DESIGNING DEBT MANAGEMENT STRATEGIES

Measuring and Managing Refinancing Risk
AGENDA

• What do we mean by refinancing risk?
• Measuring and Managing Refinancing Risk
• Conclusions
• Annex: Uruguay a country case
WHAT DO WE MEAN BY REFINANCING RISK?

“Refinancing risk is the risk that debt will have to be rolled over at unusually high cost, or, in extreme cases, cannot be rolled over at all”

Revised Guidelines for Public Debt Management, 2014

• The inability to refinance maturing debt can lead to or exacerbate a debt crisis and cause economic losses
REFINANCING RISK USUALLY ARISES FROM EXOGENOUS CIRCUMSTANCES

- International markets: i.e., global economic crisis when investors are in “flight to quality” mode or may need liquidity

- Contagion: demand can dry up even if a country’s fundamentals are relatively good – Examples:
  - Emerging countries (2013): Taper Tantrum
  - Mexico (2016): peso depreciation after Trumps election
  - Emerging countries (2020): COVID-19 Pandemic
BUT CAN ALSO BE TRIGGERED BY COUNTRY-SPECIFIC EVENTS

• Political risk: i.e. highly polarized political situation, can affect government’s legal capacity to refinance
  • Example: Brazil (2002) – Expectation of Lula winning the election
• A legislative body may not approve the executive’s refinancing plans and/or needed fiscal policy reforms
EXAMPLE OF UNEXPECTED INCREASE IN INTEREST RATES – JPMORGAN EMBI LATAM SPREADS

- Russia Crisis
- Argentina default
- Sep 11
- Lehman GFC
- Brazil political turmoil
- Taper tantrum
- Covid 19
INTEREST RATE RISK IS INTRINSIC TO REFINANCING RISK

Maturing debt to be rolled over is exposed to interest rate risk, which is thus intrinsic to refinancing risk:

• e.g. US$100 million of 1-year security
• Roll-over at the end of year 1 implies both interest rate risk and refinancing risk

The opposite is not always true:

• e.g. US$100 million of 10-year variable-rate bond
• Exposure to interest rate risk at coupon resets, but no exposure to rollover risk until maturity at year 10
QUANTIFYING REFINANCING RISK

- Refinancing risk could be measured as the potential increase in debt service due to an unexpected increase in the interest rates

\[ \text{Risk}_t^{(j)} = \text{Debt to refinance}_t^{(j)} \times \Delta \text{int. rate}_t^{(j)} \]

- Debt to refinance is **mainly endogenous** (exposure)

- Risk factor is **mainly exogenous**, determined by volatility of interest rates

- Refinancing risk is linked to the source of funding: loans from multilaterals easier to refinance compared to loans from the international capital markets
REFINANCING RISK CAN BE MEASURED IN DIFFERENT WAYS...

Most common measures:

- Shape of the redemption profile
- Share of debt falling due within a specific time period
- Average Time to Maturity (ATM)
SHAPE OF THE REDEMPTION PROFILE

Ghana – 29% of local debt maturing in 1 year

Gambia (external USD725m, internal USD606m)

- Each funding source should be monitored separately
- Refinancing risk vs. benchmark build-up
SHAPE OF REDEMPTION PROFILE AND SHARE OF DEBT MATURING WITHIN 1 YEAR

Example – portfolio of two loans:
- One loan is fixed rate, amortizing with 4 years remaining maturity. Outstanding is 100.
- The other loan is variable rate, amortizing with 4 years remaining maturity. Outstanding is 100.

Share of debt maturing within 1 year?
- \((25 + 25)/200 = 25\%\)
  - We don’t care whether the loan is fixed or variable rate
**AVERAGE TIME TO MATURITY (ATM)**

\[
ATM_{t=0} = \frac{\sum_{t=1}^{T} A_t \cdot t}{\sum_{t=1}^{T} A_t}
\]

\[
ATM_{t=0} = \frac{A_1 \cdot 1}{\sum_{t=1}^{T} A_t} + \frac{A_2 \cdot 2}{\sum_{t=1}^{T} A_t} + \cdots + \frac{A_n \cdot T}{\sum_{t=1}^{T} A_t}
\]

where \(ATM_t\) = the average time to maturity of debt portfolio

\(A_t\) = \(t^{th}\) period principal payment in the portfolio

**Example - same as previous slide**

- One loan is fixed rate, amortizing with 4 years remaining maturity
- The other loan is variable rate, amortizing with 4 years remaining maturity

<table>
<thead>
<tr>
<th>Year</th>
<th>t</th>
<th>Fixed loan</th>
<th>Floater</th>
<th>Total</th>
<th>t * Amortization</th>
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<td>25</td>
<td>25</td>
<td>50</td>
<td>50</td>
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</tr>
<tr>
<td></td>
<td>ATM</td>
<td></td>
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TOOLS FOR MANAGING REFINANCING RISK TO DIMINISH POTENTIAL IMPACT ON GOVERNMENT’S BUDGET

Use the government issuance program to:

