targets operational risk at the level of entities, rather than financial risk across the sovereign as a whole.<sup>18</sup>

Where a full overview of assets and liabilities is not available, SALM principles can be adapted to “sub-portfolios” of the balance sheet. The process may be described as pragmatic and incremental, focusing on significant positions where the analysis is tractable and implementation is feasible, rather than being fully comprehensive in scope. These operations generally fall into four categories: (i) coordinated management of foreign currency reserves with foreign currency debt; (ii) managing asset levels to provide a buffer against adverse market conditions; (iii) transactions between the central bank and government that strengthen policy outcomes, reduce cost, and reduce risk; (iv) analyzing the variables that drive government revenues and then developing alternative debt portfolios; and (v) developing market access and debt instruments that reduced the identified exposures.

The currency composition of public debt and net international reserves may be matched, to the extent that a portion of the reserves level is regarded as stable, so as to create natural hedges. Countries that have undertaken some degree of coordination in this area include Canada, Denmark, Hungary, New Zealand, Turkey, Sweden, and the United Kingdom (and some of these take it a step further by matching duration). Within the domestic debt portfolio,

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<sup>15</sup> New Zealand Government Investment Statement (2014).

<sup>16</sup> “Interview: US Treasury CRO on credit risk, Tarp and cyber threats”, Risk.net, October 7, 2016.

<sup>17</sup> Cabinet Office of the United Kingdom, “Management of Risk in Government” (2017).

<sup>18</sup> Further, in 2016, the U.K. Her Majesty's Treasury established a new Balance Sheet Group to bring greater focus on the management of the government's assets and liabilities. The Treasury published its first report on Managing Fiscal Risks in July 2018, where chapter 6 describes the actions that the U.K. government is taking to strengthen the management of the public sector balance sheet and the risks around it.

some countries offset domestic on-lending against domestic debt, in order to manage the net position (for example, Denmark and New Zealand).

The management of sovereign liquidity risk is particularly important for developing and emerging market countries. It may be defined as the minimum level of cash balances that ensures meeting day to day cash requirements, at all times and under all circumstances, taking into account the availability of other liquid resources. In particular, it should ensure that the government has sufficient funds available to cover current expenditure and debt amortization during periods when market access is impaired or prohibitively expensive, as well as volatility effects, forecast errors, and so on. It is managed by maintaining liquid assets at levels that are sufficiently robust to meet shock scenarios. Countries that have explicit policies in this regard include Denmark, New Zealand, South Africa, Turkey, and Uruguay.

Central banks may accumulate sizable volumes of liabilities on their balance sheets for a range of reasons, including sterilizing the build-up of foreign-currency reserves during period of strong capital inflows. This can create significant balance sheet mismatches that can undermine a central bank's capital and also lead to the presence of two major sovereign issuers in the domestic market. A number of countries have addressed this by undertaking debt buybacks or prepayments financed by reserves (for example, Brazil, Mexico, and Russia).<sup>19</sup>

At a qualitative level, many sovereigns take into consideration the risk characteristics of their revenue base when developing a medium-term debt management strategy and this can be extended to SALM. In particular, the observation that most sovereigns are dependent on revenues denominated in local currency, and that the level of the exchange rate does not have a strong relationship with revenues, has highlighted the risk of public debt portfolios with a high share of foreign currency debt.

### **III. THE CASE OF URUGUAY**

#### **A. Policy Objectives**

Over the past decade and a half, authorities in Uruguay have worked toward strengthening macroeconomic and financial stability. Active debt management has played an important role in mitigating financial vulnerabilities associated to risks of currency and maturity mismatches. This was accomplished by reducing the share of government debt denominated in foreign currency, lengthening the average maturity of the debt and smoothing its redemption profile. To support external stability, the central bank has maintained high levels of international reserves, which are currently well above prudential international norms.

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<sup>19</sup> For a discussion of the Mexico case see Ortiz, Guillermo (2007). Further, it should be noted that some countries, for example Brazil, Colombia, India, Israel and Mexico, provide respective central banks with government securities to sterilize liquidity injections, thereby reducing domestic balance sheet mismatches.

Prudential measures anchored in the implementation of the Basel regulatory framework also played an important role in ensuring financial stability: the banking sector continues to present sound financial indicators, including high capital levels and adequate liquidity buffers.<sup>20</sup>

Despite buttressing resiliency, the government is facing the challenges of still high financial dollarization, widespread indexation and lack of dollar-peso hedging markets. Inflation has remained stubbornly high in recent years and bank-deposit dollarization rates remain around 80 percent. A large share of labor wage contracts, mostly in the public sector, remain indexed to past inflation. Approximately 30 percent of government debt is indexed to CPI inflation—a consequence of a desire to reduce foreign-currency debt, in a market that had been reluctant to hold nominal debt (UYU) because of historically high and volatile inflation. There is instituted wage indexation of pension payments.

Over the last few years, the government has made progress on several areas. While inflation had come down in 2017, reverting to the central bank's 3.0-7.0 percent target range, it climbed above the upper bound of this range in 2018–2019 (fluctuating around 8 percent) but then again strayed outside of the range in early 2018. During 2017, the government issued its first-ever nominal fixed rate bonds in global markets and a new wage setting guideline has been set that reduces backward indexation of wages in the private sector. A yield curve for nominal rates has been recently generated from government instruments and the investor base has been developed, the lack of which had been holding back the development of hedging markets (for example, forwards and swaps).

Against this background, the main policy challenges are: (1) continuing de-dollarization and affirming the stability in the demand for the peso; (2) ensuring the ability of monetary policy to anchor inflationary expectations and control peso interest rate movements; (3) developing robust and liquid yield curves in local currency in domestic markets to promote derivatives markets to hedge currency exposure; and (4) increasing the internationalization of local sovereign bond markets in an effort to diversify the investor base, and broaden access to domestic currency financing.

The government of Uruguay also has decided to apply an SALM approach within the context of these macroeconomic objectives and institutional challenges that it faces. An overarching theme is the currency exposure in agents' balance sheets and how these risks are distributed across the economy, which affects the resilience of the economy and fiscal results. The key goal is to reduce vulnerability to shocks at the aggregate level, while reaping efficiency gains by redistributing and mitigating risk within the economy.

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<sup>20</sup> The balance sheet approach (as relating to financial stability) is evident in the regulation of financial institutions. For both banks and insurance companies there are requirements to match assets with liabilities and, in the case of banks, lend in a manner that supports clients' own ALM (e.g., provisioning may be higher if the currency of a loan is different from the client's underlying revenues).

## B. Identifying Exposures in the Consolidated Public Sector Balance Sheet

Uruguay's SALM framework is anchored in a wide perimeter of consolidation of public sector accounts. The public sector balance sheet comprises the Central Government, the Central Bank of Uruguay (BCU), the four major non-financial State-owned Enterprises (SOEs), and the State Insurance Bank (BSE). It is important to note that Uruguay is one of the few countries among emerging markets to report headline debt figures on a consolidated basis for the whole public sector, including the central bank and non-financial and financial public enterprises.

The government of Uruguay in conjunction with the IMF has undertaken analysis of the consolidated public-sector balance sheet, with a view to extending the ALM. Tables 1–4 below set out simplified balance sheets of the entities that are included in the overall public sector debt, and salient features are noted. Table 5 contains a consolidation of those four balance sheets, with transactions between entities having been netted out.

