Public Debt Management Systems
PFM In a Changing World
December 3, 2018
Outline

- What is the role of debt management in PFM?
- How to define a debt management system (DMS)?
- How to select and implement a DMS?
- What are the current DMS used by sovereigns?
- Conclusion
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Public Debt Management is part of Public Financial Management

- A government's debt portfolio is often the largest liability in the country and can generate substantial risk to its balance sheet, with potential to undermine key development objectives.

- As such, public debt management operations constitute an important part of PFM processes.

- Public debt management contributes to the governance and efficiency of PFM operations, by providing vital input (debt stock, debt service projections) during:
  - Budget formulation
  - Execution and,
  - Monitoring.
Public debt management is also important for macroeconomists, investors & public

- Provides input to macroeconomic policies design and review
- IMF and WB have multiple databases that collect and disseminate public debt data
  - Government Finance Statistics (GFS)
  - International Financial Statistics (GFHF)
  - Global Debt Database (GDD)
  - Public Sector Balance Sheet Database (PSBS)
  - Quarterly Public Sector Debt Statistics Database (QPSD)
  - Quarterly External Debt Statistics Database (QEDS)
  - International Debt Statistics (IDS)
- Source of this data is the sovereign Debt Management Office (DMO)
Simplified information and transaction flow for a DMO

**Debt Management Office**

- **Front-office**: Settlement, Debt issuances
- **Middle-office**: Benchmarks, Performance, Risk & complia.
- **Back-office**: Reporting, Payment Instructions

**Central Bank**

- Investors
- Debt issuances
- Auctions
- Payments

**Treasury**

- Public Financial Management (FMIS)
- Budget
- Budget preparation

**Central Bank**

- Central Bank
- Treasury
- Budget

**Market data provider**

- Market data provider
- Performance
- Reporting

**Debt issuances**

- Debt issuances
- Settlement

**Payment Instructions**

- Payment Instructions
- Cash management
- Accounting

**Investors**

- Investors
- Settlement

**Risk & complia.**

- Risk & complia.
- Reporting

**Budget**

- Budget
- Budget preparation

**Central Bank**

- Central Bank
- Settlement

**Budget preparation**

- Budget preparation
- Payment Instructions

**Cash management**

- Cash management
- Accounting

**Auctions**

- Auctions
- Performance

**Settlement**

- Settlement
- Payment Instructions

**Debt Management Office**

- Debt Management Office
- Front-office
- Middle-office
- Back-office

**Debt Management Office**

- Central Bank
- Front-office
- Middle-office
- Back-office

**Public Financial Management (FMIS)**

- Public Financial Management (FMIS)
- Budget
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DMS is the backbone of any sovereign DMO

Note: This figure is adapted from Turban, McLean, Wetherbe (2004)
DMS contributes to strengthening debt management operations

A robust, well-functioning and user-friendly DMS helps:

- Reduce operational and reputation risks
- Facilitate efforts to increase transparency and accountability
- Empower decision maker
- Stimulates efficiency and productivity within the DMO and with related parties
- Support the automation and integration of debt management with PFM
A DMS should meet the current and evolving needs of a country

- Supports almost the complete array of debt instruments used by the DMO; e.g.
  - external and domestic (loans, bonds, indexed instruments)
- Captures data on debt-like instruments if relevant; e.g.
  - sovereign guarantees, on-lending of government debt
- Handles the special features of instruments; e.g.
  - Day count, holiday conventions, uncommon redemption profiles
- Improves work flows within the DMO and with other parties
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For a DMS, some functions are mandatory, others nice to have

<table>
<thead>
<tr>
<th>Function</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recording, validating and maintaining debt data</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Producing payment projections</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Generating reports for analyses and decision support</td>
<td>Mandatory</td>
</tr>
<tr>
<td>Conducting portfolio and risk analyses</td>
<td>Relevant</td>
</tr>
<tr>
<td>Planning future borrowings</td>
<td>Relevant</td>
</tr>
<tr>
<td>Resource mobilization</td>
<td>Relevant</td>
</tr>
<tr>
<td>Connection with FMIS</td>
<td>Relevant</td>
</tr>
<tr>
<td>Straight through processing</td>
<td>Desirable</td>
</tr>
</tbody>
</table>
DMS needs to meet user-requirements and include key features

- User requirements for any information system include:
  - user-friendliness and intuitive interface and architecture,
  - easy retrieval of data in a useful format and the ability to export data to other platforms,
  - the ability to conduct searches within the system using keywords, and
  - the availability of a detailed user manual.

- Additionally, it should be secure, accurate and reliable.
DMS as part of the Fin. Management Info. System (FMIS)?

