CASH FLOW FORECASTING PRACTICES IN SOUTH AFRICA

POLICY DIALOGUE ON STRENGTHENING THE CO-ORDINATION BETWEEN DEBT AND CASH MANAGEMENT, ACCRA

Presenter: Johan Redelinghuys | Chief Director, National Treasury | 20 – 21 March 2018
Content

Explain South Africa’s experience covering some main features of modern cash management

• Appropriate institutional arrangements and responsibilities

• Centralisation of cash balances, established TSA structure

• Ability to make accurate projections of inflows and outflows

• Information sharing between treasury units, revenue-collecting agencies, spending ministries, etc.

• Availability of bridging finance facilities

• Integration of debt and cash management
Cash Management institutional arrangement
Cash management road map

• Cash management function established in the National Treasury, 1995
  – Formalised an appropriate institutional framework
  – Improved operational efficiency
  – Establish appropriate Treasury single account structure
  – Establish capacity to forecast cash flows
  – Put in place bridging finance facilities

• Integrated with debt management, 1998

• Coordination of government-wide cash, 2004

• Non-interest bearing buffer eliminated, 2005

• Coordination with monetary policy, 2005
Formalised an appropriate institutional framework

• Principles
  – Adopted strategy of separating monetary and fiscal policy
  – Government cash flows should not have impact on the money market liquidity
  – Integrated debt and cash management

• As a result took over cash management responsibility from the South African Reserve Bank
Institutional arrangements and responsibilities

• Reserve Bank facilitate domestic/foreign payment cycle
• Commercial banks facilitate tax and non-tax receipt cycle
• Interest bearing cash balances with Reserve Bank/commercial banks
• Clear regulations for cash management arrangements
• Obligatory exchanges of data between National Treasury, spending agencies and tax revenue agencies
• Within National Treasury exchanges between:
  – Budget Office
  – Debt Management
  – Cash Management
South Africa’s cash flow forecasting process
Cash flow forecasting involves

• Alignment of large expenditure and debt service (interest, redemptions) with revenue flows
• Long-and short-term cash flow forecasting
• Good communication between all government departments and tax collecting agency
• Close links with debt issuance unit and funding strategy
Improving accuracy of forecasting

- Electronic payments (phase out cheques)
- Transfer responsibility to agencies and departments
- Build a database of cash flows
- Eliminate human factor through system generated forecasts
- Variance analysis
# Forecasting periods

<table>
<thead>
<tr>
<th>Long-term</th>
<th>3-year annual forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3-year monthly forecast</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
</tr>
<tr>
<td><em>Months</em></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 11 12</td>
</tr>
</tbody>
</table>

## Current year rolling monthly forecast

<table>
<thead>
<tr>
<th>Year 1</th>
<th><em>Rolling into year two</em></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Months</em></td>
<td></td>
</tr>
<tr>
<td>1 2 3 4 5 6 7 8 9 11 12</td>
<td></td>
</tr>
</tbody>
</table>

## 90-day daily forecasts (or longer if needed)

<table>
<thead>
<tr>
<th>Short-term</th>
<th>90-day daily forecasts (or longer if needed)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Days</strong></td>
<td></td>
</tr>
<tr>
<td>1 - 90</td>
<td></td>
</tr>
</tbody>
</table>

## Current day firm forecasts (11:00 and 15:00)

- **Forecasting periods**
  - 3-year annual forecast
  - 3-year monthly forecast
    - Year 1
      - *Months*
        - 1 2 3 4 5 6 7 8 9 11 12
    - Year 2
      - *Months*
        - 1 2 3 4 5 6 7 8 9 11 12
    - Year 3
      - *Months*
        - 1 2 3 4 5 6 7 8 9 11 12
  - Current year rolling monthly forecast
    - Year 1
      - *Months*
        - 1 2 3 4 5 6 7 8 9 11 12
  - 90-day daily forecasts (or longer if needed)
    - **Days**
      - 1 - 90
  - Current day firm forecasts (11:00 and 15:00)
## Cash flow forecasting matrix