**Table 1. Central Government's Balance Sheet**  
(end-December 2017, in USD billions)

Assets		Liabilities	
<b>Financial Assets</b>	<b>2.9</b>	<b>Financial Liabilities</b>	<b>28.7</b>
CP-Indexed Local Currency (LC-UI)	0	CP-Indexed Local Currency (LC-UI)	9.7
Nominal Uruguay Pesos (UYU)	0.8	Nominal Uruguay Pesos (UYU)	3.7
Wage-Indexed Local Currency (LC-UW)	0.0	Wage-Indexed Local Currency (LC-UW)	1.1
Foreign Currency (FX)	2.1	Foreign Currency (FX)	14.1
		<b>Net Financial Worth</b>	<b>-25.8</b>
<b>Other Assets</b>		<b>Other Liabilities</b>	...
Property, Plant and Equipment	...		
Investment in SOEs, BSE and the BCU	...		
<b>Total Assets</b>	<b>...</b>	<b>Total Liabilities and Net Worth</b>	<b>...</b>

Source: UGD.

Less is known about some entries in the core government balance sheet, as there is no formal statement of financial positions that is compiled under generally accepted accounting standards (Table 1). While it may be inferred that there are substantial assets in the form of “property, plant, and equipment,” there is no value placed on this category. Similarly, there may be substantial other assets and liabilities, as can be seen in the SOE balance sheets. Such absence of a full balance sheet is not unusual; indeed, as noted in Section I, a minority of countries produces financial reporting using a consolidated public-sector balance sheet.

In broad terms, the government's balance sheet is “short” foreign currency (primarily U.S. dollars) by around USD 12 billion, short CP-Indexed Local Currency (LC-UI) by around

USD equivalent 10 billion, and short Wage-Indexed Local Currency (LC-UW) by around USD equivalent 1 billion. Apart from the return from investment in SOEs, this debt is serviced by the “tax asset.” Therefore, the pertinent issue in terms of ALM, when analyzing the government balance sheet in isolation, is the sensitivity of tax revenues to the level of the USD, CPI (Consumer Price Index), and UW.<sup>21</sup>

To this end, the government has had a policy of reducing the exchange rate risk in its balance sheet by reducing the share of foreign currency debt in favor of UI, reflecting the fact that tax revenues are denominated in Uruguayan Peso (UYU) and could be expected to rise with the price level.

The BCU balance sheet is large, with assets of USD 23.3 billion, which is equivalent to almost 40 percent of GDP (Table 2). The net currency composition is long USD equivalent 8.2 billion in foreign currencies (mostly USD; other currencies are close to flat), long UI by USD equivalent 5.4 billion, and short UYU by USD equivalent 11.8 billion.<sup>22</sup>

The balance sheet may change significantly over time depending largely on the level of dollarization and demand by nonresidents for UYU/UI. For example, in 2014 when there was strong demand by nonresidents, the balance sheet had total assets of over USD 25 billion.

Not surprisingly, SOEs’ assets are dominated by “property, plant, and equipment” (denominated in domestic currency) and it can be observed that equity is 60 percent of the total assets. Regarding the debt, USD 0.8 billion equivalent is in local currencies and 1.6 billion in USD (Table 3).

Although the balance sheet summary indicates that the SOEs carry some USD debt against a predominantly domestic asset base, only a partial picture of SALM issues can be seen. This is because economic exposures may arise from other parts of the balance sheet and because of the nature of different SOE economic activities. For example, National Administration of Power Plants and Electrical Transmissions (UTE) has contracts in place to buy electricity from private providers for 20 years denominated in USD. On the other hand, it exports energy to Argentina, also priced in USD. In the case of National Administration of National Administration of Fuels, Alcohol and Portland (ANCAP), it purchases oil in the international market, exposing it to variable USD and oil prices, while the prices of the refined products it

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<sup>21</sup> LC-UI and LC-UW are conventional fixed rate bond lined to the consumer price and wage indices, respectively.

<sup>22</sup> To assess more accurately the efficacy and efficiency of SALM actions on the sovereign balance sheet, as well as on the individual balance sheets of BCU, Central Government, SOEs, and BSE, we would need more granular information on the individual entities’ liabilities, e.g., which BCU liabilities are part of the “monetary base” and what portion of BCU liabilities does not pay interest.



sells are officially administered and denominated in local currency, with only limited pass-through from international prices.

**Table 2. Central Bank's Balance Sheet**  
(end-December 2017, in USD billions)

<b>Assets</b>		<b>Liabilities</b>	
<b>Financial Assets</b>	<b>23.3</b>	<b>Financial Liabilities</b>	<b>21.1</b>
CP-Indexed Local Currency (LC-UI)	6	CP-Indexed Local Currency (LC-UI)	0.6
Nominal Uruguay Pesos (UYU)	0	Nominal Uruguay Pesos (UYU)	11.8
Wage-Indexed Local Currency (LC-UW)	0	Wage-Indexed Local Currency (LC-UW)	0.0
Foreign Currency (FX)	17	Foreign Currency (FX)	8.8
		<b>Net Financial Worth</b>	<b>2.2</b>
<b>Other Assets</b>	...	<b>Other Liabilities</b>	...
Property, Plant and Equipment	...		
Other	...		
<b>Total Assets</b>	...	<b>Total Liabilities and Net Worth</b>	...

Source: Central Bank.

To obtain a full picture of ALM issues arising from SOEs, a thorough analysis of each business would be required, both of other balance sheet components and flow items. The analysis would need to take account of each entity's business strategy and public policy considerations, such as the delivery of social objectives. This work has commenced and the two largest SOEs have a need to continuously purchase foreign currencies (largely to finance purchases of oil).

The state-owned Banco Seguros del Estado (BSE) provides annuities that are indexed to wages and, to hedge these, it needs assets that co-vary with the wage index (UW). Given the lack of such assets in the domestic market, to date it has relied on the GoU to provide a tailor-made UW asset in the form of a private placement.<sup>23</sup> While at this stage the size of this

<sup>23</sup> For example, there is virtually no public equity market.

asset/liability is quite small, it is expected to grow rapidly in coming years as people retire and convert their lump-sum savings into annuities.<sup>24</sup>

**Table 3. Public Enterprises' Balance Sheet**  
(end-December 2017, in USD billions)

<b>Assets</b>		<b>Liabilities</b>	
<b>Financial Assets</b>	<b>1.9</b>	<b>Financial Liabilities</b>	<b>2.5</b>
CP-Indexed Local Currency (LC-UI)	0.0	CP-Indexed Local Currency (LC-UI)	0.5
Nominal Uruguay Pesos (UYU)	1.2	Nominal Uruguay Pesos (UYU)	0.2
Wage-Indexed Local Currency (LC-UW)	0.0	Wage-Indexed Local Currency (LC-UW)	0.1
Foreign Currency (FX)	0.7	Foreign Currency (FX)	1.6
		<b>Net Financial Worth</b>	<b>-0.5</b>
<b>Other Assets</b>	<b>12.4</b>	<b>Other Liabilities</b>	<b>4.1</b>
Property, Plant and Equipment	7.6		
Other	4.8		
<b>Total Assets</b>	<b>14.4</b>	<b>Total Liabilities and Net Worth</b>	<b>14.4</b>

Source: Public Enterprises.

Overall, the salient features of the individual public sector entities' balance sheets are: (i) the central government's balance sheet is short in U.S. dollars (USD) as it contains the most foreign currency debt; (ii) the BCU's balance sheet is large, with long USD and CPI-linked positions but short in pesos; (iii) SOEs' balance sheets exhibit some mismatches relating to foreign currency debt, but also show flow exposures to foreign currencies that are difficult to hedge due to the incompleteness of local markets; and (iv) the BSE's balance sheet has a growing exposure to the nominal wage index, with a rising number of beneficiaries seeking annuities.