• Avoid concentration of future repayments
  • Prudential limits
  • Amortizing structures (despite undesirable for liquidity/trading)
• Extend average maturity in favorable times
• Diversify by funding source: types of investors, use market sources in good times and save IFI credit lines for bad times
• Keep floating-rate and inflation-linked bonds in the issuance program
TOOLS FOR MANAGING REFINANCING RISK

Contingent credit lines

- 17 IBRD countries have outstanding Deferred Draw-Down Options (DDOs)

Cash buffer/Pre-finance

- Most DMOs operate with cash buffers – (Uruguay, Brazil)

Liability management operations

- Buyback: the government repurchases its own debt before it reaches maturity (“reverse” auctions, tender offers, buyback program)
- Debt exchange: repurchase of securities the government wants to retire, and simultaneously selling either new or old securities (to improve redemption profile or liquidity)
- Especially important when the government is creating benchmarks to increase liquidity (development of the domestic market)
ATM tells two different stories

ATM at issuance have been quite volatile, with the average of 5.5 years.
KEY MESSAGES

There will always be crises that affect refinancing risk

Various complementary strategic targets can help monitor and control refinancing risk:

• limit share of debt maturing within 1/2/3 years (look beyond next year) and limit bunching of amortizations in a certain period
• keep a minimum floor for ATM
• keep a minimum liquidity cushion
Development of the domestic market is essential for changing the structure of a debt portfolio.

There is an array of tools for managing refinancing risk, which usually imply higher cost:

• Borrow long-term in foreign markets
• Use debt exchanges and buybacks to smooth redemption profiles
• Use contingent credit lines, pre-finance and build liquidity cushions

Make the most of the good times to reduce refinancing risk, because the bad times will most likely increase it.
Annex: country case

Uruguay
Case of Uruguay

Uruguay: a story of managing refinancing risk

1997 Uruguay had issued a 5-year USD bond for USD300m maturing in 2002

2001 Argentina default

Before the default market starting getting complicated

Rollover 7-10 years moved to 5 then to 3 then ....

Uruguay knocks on the doors of WB and is deferred to IMF who doesn’t want to be involved in another default

Finally, US Treasury intervention solves the situation
Case of Uruguay

Uruguay’s Foreign Currency Denominated Public Debt and Sovereign Spread over U.S. Treasury Bills

Graph showing debt and spread over time with a vertical line marking the month of default.

Notes: The vertical line marks the month of default.

J. C. Hatchondo and L. Martinez: The Politics of Defaults
Uruguay’s experience with refinancing risk

Funding is often concentrated in the short term because debt managers:

● want to keep the borrowing cost low
● take for granted short-term funding availability under any circumstances
● underestimate the probability of fiscal or financial crisis (external or domestic)
● dismiss the real dimension of international contagion
● ignore fat tails events
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Once rollover constraints appear, policymakers scramble to keep up with new constrained environment:

- accepting higher financing costs
- shortening maturities even more (higher risk, higher cost)

This may in turn reduce credibility of the country’s capacity to service its debt (will also depend on country specific factors)
Case of Uruguay

Putting Theory into Practice

- Formal principle in managing refinancing risk:
  “Financing risk prevention is always less expensive than crisis resolution costs.”
  Must be included in any debt management strategy.

- Adequate liability management is crucial to achieve this goal.
  - Stretching out maturities
  - Pre-financing short-term amortizations (cash cushions)

- Cash cushions become a strategic component to strengthen refinancing risk immunization.
The optimal policy mix between maturity extensions and cash accumulation depends on market conditions.

However, authorities considered that as a general rule, it is cheaper to achieve refinancing risk immunization through maturity extensions than with cash accumulation. Particularly in times when:

- long-term interest rates are low
- carry trade on reserve holdings is high

Therefore, the respective policy sequence is:

1. Look for maturity extension (in issuance) and through swaps and buybacks in the short-end of the curve, and then
2. Have cash buffers
Case of Uruguay

First Step: Smooth out debt profile

As of December 2004

- 2005: 7.9% GDP
- 2006: 8.8% GDP
- 2007: 5.8% GDP

As of September 2010

- 2011: 2.5% GDP
- 2012: 1.5% GDP
- 2013: 0.9% GDP

Source: Debt Management Unit, Ministry of Finance, Uruguay
Second Step: Target cash holdings

Central government cash holdings equivalent

- 9 months - protects against 95% of capital reversal risk
- 14 months - cover 99% of that risk

% of GDP

<table>
<thead>
<tr>
<th>Year</th>
<th>Assets of CG</th>
<th>Amortizations</th>
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<tr>
<td>2010</td>
<td>4.50%</td>
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<tr>
<td>2011</td>
<td>1.80%</td>
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<tr>
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<td>1.50%</td>
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<td>0.90%</td>
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<td>2014</td>
<td>0.70%</td>
<td>1.00%</td>
</tr>
<tr>
<td>2015</td>
<td>1.00%</td>
<td>1.00%</td>
</tr>
</tbody>
</table>
Uruguay’s pre-funding strategy allowed the country to stay out of the international capital markets during the post-Lehman episode.

Source: Bloomberg - JP Morgan