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ANNUAL</th>
<th>MONTHLY</th>
<th>DAILY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Receipts</td>
<td>Payments</td>
</tr>
<tr>
<td>Opening balance</td>
<td>—</td>
<td>—</td>
<td>Opening balance</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Rand</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• US$</td>
</tr>
<tr>
<td>Budget deficit</td>
<td></td>
<td>Revenue</td>
<td>Tax revenue</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tax revenue</td>
<td>Non-tax</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Non-tax revenue</td>
<td>• Fx profits</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Dividends</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Other</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Expenditure</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Debt-service costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Line Ministries</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Local</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign currency</td>
<td></td>
</tr>
<tr>
<td>Loan redemptions</td>
<td>Total</td>
<td>Domestic</td>
<td>Domestic</td>
</tr>
<tr>
<td></td>
<td>redemptions</td>
<td></td>
<td>• Specific loans</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Foreign</td>
<td>• Foreign</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Specific loans</td>
</tr>
<tr>
<td>Gross borrowing requirement</td>
<td>Total</td>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

The table above illustrates the cash flow forecasting matrix, detailing the annual, monthly, and daily financial flows, including revenue, expenditure, and budget deficit. The matrix categorizes items into annual, monthly, and daily receipts and payments, with specific items listed for each category. The table also highlights the foreign currency aspect, emphasizing the importance of converting foreign transactions into the country's national currency.
...Cash flow forecasting matrix

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ANNUAL</th>
<th>MONTHLY</th>
<th>DAILY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Net increase</td>
<td></td>
<td>Receipts</td>
</tr>
<tr>
<td></td>
<td>• Treasury bills</td>
<td></td>
<td>Payments</td>
</tr>
<tr>
<td></td>
<td>• CPD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-term domestic loans</td>
<td>Total net increase</td>
<td>Net increase</td>
<td>New issues</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Redemptions</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Long-term domestic loans</td>
<td>Total domestic loans</td>
<td>Total domestic loans</td>
<td>Fixed rated</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Inflation-linked</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Retail bonds</td>
</tr>
<tr>
<td>Foreign loans</td>
<td>Total foreign loans</td>
<td>Total foreign loans</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Change in cash balances</td>
<td>Change</td>
<td>Change</td>
<td>Closing balance</td>
</tr>
<tr>
<td>• Opening</td>
<td>Rand</td>
<td>Rand</td>
<td>• Rand</td>
</tr>
<tr>
<td></td>
<td>US$</td>
<td>US$</td>
<td>• US$</td>
</tr>
<tr>
<td>• Closing</td>
<td>Rand</td>
<td>Rand</td>
<td></td>
</tr>
<tr>
<td></td>
<td>US$</td>
<td>US$</td>
<td></td>
</tr>
</tbody>
</table>
Inputs for cash flow forecasts

Debt Management Unit
- Debt service costs
  - Interest
  - Redemptions
- Issuance calendar and amounts for domestic and foreign bonds

Cash Management Unit
- Revenue cash flows
- Expenditure cash flows
- Short-term issuance calendar and amounts
  - Treasury bills
  - Bridging finance
- Change in cash balances

Reserve Bank
- Transactions to be effected for monetary management purposes
Bridging finance instruments
Bridging finance instruments

- Treasury bills 3-, 6-, 9-, 12-months and shorter
- Utilising surplus cash of wider Government (Provinces and State-Owned Companies)
- Use of Government’s cash balances at SARB:
  - Sterilisation deposits (R67 billion)
  - Foreign exchange deposits (US$ 6.3 billion)
- Intra-day roll up of tax revenue
- Rescheduling of large expenditure
- Converting US dollar into rand (currency swaps)
- Repurchase (repo) facility in government bonds
- Reserve Bank buying government bonds
South Africa’s bridging finance matrix to cover short-term cash pressures

1. Issue a short-term Treasury bill
2. CPD Borrowing
   - Increase borrowing from CPD
3. Has National Treasury limit been reached?
   - Yes
     - SARB sterilisation deposits
       - Draw on deposits
   - No
     - No action required
4. Does National Treasury have sufficient cash?
   - Yes
     - Perform auction
   - No
5. Has National Treasury limit been reached?
   - Yes
     - SARS tax revenue
       - Intra-day roll up
     - NO
     - NO
6. Will there be sufficient cash to roll up?
   - Yes
     - NO
     - NO
   - NO
7. Is there a payment which can be delayed?
   - Yes
     - Effect the swap and transfer proceeds to government
   - NO
8. Does SARB have sufficient National Treasury US$ to use in swaps?
   - Yes
     - Effect repo
   - NO
9. Can repo be entered into?
   - Yes
     - Swap National Treasury US$
       - Repo RSA bonds
   - NO
Pooling of broader public sector cash

- Sub-National Governments
  - Invest
  - Bridging finance borrowing

- State-Owned Companies
  - Invest

- Corporation for Public Deposits
  - Invest
  - Bridging finance borrowing

- Reserve Bank

- National Government
  - Invest
  - Bridging finance borrowing
Integrating debt and cash management
Formulation of a medium-term debt management strategy