Table 5 provides a consolidation of the four balance sheets (Tables 1–4), where transactions between the various entities have been removed.<sup>25</sup> For example, entities' investments in the

<sup>24</sup> In Uruguay's defined-contribution pillar of the pension system, pension payments (annuities) are serviced by insurance companies. These annuities are adjusted by the nominal wage index by law. The BSE, currently the only player in this market, invests most of its assets under management in CPI-indexed securities—thus running a growing exposure to the relative movements of nominal wages and inflation. Having the possibility to invest in assets that co-vary with the wage index (either through bond purchases or, eventually, swaps), the BSE would be able to hedge its obligations and reduce its balance sheet risk. It could also provide incentives for private insurance companies to re-enter this market, as the pension system matures in coming years and larger numbers of retirees will be seeking to use their lump-sum savings to purchase annuities.

<sup>25</sup> Note that the assets and liabilities are not equal, as the GoU balance sheet is incomplete.

UI securities issued by the GoU are cancelled out, reducing both UI debt and UI assets. The GoU's shareholding in the entities and the entities' capital also cancel out.

A number of general observations may be made from the consolidation: first, USD liabilities exceed USD assets by 4.3 billion.<sup>26</sup> The high level of foreign-currency reserves is offset to a large degree by the USD reserve requirements that the banks must hold and the government's USD debt. This provides reinforcement for the government's continued strategy of reducing risk by moving toward a lower level of USD debt (although the cost of doing so continues to require analysis and trade-offs, particularly as the net USD debt decreases over time). The net debt position also helps inform the composition of the FX reserves: depending on the currency composition of external debt and FX reserves, allocation to USD will reduce risk, whereas allocation to other currencies will increase risk (natural-hedging-of-debt argument).

**Table 4. State-Owned Insurance Bank's Balance Sheet**  
(end-December 2017, in USD billions)

<b>Assets</b>		<b>Liabilities</b>	
<b>Financial Assets</b>	<b>3.8</b>	<b>Financial Liabilities</b>	<b>3.6</b>
CP-Indexed Local Currency (LC-UI)	1.37	CP-Indexed Local Currency (LC-UI)	1.02
Nominal Uruguay Pesos (UYU)	0.85	Nominal Uruguay Pesos (UYU)	0.16
Wage-Indexed Local Currency (LC-UW)	1.34	Wage-Indexed Local Currency (LC-UW)	2.23
Foreign Currency (FX)	0.26	Foreign Currency (FX)	0.17
		<b>Net Financial Worth</b>	<b>0.2</b>
<b>Other Assets</b>	<b>0.49</b>	<b>Other Liabilities</b>	<b>0.19</b>
Property, Plant and Equipment	0.38		
Other	0.10		
<b>Total Assets</b>	<b>4.20</b>	<b>Total Liabilities and Net Worth</b>	<b>4.20</b>

Source: BSE.

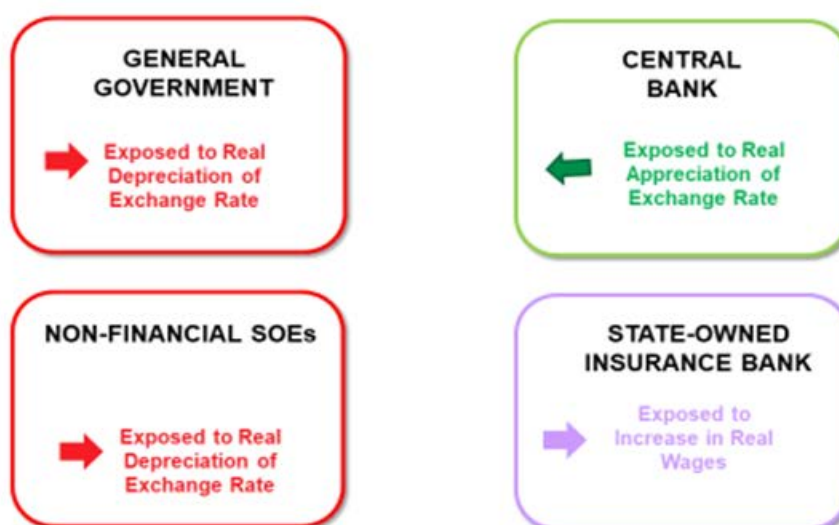
<sup>26</sup> While a full analysis of the GoU's revenue and expenditure has not been undertaken, the government does not have readily identifiable sources of foreign-currency revenue beyond the balance sheet items identified in the analysis. As is the case for other governments without direct sources of foreign-currency revenue, domestic-currency debt represents a less risky strategy.

**Table 5. Consolidated Public Sector Balance Sheet**  
(end-December 2017, in USD billions)

Assets		Liabilities	
<b>Financial Assets</b>	<b>20.3</b>	<b>Financial Liabilities</b>	<b>48.4</b>
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
		<b>Net Financial Worth</b>	<b>-28.1</b>
<b>Other Assets</b>	<b>12.9</b>	<b>Other Liabilities</b>	<b>4.29</b>
Property, Plant and Equipment	8.0		
Other	4.9		
<b>Total Assets</b>	<b>...</b>	<b>Total Liabilities and Net Worth</b>	<b>...</b>

Source: Central Bank.

Figure 1. Balance Sheet Currency Mismatches across Public Sector Sub-Portfolios:  
Schematic View



### **C. Role of Institutional Entities' Arrangements in Supporting SALM**

The Uruguayan SALM approach requires a comprehensive framework of coordination between the various sovereign entities dealing with monetary and fiscal policy, and debt management. In adopting an integrated sovereign asset and liability management framework, a joint analysis of the characteristics of financial assets and liabilities on the sovereign balance sheet allows decision makers to take into account more fully the interrelationships and correlations among sources of risks when formulating strategies and policies.

Given the operational issues and institutional challenges underlying the SALM approach, coordination of participating entities' policies is key to aligning implementation of SALM policy objectives. Operating as an autonomous entity, the BCU is primarily responsible for achieving price stability and for regulating and supervising financial institutions. It adopts an inflation targeting scheme in which a monetary aggregate is chosen as the policy variable. The reserve requirements and the issuance of short-term BCU securities (LRM) are the main instruments to manage the quantity of reserves in the banking system. The BCU also operates a daily deposit and credit facility. In addition to that, a flexible exchange rate regime remains an important key stabilizer for the absorption of external shocks. The BCU interventions in the exchange market aim at providing the market with liquidity in foreign currency. Thus, the ample level of the BCU's international reserves acts as an important buffer that can be used to address severely illiquid conditions.

The BCU and MEF have taken a number of initiatives to improve the coordination of policy and procedural efforts between debt management and monetary policy. One of the most important steps taken was the establishment of the PDCC Public Debt Coordination Committee (PDCC) in April 2016. The PDCC provides an institutional setting to formally coordinate the implementation of the debt management strategies of the Central Bank and the government, based on consistent monetary policy and government financing goals, and given their mandates and risk constraints. The Committee is headed by the Manager of Economic Policy and Markets from the BCU. This framework for cooperation between institutions follows international best practices developed by the World Bank. Also, under its purview are the development of domestic markets, management of the public sector consolidated balance sheet, and potential risk-mitigating strategies for publicly-owned companies.<sup>27</sup>

The improvement of issuance activity is one of the key aspects discussed at the PDCC meetings. The BCU and MEF issuances are segmented within a predefined range of maturities: the BCU's issuances are planned to meet the monetary targets on a quarterly basis, which means issuing LRM up to one year to maturity (30, 90, 180, and 360 days),<sup>28</sup>

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<sup>27</sup> Since its creation in April 2016, the PDCC has met uninterruptedly every 3 months. Also, it publishes a summary of the main issues discussed (in both English and Spanish).