Alternative DMS solutions

- In-house systems
- Off-the-shelf solutions
  - Public DMS: CS-DRMS, DMFAS
  - Commercial: Calypso, Telsat, Murex, Wall Street Systems
## Selection and implementation of a DMS

<table>
<thead>
<tr>
<th>Type of system</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>In-house system</strong></td>
<td>• Tailored to DMO’s country specific current and future needs</td>
<td>• Not one of core competencies of DMOs; inexperienced team more prone to neglect key system features</td>
</tr>
<tr>
<td></td>
<td>• Full access to the source code; unlimited and free access to large number of users</td>
<td>• Tendency to underestimate the extent of challenges for developing a software package in terms of complexity, time and cost</td>
</tr>
<tr>
<td></td>
<td>• Not dependent on software maintenance and upgrade contracts</td>
<td>• Require well prepared user-requirements, project plan and implementation</td>
</tr>
<tr>
<td></td>
<td>• Tailored to support DMO’s organizational flows</td>
<td>• More likely to generate suboptimal solutions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Key IT person risk</td>
</tr>
<tr>
<td><strong>Off-the-shelf solutions</strong></td>
<td><strong>(General)</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Professionally developed and reliable; adhere to core financial industry standards</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Capacity to handle large sets of data and transactions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Lower technology risks and positive externality if used by several countries</td>
<td></td>
</tr>
<tr>
<td><strong>- Public DMS</strong></td>
<td>• Specifically built for sovereign debt management portfolio</td>
<td>• Originally built to manage external debt for back office, requiring work-arounds to handle other instruments (e.g., inflation linked) and operations (e.g., liability management)</td>
</tr>
<tr>
<td></td>
<td>• Perceived as public good and shared ownership of software by involved countries</td>
<td>• Creates dependence on the existing system that was originally free or low cost</td>
</tr>
<tr>
<td><strong>- Commercial system</strong></td>
<td>• Complete product, with front, middle and back office functions usually captured in the same package, supporting STP</td>
<td>• Not designed for sovereigns</td>
</tr>
<tr>
<td></td>
<td>• Well prepared to connect to external systems</td>
<td>• Less flexible than the public DMS in addressing sovereign’s needs related to country-specific instruments and transactions</td>
</tr>
<tr>
<td><strong>(Specific)</strong></td>
<td></td>
<td>• Usually expensive installation, maintenance, upgrades and training</td>
</tr>
</tbody>
</table>
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§ Conclusion
### General observations from 31 country surveys

- Almost all countries (94%) use a software
- LIC & LMIC prefer public DMS, UMIC evenly split between in-house and public DMS, HIC adopt commercial or develop their own

<table>
<thead>
<tr>
<th></th>
<th>LIC / LMIC</th>
<th>UMIC</th>
<th>HIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-house</td>
<td>1</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>Public DMS</td>
<td>7</td>
<td>8</td>
<td>2</td>
</tr>
<tr>
<td>Commercial</td>
<td>2</td>
<td>0</td>
<td>4</td>
</tr>
</tbody>
</table>
Current DMS capture mandatory and most of the relevant functions / Satisfaction level

![Bar Charts]

- Overall DMS
- Technical Support
- Hardware

- Borrowing Operations (Front-Office)
- Risk Analysis Operations (Middle-Office)
- Debt Recording and Repayment Operations (Back-Office)
- Reporting
- Other Functions

- In-house
- Public DMS
- Commercial
All systems cover the common debts instruments (bonds, bills, loans) & fees.
Interaction of the DMS with FMIS is desirable, but weakest feature
Outline

- What is the role of debt management in PFM?
- How to define a debt management system (DMS)?
- How to select and implement a DMS?
- What are the findings from a survey?
- Conclusion
Conclusions

- Public debt management contributes to the governance and efficiency of PFM operations, by providing vital debt related input.
- A robust and secure DMS ensures such input is accurate, timely and reliable.
- Selection of the DMS requires through analysis of the current and future needs.
- DMS solutions used by surveyed countries meet the current needs, but fail at integrating into the PFM processes.

Questions?

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Acronyms

- DMS: Debt management system
- DMO: Debt management office
- FMIS: Financial management information system
- HIC: High income countries
- LIC: Low income countries
- LMIC: Lower middle income countries
- PFM: Public financial management
- UMIC: Upper middle income countries
### DMS landscape among 31 surveyed countries

<table>
<thead>
<tr>
<th>Brazil</th>
<th>Fiji</th>
<th>Indonesia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulgaria</td>
<td>Ghana</td>
<td>Paraguay</td>
</tr>
<tr>
<td>Macedonia</td>
<td>India</td>
<td>Philippines</td>
</tr>
<tr>
<td>Peru</td>
<td>Jamaica</td>
<td>Trinidad</td>
</tr>
<tr>
<td>South Africa</td>
<td>Maldives</td>
<td>Vietnam</td>
</tr>
<tr>
<td>Sweden</td>
<td>Thailand</td>
<td>Denmark</td>
</tr>
<tr>
<td>Turkey</td>
<td>Albania</td>
<td>France</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Costa Rica</td>
<td>Georgia</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Georgia</td>
<td>Iceland</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Madagascar</td>
<td>Morocco</td>
</tr>
<tr>
<td>Dominica</td>
<td></td>
<td>New Zealand</td>
</tr>
</tbody>
</table>