Cash Management:

- Aggregates “above and below the line” transactions (3 years)
  - Fiscal balance (expenditure/revenue) from Budget Office
  - Debt issuance strategy based on risk benchmarks
- Prepare monthly (3 years) borrowing strategy
  - Issuance profile is input to debt service cost calculations
  - Advance identification of funding pressures
  - Ensure appropriate cash buffers
- Provide short-term loan issuance strategy (including bridging finance)
- Settling coupon and maturity dates of new bonds to coincide with large revenue flows

Debt Management:

- Provide long-term loans issuance strategy (instruments, maturity and coupon), domestic and foreign
- Mitigate cash management problems that may assist when large bonds mature through a bond switch/conversion program
Development and execution of an annual borrowing plan

Cash Management:

- Responsible for short-term loan issuance plan (maturity, amounts in each maturity, etc.)
- Forecasting of in-year “above and below the line” cash flows
- Determine the optimal weekly auction levels in short- and long-term loans
  - Stable and predictable bond issuance pattern reduces market uncertainty
  - Short-term variability in expenditure and revenue flows managed through short-term borrowing
  - Align large expenditure flow with revenue inflows
- Manage Treasury bill auctions
- Monitor revenue and expenditure trends against Budget
- Monitor weekly issuance against targets
- Provide information on short-term issuance and cash balances for monthly press statements
- Overnight bond repos could contribute to market development

Debt Management:

- Manage domestic bond auctions and global bond issuance
  - Which bonds to issue and when, taking into account market appetite
  - Occasional pressure to act opportunistically taking advantage of favourable market conditions and overfund
- Manage investor relation program
  - Arrange domestic and foreign roadshows
  - Maintain investor relations website
  - Coordinate investor visits
- Issuance strategy taking into account the following agreed hierarchy of risks: liquidity, refinancing and cost
Debt and cash coordination structure

- Established coordination structures not only for National but also State-Owned Companies

<table>
<thead>
<tr>
<th>Committee</th>
<th>Cash Management</th>
<th>Debt Management</th>
<th>State-Owned Company Oversight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular fiscal framework forecasting</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Regular Budget Coordination</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Quarterly Public Sector Borrowers’ Forum</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Weekly borrowing plan implementation</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

Agenda:
- Market overview
- Bond auctions results
- Treasury bill auction results
- Progress with funding against target
- Local and foreign currency balances
- Funding by State-Owned Companies

Funding strategy sub-committee
Consultative process between SARB and National Treasury

Bilateral
(Minister and Governor)

Standing Committees
(Bank and National Treasury Officials)

- Macroeconomic Standing Committee
- Banking and Financial Markets Standing Committee
- Financial and Regulatory Issues Standing Committee
  - Banking Subcommittee
  - Financial Markets Subcommittee
  - Cash Management Operations Working Group
Dealing with cash pressures,
September to December 2017
Projected cash pressures due to revenue and funding shortfall of R50 billion
### Funding scenarios to cover revenue shortfall

<table>
<thead>
<tr>
<th>R billion</th>
<th>Scenarios</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue shortfall</td>
<td>-40.0</td>
<td>-45.0</td>
<td>-50.0</td>
<td></td>
</tr>
<tr>
<td>Funding shortfall</td>
<td>-6.0</td>
<td>-6.0</td>
<td>-6.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total shortfall</strong></td>
<td><strong>-46.0</strong></td>
<td><strong>-51.0</strong></td>
<td><strong>-56.0</strong></td>
<td></td>
</tr>
<tr>
<td>Treasury bills</td>
<td>5.0</td>
<td>6.0</td>
<td>7.0</td>
<td></td>
</tr>
<tr>
<td>Domestic bonds</td>
<td>41.0</td>
<td>45.0</td>
<td>49.0</td>
<td></td>
</tr>
<tr>
<td><em>Bond switch auctions</em></td>
<td>25.0</td>
<td>25.0</td>
<td>25.0</td>
<td></td>
</tr>
<tr>
<td><em>Delayed foreign currency purchases</em></td>
<td>10.0</td>
<td>10.0</td>
<td>10.0</td>
<td></td>
</tr>
<tr>
<td><em>Domestic bond auction increase</em></td>
<td>6.0</td>
<td>10.0</td>
<td>14.0</td>
<td></td>
</tr>
<tr>
<td><strong>Per week (cash proceeds):</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- <em>September 2017</em>(R million)</td>
<td>28 x 110</td>
<td>28 x 110</td>
<td>28 x 110</td>
<td></td>
</tr>
<tr>
<td>- <em>November 2017</em>(R million)</td>
<td>19 x 315</td>
<td>19 x 530</td>
<td>19 x 740</td>
<td></td>
</tr>
<tr>
<td><strong>Total financing</strong></td>
<td>46.0</td>
<td>51.0</td>
<td>56.0</td>
<td></td>
</tr>
<tr>
<td><strong>Contingency:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Longer Treasury bill auctions not fully reduced in last quarter</td>
<td>15.0</td>
<td>14.0</td>
<td>13.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total revenue shortfall which can be covered</strong></td>
<td><strong>-55.0</strong></td>
<td><strong>-59.0</strong></td>
<td><strong>-63.0</strong></td>
<td></td>
</tr>
</tbody>
</table>
Net increase in Treasury bills to finance cash pressures