<sup>28</sup> In the past, among the securities issued by the BCU, there were CPI inflation-indexed bonds of up to 10 years to maturity, as well as zero coupon securities (LRM) of up to 2 years to maturity. Under the new arrangement, where the BCU issues only LRM with maturities ranging from 30 days to 1 year, the BCU reduces the market

while the MEF issuances are directed to provide government financing for longer tenors, including fixed rate bonds and CPI inflation-indexed bonds. The definition of the MEF issuance plan for the following six months factors in information from the BCU's market operations area about the expected demand for the government bonds, as well as the market liquidity conditions. In this context, both institutions are continuously evaluating the execution of potential structured operations, using different sorts of BCU and MEF market instruments, to meet some opportunistic objectives from their respective policy areas.

As the Committee oversees the development of domestic markets, management of the public sector consolidated balance sheet, and potential risk-mitigating strategies for publicly-owned companies,<sup>29</sup> specific topics addressed include: (i) assessing developments in domestic and international debt capital markets and their impact in local and foreign currency yield curves; (ii) government's domestic market issuance calendar; (iii) developing domestic market instruments that could help insurance companies reduce their balance sheet currency mismatches associated with annuities payments under the pension regime framework; (iv) analysis of currency hedging alternatives for public-sector enterprises; and (v) connecting domestic financial markets in Uruguay to global clearing and settlement systems.

#### **IV. TRANSACTIONS DESIGNED TO ADDRESS RISK EXPOSURE ACROSS THE SOVEREIGN BALANCE SHEET IN URUGUAY**

Below we describe and analyze different strategies implemented by the Uruguayan authorities to reduce financial balance sheet vulnerabilities in the consolidated public sector, based on the identification of exposures under a sovereign ALM balance framework. The adopted risk mitigation strategies are based on identifying opportunities to better distribute currency risk across different institutions in the public sector (through cross-sectoral natural and financial hedging). The focus is on different categories of currency exposure identified from net balance sheet currency positions (both in terms of flow and stock risks). In addition, it takes into account the cyclical properties of macroeconomic variables and the risk-characteristics of the government's revenue base.

##### **A. Role of Liability Management Operations in Managing Foreign Exchange Exposures**

From late 2010, Uruguay experienced strong capital inflows, and by 2015 the BCU had accumulated increasing levels of foreign-currency reserves, funded (sterilized) by short-term BCU securities. Reserves were well above prudential metrics, and the BCU was facing

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fragmentation effects, favors the management of the public debt and promotes the development of the local bond market.

<sup>29</sup> See the following link for the Protocol of the PDCC:

<http://deuda.mef.gub.uy/innovaportal/file/18104/6/constitutive-act-of-the-public-debt-coordination-committee.pdf>

balance sheet pressures from the cost-of-carry of reserves. In turn, the government was keen in pursuing its debt-dedollarization strategy.

In July 2015, the central government and the BCU launched a joint operation of issuance and exchange of public securities in the local market involving a two-stage liability management operation (Figure 2 and 3, Appendix 1):

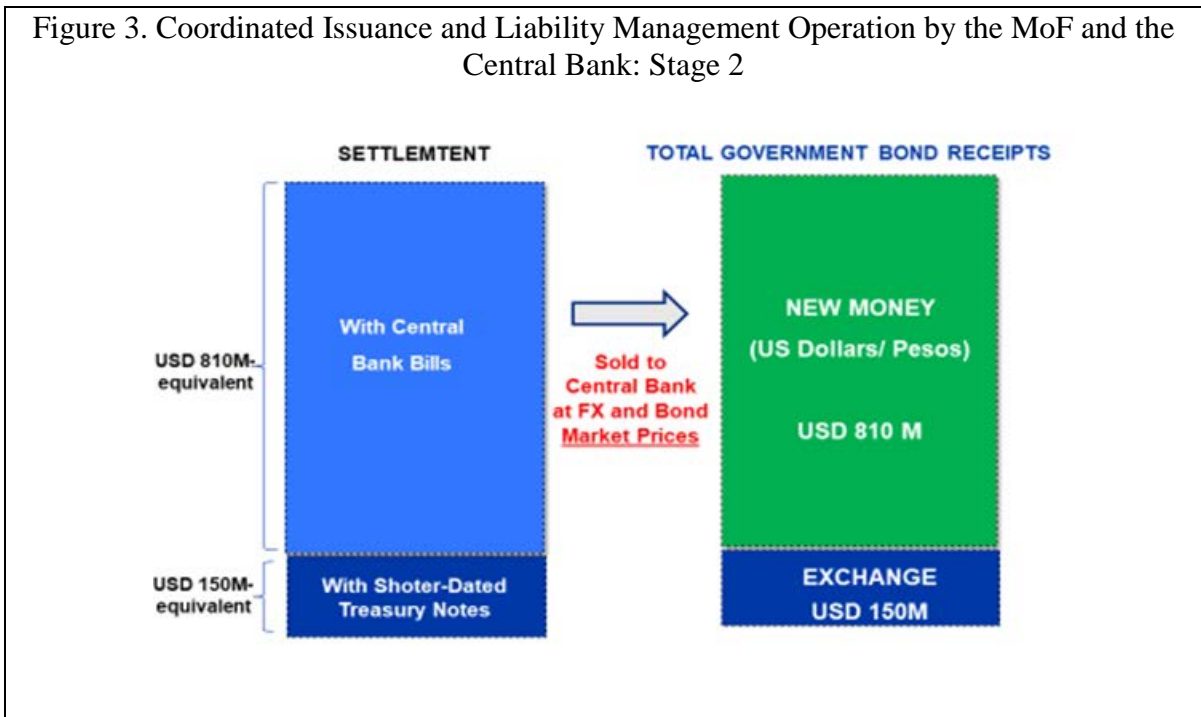
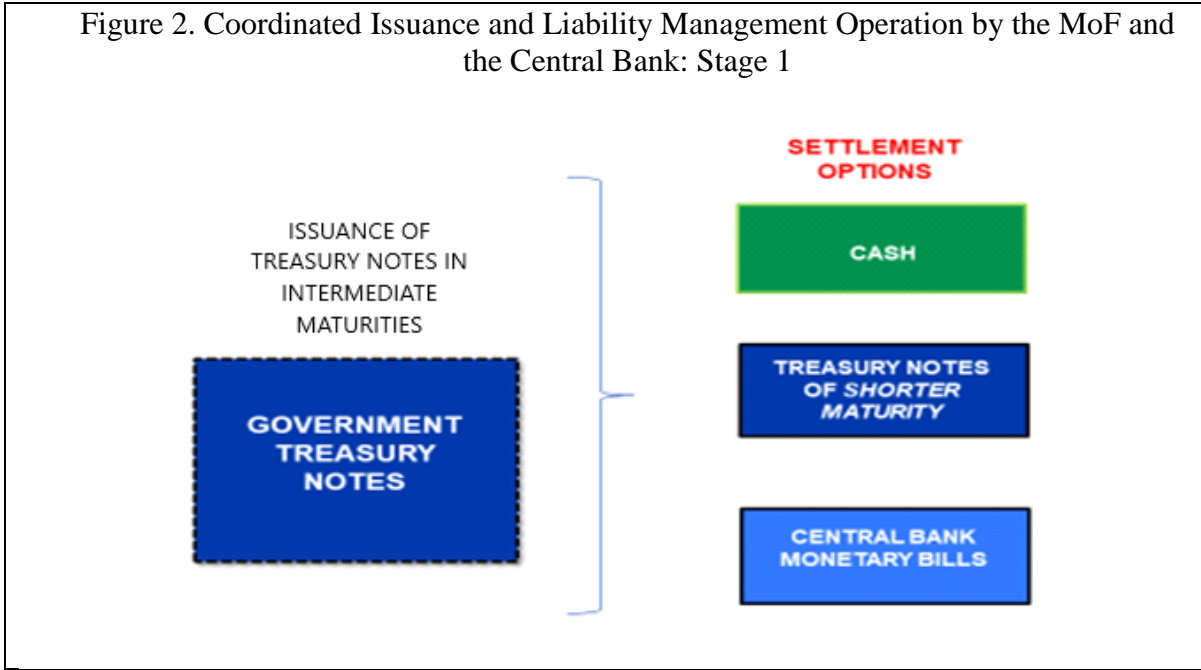
- First, the government issued medium-term bonds in local currency through an auction, where market participants had the option to buy them by using cash (pesos or dollars) or exchange them for their holdings of local central bank securities and/or central government securities of shorter residual maturity (and higher coupons).
- Then, a second transaction took place between the BCU and the MoF, where the amount of BCU securities delivered in the first stage would be exchanged for pesos and/or USD from the central bank.

Accordingly, the government decided to place a Peso equivalent of US\$960 million, and investors practically bought almost all of the bonds issued by tendering their holdings of shorter-dated central bank securities. The government then exchanged (at market prices) the amount of BCU securities tendered by investors in return for dollars from the central bank, thus representing “new money” for the central government and allowing the BCU to cancel its own securities, thereby reducing the size of its balance sheet.

In addition to accomplishing the sovereign’s financing goals in a cost-efficient way, the net result of these coordinated transactions was to reduce currency mismatches on both institutions’ balance sheets, reduce the cost of carry, while also increasing the average maturity of the overall public sector debt. In particular:

- First, the central government was able to reduce its currency mismatches by operating on both sides of its balance sheet: it increased the share of the government’s liabilities denominated in local currency, and at the same time increased its dollar assets by cashing-on the exchanged securities from the central bank.
- Second, by swapping part of their high-coupon local currency liabilities in exchange for dollar reserves, the central bank ameliorated its balance sheet currency mismatch (which was long in dollars), offsetting part of the funding (sterilization) costs of reserve accumulation.
- Third, the operation increased the average time to maturity of the consolidated public sector debt (which includes both central bank and central government liabilities), given that most of the longer-dated securities issued were bought in exchange for short-dated central bank securities.

- Finally, this operation contributed to the development of the local market, by giving investors the opportunity to switch from several securities with small volumes outstanding into fewer and more liquid benchmarks.





## **B. Hedging Foreign Currency Risk in State-Owned Non-Financial Enterprises**

The lack of FX hedging instruments in the local market has forced domestic entities, including SOEs, to look for solutions to risk management exposures within the sovereign balance sheet, providing a natural environment for adopting and cooperating on a consolidated public sector portfolio perspective. In this context, a risk mitigating transaction between the BCU and SOEs is described below.

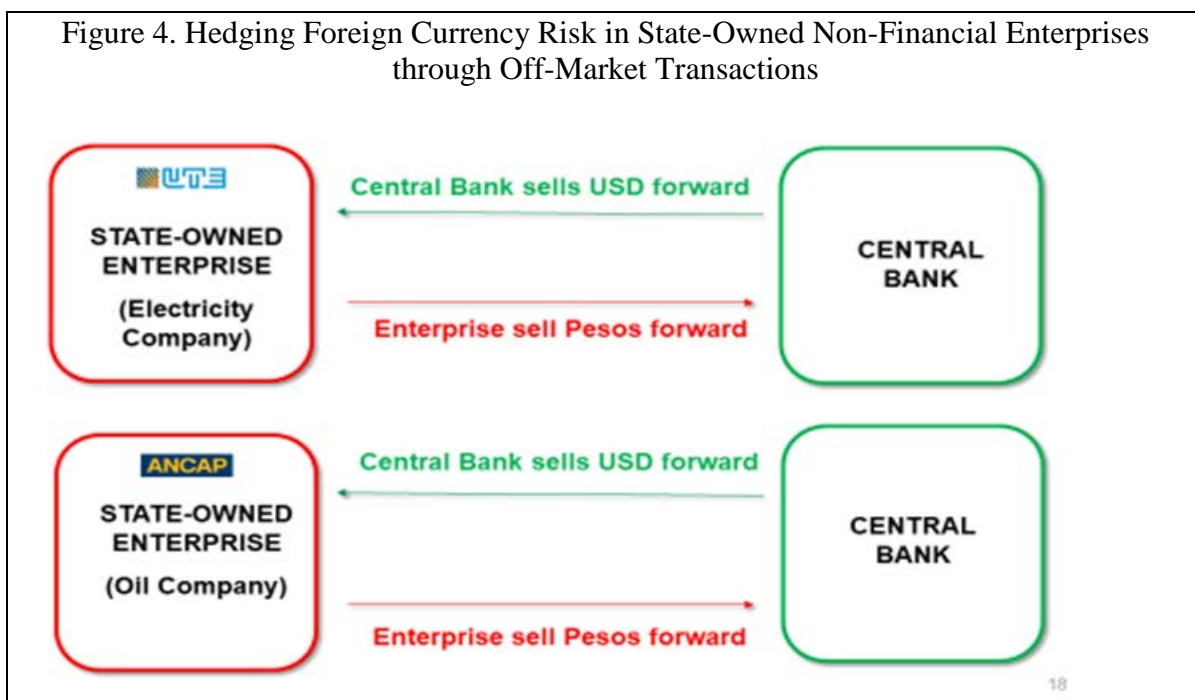
The BCU maintains a significant long position in USD (assets greater than the liabilities in foreign currency), while the two largest state-owned companies (ANCAP and UTE) hold a short position in USD (liabilities greater than the assets in that currency). That is, the balance sheets of the BCU on one side, and of ANCAP and UTE on the other, reflect opposite exposures in relation to the USD exchange rate.

During 2017, the central bank sold dollar forwards to both state-owned companies. Since both transactions were carried out off-market, it was important to carry them out at market prices, with contracts including standard counterparty-risk clauses, to dispel any notion of implicit subsidies.

These transactions allowed public enterprises to mitigate the impact of exchange rate fluctuations on their balance sheets. In Uruguay's case, this has additional importance as hedging markets are limited, which constrains the ability of government-owned entities to optimally manage their own risks (Figure 4).

From a macroeconomic perspective, these financial operations allowed the redistribution of foreign exchange risk among those entities with the best capacity to absorb it, thus providing an integral risk management approach of the consolidated public sector.

Figure 4. Hedging Foreign Currency Risk in State-Owned Non-Financial Enterprises through Off-Market Transactions



### C. Developing Domestic Debt Market Instruments

The SALM framework was used in developing domestic market instruments that could help the state-owned insurance company BSE reduce its balance sheet currency mismatches associated with annuities payments. In this connection, the government submitted legislation, which was approved in April 2018, that created a new daily accounting unit that would track changes to the nominal wage index (*Índice Medio de Salario Nominal - IMSN*).