- Baseline 2017 Budget (91-day + R1 billion from Aug to Oct 2017 reduced from Jan to March 2018)
- Longer maturity bills + R600 million from Aug to Dec 2017 and reduced from Jan to March 2018
- Longer maturity bills + R600 million from Aug 2017 to Mar 2018
- Longer maturity bills + R500 million from Sep to Dec 2017 reduced from Jan to Mar 2018
Projected cash balances and bridging finance, Oct – Dec 2017

- Use of sterilisation deposit
- Cash balances before daily tax revenue
- Borrowing from Corporation for Public Deposits (projected available balances)
- Intraday tax revenue roll up

Risks to cash levels:
- Lower tax revenue than forecasted
- Lower CPD balances than projected
- Unsuccessful Treasury bill/bond auctions

Risk mitigation:
- Use of R10 billion sterilisation deposits
- Intraday tax revenue roll up
Projected cash balances and bridging finance, Dec 2017

- Use of sterilisation deposit
- Cash balances before daily tax revenue
- Borrowing from Corporation for Public Deposits (projected available balances)
- Intraday tax revenue roll up

Risks to cash levels:
- Lower tax revenue than forecasted
- Lower CPD balances than projected
- Unsuccessful Treasury bill/bond auctions

Risk mitigation:
- Use of R10 billion sterilisation deposits
- Intraday tax revenue roll up
Thank you
Slides explaining TSA in detail
Payment cycle

Reserve Bank

Department’s Paymaster General (PMG) Accounts

PMG → Consolidated PMG → PMG

PMG

PMG

PMG

PMG
Departmental (non-tax revenue) receipt cycle

- Departmental Deposit acc. at Commercial Banks
- Departmental PMG acc. at SARB

Exchequer

Extraordinary receipts
Daily settlement of local currency expenditure

Departments/spending agencies Accounts

Departmental expenditure

Debit balance cleared

Transfer to clear debit balance

Credit balance cleared

Surplus invested

Debit balance cleared

Tax revenue

Tax and loan accounts (investments)

Loan receipts (Borrowing)

Commercial banks

Reserve bank

Departmental revenue
Daily settlement of foreign currency expenditure

- **Departmental foreign expenditure**
- **Departments/spending agencies accounts**
- **Reserve Bank**
- **Foreign currency investment account**
- **Foreign loans**
- **Domestic foreign currency purchases**

Utilise Fx investments to meet Fx expenditure
South Africa’s TSA account structure for the National Government
TSA account structure for the National Government

**Commercial Banks**

<table>
<thead>
<tr>
<th>Deposit accounts</th>
<th>Rand Exchequer investments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-tax revenue deposits by departments</td>
<td>Tax &amp; Loan accounts where Rand surplus cash are held</td>
</tr>
</tbody>
</table>

**Reserve Bank**

<table>
<thead>
<tr>
<th>Paymaster General accounts</th>
<th>Exchequer account</th>
<th>US$ Exchequer investments</th>
<th>Corporation for Public Deposits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Account of departments to manage their finances</td>
<td>Main account of the National Revenue Fund</td>
<td>Foreign currency is held in this account</td>
<td>Pooling of surplus cash of sub-national governments and SOCs</td>
</tr>
</tbody>
</table>

1. All non-tax revenue received by departments transferred to their PMG accounts 2 days later
2. PMG accounts go in overdraft during the day. End of day consolidated balance cleared to Exchequer account
3. Exchequer account funded to meet PMG Rand/foreign exchange commitments
4. Borrowing bridging finance from Corporation for Public Deposits
Examples of annual, monthly and daily cash flow forecast

• See handouts