The government intends to issue medium and long-dated Treasury Notes in local currency tied to these nominal wage changes. The main goal of this new issuance strategy is to supply market securities that can be used by insurance companies to match the currency and maturity composition of assets and liabilities in their retirement annuity business.<sup>30</sup> At the same time, this demand for local currency instruments will also help to underpin the public

<sup>30</sup> It should be noted that while this issuance strategy helps reduce insurance companies' risk, these risks are now undertaken directly by the central government (instead of assuming them as a contingent liability). In essence, this framework envisages that all public sector risks are being held by the government, which de facto becomes the "residual" public-sector balance sheet risk manager (i.e., the entity that centralizes the management of all public-sector balance sheet risks). This is because the overall public-sector risk exposure is not changing in a consolidated public sector balance sheet (where all entities within the public sector are included).

sector's debt dedollarization strategy, broadening its sources of financing in local markets.<sup>31, 32</sup>

## V. LESSONS LEARNED AND STEPS FORWARD

In what follows, the paper distills practical lessons and implications from Uruguay in five key areas.

### A. Adoption of SALM Framework

A number of factors may contribute to the adoption of an SALM framework. First, the definition of “gross public sector debt” is wider than in most countries, as noted above, and includes the debt of the BCU, most SoEs, and two financial entities. In this environment, the central government tends to have a direct interest in their balance sheets; it also means that transactions between the central government of Uruguay and other entities are neutral in terms of the main debt measure. Thus, the central government can address risk from a portfolio perspective, taking into account correlations between different types of risks. Further, the lack of hedging markets is a challenge but also an opportunity, as the lack of FX hedging instruments in the local market has forced entities in Uruguay to look for solutions to risk management exposures within the sovereign balance sheet.

### B. Institutional Coordination

The SALM operations evolved from an informal framework, to an institutional setting. In Uruguay, earlier ALM actions used existing channels and networking by public officials across institutions.<sup>33</sup> There had been a track record of cooperation between government entities to address balance sheet and risk management issues, even though there had been no specific mandate or requirement to do so.

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<sup>31</sup> Developing a yield curve in this new unit of account, in turn, is the foundation for the emergence of an efficient and transparent swap market between the new accounting unit and the index that tracks changes in consumer prices (CP-Indexed Local Currency, LC-UI). Going forward, these financial derivatives could provide insurance companies with additional market instruments for better risk-management.

<sup>32</sup> However, the use of these new instruments would likely detract from the issue of conventional securities, thus damaging their liquidity, and would mostly be bought and held by the BSE, thus limiting their secondary market benefits. In general, the introduction of new instruments could lead to fragmentation of the domestic government bond market.

<sup>33</sup> The relatively small size of the country and consequently the scale of its public institutions may provide a nimbleness that is more difficult to achieve in larger settings. As noted earlier, ALM transactions have been undertaken through the coordinated actions of officials at the DMU and the BCU. In July 2015 (Box 1 p34) CG swapped long term debt for short term BCU paper which was then sold to BCU in exchange for USD from the foreign reserves. This transaction improved the debt profile and reduced BCU balance sheet decreasing the foreign reserves and the cost of carry.

The Debt Management Unit in the Ministry of Economy and Finance, together with the BCU, have played a pivotal role in the implementation of an SALM framework. Recent developments include setting up a PDCC that monitors and shapes the risk management across the wider public-sector balance sheet, focusing on financial liabilities and assets, and considers options to manage consolidated balance-sheet risks.<sup>34</sup>

The establishment of a PDCC, with broad terms of reference, significantly improved the coordinated approach to a more systematic analysis of the public-sector balance sheet. It provided impetus for systematic analysis of financial risk, costs and return across the main entities. Also, decisions about transferring risk to the private sector, via insurance or through capital markets, could be taken on the basis of this systematic analysis to ensure that resources were allocated in the most efficient manner.

### **C. Identification of Exposures**

Widening the scope of analysis of the public sector balance sheet has a number of benefits, both in terms of more comprehensive risk management and in the efficient execution of mitigation measures. A systematic analysis covering the central government, central bank, and SOEs creates a full risk picture, revealing risk exposures and natural hedges, as well as risk concentrations (e.g., exposure to a single credit risk by a number of entities).

The second relates to the choice of the relevant accounting practices. The value of assets and liabilities greatly depends on which accounting measure is used: mark-to-market valuation or historical price.<sup>35</sup> As bond prices move inversely with interest rates and changes in exchange rates affect the market value of external debt, mark-to-market valuation leads to larger fluctuations in the value of debt compared to the use of historical prices. These fluctuations helped to draw policy attention to the lack of natural hedges.

### **D. Risk-mitigation Measures**

A full understanding of the risks arising from the consolidated balance sheet has offered an opportunity to manage them at the source through policy changes: in other words, considering alternative means to implement policy objectives and making judgments based on the relative costs and risks of each. Further, the depth and structure of domestic capital markets have shaped SALM implementation. Lack of hedging instruments in the local market has forced entities to look for solutions to risk management issues through natural hedges within the sovereign balance sheet, with the BCU using its balance sheet to provide

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<sup>34</sup> Regarding the decision-making arrangements in the PDCC, there have not been instituted voting procedures, such as consensus and unanimity, or decision review provisions yet.

<sup>35</sup> Although central banks and governments (MoFs) usually have different accompanying standards, FX valuations are typically similar for both central banks and MoFs (mark-to-market), while interest rate valuations tend to be different (mark-to-market for central banks and nominal or face values for MOFs (see also Section VI B.)).

hedges. In addition to portfolio-based cost-risk considerations and diversification benefits, SALM can help complete markets through government intervention.

### **E. Implementation**

Implementation actions arising from the analysis that the PDCC undertakes need to be negotiated. Each entity has its own legal requirements and public policy objectives and decision-making remains with those holding delegated authority. This ensures that accountability is not blurred and strikes an appropriate balance between risk management at the level of the sovereign and efficient operation of individual entities.

Accounting principles affect SALM and incentives. The discussion of whether the cost of carry of the FX reserves can be reduced by swapping to or issuing floating rate debt again depends both on whether FX reserves are stable but also on the accounting rules that allow the transfer of BCU profits to the Ministry of Finance of Uruguay.

### **F. Accountability**

In managing the residual risks of entities, it is essential to ensure that they remain accountable for the efficient management of their businesses and balance sheets. The ability to transfer risks to the center must not become a means to shift to the government's balance sheet problems that could have been managed effectively at the level of the entity. In that context, the PDCC provides informal decisions regarding the sovereign balance sheet risk management, which decisions have to be approved by the state, if the state (Treasury) is the residual risk manager.

## **VI. CONSIDERATIONS FOR SOUND PRACTICES IN APPLYING SALM**

Based on the experiences of Uruguay and other countries, some broad guiding principles and good practices may be drawn for the application of an SALM framework.

### **A. Data Requirements**

As more governments produce statements of financial position (i.e., balance sheets), which provide a full picture of sovereign assets and liabilities, the basic data for applying SALM become available. However, as the Uruguay case illustrates, this may not necessarily be a prerequisite for undertaking risk management. It is possible to identify the government entities that contribute materially to the balance sheet, particularly those with financial assets and liabilities for which SALM may be able to improve risk, cost or return outcomes. In these circumstances, up-to-date financial reporting for each entity is required. In Uruguay, as is the case in many other countries, SOEs, the central bank, and other financial entities are producing financial statements that conform to generally accepted accounting principles, even if the sovereign does not.

It should be noted that even when aggregated financial reporting for the sovereign as a whole is available, the data requirements for SALM are likely to call for more granularity and extensive examination of the financial reporting of individual entities. For example, to obtain a picture of net currency and interest-rate risk exposures, it would be necessary to have more detailed information on the currency composition of debt and financial assets, maturity profile of debt, asset allocation, duration of fixed-income assets, etc. This would be challenging to aggregate on a real-time basis, but static information on balance dates would provide sufficient data for a first approximation. This could be supplemented with analysis of the degree to which the aggregated positions vary through time.

## **B. Development of an Analytical Framework and Strategy**

An analytical framework for SALM may be characterized by the following four stages. The first is to identify the scope of the analysis and the relevant entities that would be included. Uruguay has taken a relatively broad approach compared to other countries, many of which focus on the balance sheets of the government and central bank in the first instance. Decisions on scope are shaped by materiality—i.e., identifying the entities with the largest balance sheets and risk, as well as practicality—i.e., the probability that action would be possible in the prevailing institutional setting.<sup>36</sup>

The second stage is an analysis of financial risk across the relevant entities. This would reveal where there are natural hedges and identify mismatches, which may be characterized as net risk positions. A range of analytical tools may be used to analyze this risk in order to better understand the potential implications for the government's fiscal position in the future. These include variants of the mean-variance approach, such as value-at-risk (VaR) or cost-at-risk (CaR), as well as deterministic analysis such as stress tests.<sup>37</sup> Many governments employ such tools to support decisions on the composition of public debt, including Uruguay, and the analysis may be adapted to net positions, rather than gross debt.

The third stage is development of a SALM strategy, based on the analysis of risk. The ability of the sovereign to bear risk is an important consideration and this will be shaped by balance sheet strength (e.g., debt levels and net worth), fiscal prospects and flexibility, nature and level of contingent liabilities, and ongoing access to finance. Against this, cost-risk (or risk-return) tradeoffs may be made, taking into account market and other constraints. The strategy may include a mix of risk avoidance (e.g., changes to policies or activities), risk retention, or risk transfer (e.g., insurance or derivatives).

Further, there are differing approaches to measuring risk and accounting for financial instruments between entities. A central bank generally would use mark-to-market to value foreign-currency reserves, which implies that a 10-year bond is seen as a risky instrument—

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<sup>36</sup> For example, in Uruguay the definition of public sector debt, encompassing the wider public sector that includes SOEs and the Central Bank of Uruguay (BCU) defined the scope.

<sup>37</sup> See Das et al. (2012) for an outline of these tools.

its value varies according to the level of interest rates. For the government debt manager, the objective is to manage the volatility in annual debt interest payments and contain rollover risk. From this perspective, a 10-year bond is a less risky instrument. In addition, government debt is generally accounted for on the basis of historic cost, whereas central bank reserves are reported at fair value. This may create a situation where the central bank books a loss on its 10-year asset if interest rates rise, whereas the government reports no change in valuation of its 10-year liability. The result is a reported loss for the combined entity, even though from an economic standpoint a hedged position is in place.

To mitigate performance metrics caused by different accounting conventions, a supplementary position and performance reporting might be needed. For example, the government of Canada in the reporting of its Exchange Fund Account, provides a such additional reporting (in Annex 5 of its Annual Report). In particular, it reports a “total return on net assets” and “performance attribution of total return”, in which both assets and liabilities are marked to market.

The last stage is implementing the strategy and evaluating outcomes. This includes decisions about specific instruments and implementing policy change.

### **C. Policy and Coordination**

The assets and financial liabilities on a sovereign balance sheet should reflect the implementation of fiscal and monetary policies, social policy (e.g., lending for housing; provision of retirement income), and commercial activities (SOEs, public financial institutions). As the entities responsible for implementing these policies have statutory or delegated authority for their operations, a SALM strategy is developed through a process of negotiations and decisions. The objective is to improve outcomes in terms of reducing risk and/or cost, within the agreed objectives and frameworks for each policy area. Such policy outcomes could be achieved through this type of coordination.

Based on the experience in Uruguay and other countries, some generalizations can be made about the circumstances in which SALM adds value. If the government has foreign-currency debt on its balance sheet, it may be possible to reduce risk by matching its composition to that of the foreign-currency reserves, at least for the investment tranche of the reserves.<sup>38</sup> Some countries have accumulated reserves well in excess of the levels required for exchange rate or currency flow management reasons; this provides scope to reduce FX debt and/or diversify investments. A third common case is when a central bank has significant local-currency debt, for example, from funding (sterilization) or resolving financial crises. Central bank issuance fragments the market for sovereign debt—consolidating borrowing in

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<sup>38</sup> Also, some central banks take into consideration the composition of short-term external debt for their strategic asset-allocation decisions.

government securities can support debt management and monetary policy objectives, as well as improving the functioning of the local market.

The interaction between the public debt management (PDM) and asset management strategy and the SALM strategy should be clear. Robust formal institutional arrangements in developing especially the PDM strategy provides investors and the public with a greater degree of assurance about the management of the sizable risks in the government's balance sheet. A well-articulated PDM strategy, which has as much specificity as possible and clearly explains the analysis and rationale for the chosen approach, is essential for such purpose. Logical and detailed explanations of policy decisions, *ex ante*, may also reduce the likelihood that outside commentators criticize the policy actions *ex post*. A forum for an open dialogue can help secure support for the strategy, as part of the government's overall approach to macroeconomic management and financial stewardship.

The structure of domestic capital markets may also limit SALM implementation. Some developing countries cannot issue domestic debt because of illiquid and/or shallow domestic debt capital markets and the lack of a reliable local investor base. Also, their attempts to issue domestic-currency external debt *i.e.*, foreign governing law, have often not been well-received in international markets reflecting, in part, their vulnerability to shocks, possible restrictions on the ability of foreign investors to buy local-currency debt (*e.g.*, on type of instruments, minimum holding period), poor transparency, and/or a lack of interest rate and exchange rate hedging instruments. Thus, the level of the domestic-currency bond market development determines the respective government's domestic versus foreign-currency funding and consequent composition of its debt portfolio, and in turn its ability to fully implement a SALM strategy.

Successful adoption of an SALM framework requires a well-defined institutional structure and close coordination and information sharing among the institutions involved, along with the ability to translate the information into a financial risk strategy that can be implemented by those institutions.

#### **D. Other Institutional Considerations**

As financial assets and liabilities of the sovereign are managed by a number of separate entities, possible institutional impediments to SALM should be identified and dealt with promptly. While a coordinated approach could result in improved outcomes for the sovereign balance sheet as a whole, the benefits may not accrue to the balance sheet of a particular entity. This may weaken incentives for action. Also, there may be friction between institutions for other reasons, possibly historic, which undermine the prospects for coordination. In these circumstances, strong leadership is required to ensure efficient SALM.



## VII. CONCLUDING REMARKS

An SALM framework is suitable for countries that fulfill certain preconditions. If authorities decide to adopt an SALM framework, first, they need an integrated sovereign balance sheet, following good practices. Second, they should aim to create an appropriate institutional/coordination platform for those government entities whose financial accounts will be included in the sovereign balance sheet and whose corresponding portfolio risks will need to be monitored. Third, they will need to have policy instruments that are effective in modifying the overall portfolio cost and risk characteristics. Under these conditions, adoption of an SALM framework would allow the country to efficiently and adequately identify and measure prevailing and/or emerging portfolio risks, as well as to manage them in the most cost-effective manner.

However, a fully developed sovereign balance sheet may not be always feasible and may have to be a long-term goal. To take advantage of the benefits that SALM can offer, the authorities should at least be able to identify the main assets and liabilities that would have a material impact on the management of financial risk, analyzing them accordingly. For most countries, they would include the balance sheets of the central government and central bank in the first instance.<sup>39</sup> Beyond that, the focus should gradually turn to other entities with significant debt and financial assets, such as financial institutions, investment and pension funds, and SOEs.

It may take time to establish a formal body that is able to coordinate SALM. In Uruguay, earlier ALM actions used existing channels and networking by officials. This process has also been observed in other countries. However, the establishment of a PDCC in Uruguay, with broad terms of reference, provided an impetus for systematic analysis of financial risk, costs and return across the main entities.

As the assets and liabilities that make up the sovereign balance sheet are managed by a range of entities, some with constitutional or statutory independence, adoption of a fully-fledged SALM framework may require extensive negotiations among these entities. However, since the central bank is typically a main participant, any operational independence of an SALM entity can only come about through a “meeting of minds” that share the same overarching SALM objective.

In principle, constitutional or statutory independence of participating entities should not be a reason to resist the formation of an SALM framework. As its implementation aims to improve the efficiency of policy outcomes, it should be in the interest of the sovereign as a whole. Further, if application of an SALM framework calls for changes in the investment,

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<sup>39</sup> Regarding the central government balance sheet, efforts should be made to include the government’s main “fiscal” asset, i.e., its ability to tax, for a more comprehensive representation of the government’s total assets. In this study, we have mainly taken into account the central government’s financial assets.

borrowing or risk management actions that could be accommodated within the policy framework of constituent entities, then such changes should not be resisted.

A separate entity to implement the strategic SALM analysis may be desirable. The public debt management unit, or an expanded unit would be a prime candidate. Its core role of developing a public debt management strategy also requires analysis of the nature of the government's assets and revenue. In addition, it has often the institutional arrangements in place to manage the operational risks associated with the execution of high-value transactions in financial markets.

It should be noted that financial reporting standards and differing definitions of risk could reduce incentives to work towards SALM. For example, as discussed in section V, different accounting treatments of securities could result in a reported loss for the combined central bank-government entity, even though from an economic standpoint a hedged position is in place. From a financial reporting perspective, a 10-year bond is seen as a risky investment by a central bank, whereas it might be seen as helping to contain rollover risk and the volatility in annual debt interest payments by a public debt manager.

Where existing instruments and markets are not readily available to offset identified exposures, governments can support the development of such facilities. To this end, countries have supported the development of local currency bond markets, issued in the international capital markets, or developed the capacity to enter into derivative transactions.

Finally, an SALM framework can serve as a monitoring device for the dynamic evolution of sovereign balance-sheet risks. Implementation of an SALM model will probably impact the respective country's macroeconomic setting, including its fiscal accounts (effects on issuances and liability management operations), monetary and exchange rate policies (effects on interest and exchange rates), and institutional structure (effects on sovereign asset and liability hedging strategies). These effects will possibly trigger policy reactions to any unintended or undesired consequences, especially if they are sizeable. Then, round-two application of the SALM approach will have new macroeconomic consequences and create another feedback loop (a dynamic mechanism of monitoring, assessing, and addressing resulting sovereign portfolio risks), and so on. A dynamic process of this kind, that helps to secure optimal hedges and improve sovereign risk management outcomes, can be facilitated by ad hoc stress testing and/or ex-ante scenario analysis of the adopted SALM model.

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## Appendix 1. Liability Management Operations

Risk	Liability Management Operation
Refinancing risk/rollover risk	<p>Smooth maturity profile by well-planned primary market issuance.</p> <p>Regular use of buybacks and exchanges to reduce size of large individual maturities.</p> <p>Use of amortizing bonds/debt.</p>
Funding liquidity risk and market liquidity risk	<p>Funding liquidity risks:</p> <p>Use of cash buffers and contingency credit lines.</p> <p>Market liquidity risk:</p> <p>Issuance in key maturity segments; concentrate on small number of instrument types; transparency to reduce uncertainty.</p> <p>Use of market makers and securities lending facilities.</p> <p>Use of buybacks and bond exchanges to contribute to trading in on-the-run issues.</p>
Interest rate risk	<p>Targets for issuance of fixed/floating rate instruments in primary market issuance.</p> <p>Interest rate derivatives to change interest rate structure and duration.</p> <p>Changes in portfolio composition to manage interest rate sensitivity.</p>
Exchange rate risk	<p>Limits for overall foreign exchange risk and benchmark portfolio composition.</p> <p>Well-structured primary market issuance.</p> <p>Use of bond exchanges to achieve a targeted mix of local and foreign currency in the debt portfolio.</p> <p>Use of cross-currency swaps or optionality in loan agreements (where they exist).</p> <p>Use of foreign exchange derivatives to hedge other foreign exchange risk deriving from other instruments such as foreign-currency bonds or CP, as well as assets.</p>
Credit risk	<p>Alerting fiscal authorities of the need to take appropriate action and address market concerns so sovereign bond yields and credit default spreads are reduced.</p>
Counterparty risk for derivative transactions and assets on the balance sheet	<p>Counterparty credit risk limits.</p> <p>Monitoring of counterparty creditworthiness and adequate posting of collateral.</p>

Legal risk	Use of standard legal agreements. Sound internal processes and a legal strategy for the use of collective action and pari passu clauses; consistent application of cross default and negative pledge clauses.
Operational risk	Internal structure that delineates responsibilities. Well-documented internal processes and systems. Four-eye principle and well-trained staff. A risk management culture that rewards reporting of failed processes or close calls.

Source: Jonasson and Papaioannou (2018)

## Appendix 2. Countries Applying Elements of SALM

There are numerous instances of government using ALM principles in a more or less ad hoc way. These fall into four categories: (i) coordinated management of foreign currency reserves with foreign currency debt; (ii) management of asset levels to provide a buffer against adverse market conditions; (iii) transactions between the central bank and government in order to strengthen policy outcomes, reduce cost, and reduce risk; and (iv) analysis of the variables that drive government revenues and development of debt portfolios that match these.

**Table 1. Selected SALM Country Cases**

Country	Management of Sovereign Assets and Liabilities.
Canada	Decision-making authority for both assets and liabilities is assigned to the Ministry of Finance, which delegates the day-to-day management is delegated to the Central Bank. The coordination mechanism is instituting regular meetings between the entities involved in SALM.
New Zealand	Manages local currency and foreign currency assets and provides derivative transactions for government entities.
Australia	Allocation of assets between alternative portfolios and funds may take account of the government's broader priorities and objectives, but not specifically of balance sheet risks, coordination is by the responsible ministry.
Hungary, Uruguay	The coordination mechanism is instituting regular meetings between the entities involved in SALM.
Mexico	Reduced its external debt in 2006 through issuing domestic securities and using the proceeds to acquire FX from the central bank, which in turn redeemed its securities to reduce negative carry-costs improving the composition of the sovereign balance sheet.
Denmark	Manages the consolidated position of the government debt by considering assets of government funds (e.g., pension funds, holding primarily government bonds and on-lending), guidelines for government guaranteed entities on exchange rate risks and loan types.
Turkey	Manages the currency composition of the international reserves based on the maturity structure and currency composition of the government foreign exchange liabilities.
Finland, Turkey	Management of central government debt and cash reserves is on a net basis.

Source: Lu, Papaioannou and Iva Petrova (2012) and country websites.