Aguiar and Amador

Take the Short Route
How to repay and restructure sovereign debt with multiple maturities

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Introduction

Food for thought in a tractable model

- Repay short-term debt (first) when de-leveraging
- Thm 1: Short-term debt operations suffice
- Thm 2: Long-term operations may be counter productive

Standard and non-standard assumptions

- $\beta(1 + r) = 1$ (non-standard)
- No risk apart from risky default cost (not unusual)
- $\lambda \perp b$ in crisis region of interest (non-standard)
- Social losses of default (standard)
Discussion

• Slicing the results differently

  1. De-leveraging is optimal under commitment to $T$
     (Not only without commitment)

  2. Lack of commitment to $T$ is not binding when relying on short-term debt operations
     (Not only on de-leveraging paths)

• Understand role of assumptions, differences to Niepelt (2014)
Life in the Crisis Zone

Comments on “Take the Short Route …”
De-leveraging

A savings-cum-exit-time problem

- Perfect smoothing before and after $T$, “jump” at exit time

- Before: Flat consumption due to $\beta(1 + r) = 1$, discount factor $\beta(1 - \lambda)$, Arrow security return $(1 + r)(1 - \lambda)^{-1}$

- After: Ditto, with $\lambda = 0$

- “Jump” due to multiplier

$$\max_{b_{S,T}} u(\ldots + b_{S,T}) + \beta u(\ldots - (1 + r)b_{S,T}) \quad \text{s.t.} \quad \bar{B} \geq b_{L,0} + b_{S,T}$$
Why exit the crisis zone?

- Staying put costs $r + \lambda$ per unit of short-term debt per period
- The $\lambda$ component reflects social losses
  - It compensates for risk of default when lenders receive zero although borrower bears cost
- Exiting the crisis zone and eliminating the $\lambda$ component is worth it, unless finite $T$ strongly undermines consumption smoothing

$\Rightarrow$ Social losses are key
\[ T = 1 \]
\[ W(b_{L,0}, b_{S,0}, T) = 2.12662 \]
\[ T = 1, 2 \]

\[ W(b_{L,0}, b_{S,0}, T) = 2.12662, 2.99073 \]
\( T = 1, 2, 3 \)
\[ W(b_{L,0}, b_{S,0}, T) = 2.12662, 2.99073, 2.95469 \]
$T = 1, 2, 3, 4$

$W(b_{L,0}, b_{S,0}, T) = 2.12662, 2.99073, 2.95469, 2.89935$
$T = 1, 2, 3, 4, 5$

$W(b_{L,0}, b_{S,0}, T) = 2.12662, 2.99073, 2.95469, 2.89935, 2.85761$
Long- vs. short-term debt

- Servicing long-term debt costs just $r$ per period
- Price effect due to default risk materializes at issuance
- With outstanding long-term debt, price effect is a bygone

$\Rightarrow$ De-leveraging incentives only are present with short-term debt exposure

$\Rightarrow$ More generally, initial debt composition affects de-leveraging incentives (return to this later)
Robustness of the de-leveraging result

- Additional, “intermediate” maturities don’t make a difference
  The shorter the duration, the larger the need for rollovers and thus, the default risk/social loss component that gets “re-priced” and induces de-leveraging

- Smaller $\beta$ (standard assumption) does make a difference
  Extreme case: $\beta = 0$ (top of debt-Laffer curve)

$\Rightarrow$ The de-leveraging result is not general, but it is interesting precisely because it holds when $\beta(1 + r) = 1$
Time Consistency

Initial debt *composition* affects *de-leveraging incentives*

Standard sovereign debt model

- Debt affects default risk directly and indirectly, through subsequent rollover decisions
- Price effects reflect default risk/social losses
- They vary by maturity, inducing an optimal composition

This model

- Price effects only work through $T$ (since $\lambda \perp b$) which is endogenous to debt composition
Consequences of lack of commitment

Standard sovereign debt model

- Fully aligning ex-ante and ex-post incentives is impossible

This model

- *Alignment is possible*
  
  Only need to render choice of $T$ time consistent

$\Rightarrow$ Crucial $\lambda \perp b$ assumption
How to render choice of $T$ time consistent?

- Ex-ante choice internalizes all future price effects
- Ex-post choice no longer internalizes bygones
- To guarantee consistency, “not-bygones” ex ante should remain “not-bygones” ex post

Fully relying on short-term debt operations achieves this

Relevant default risk/social losses get “re-priced” in each period (at each rollover)

⇒ Scant intuition in paper
Why are long-term debt operations counter productive?

- Swapping long- for short-term debt undermines alignment
  But it triggers appreciation of long-term debt
  Mutual gains could be realized—but not in the market, due to holdup
  Cf. debt overhang literature

⇒ Social losses are key

- Swapping short- for long-term debt undermines alignment
  It also dilutes long-term debt, but at no gain for borrower

⇒ Social losses are key
Other Comments

The theorems

- Theorem 1: \( V(b) = \sup_T W(b, T) = W(b, T(b)) \)
  Equal budget sets in \( V \) and \( W \) with short-term debt only

- Theorem 2: \( V(\tilde{b}) \leq V(b) \) if \( b \) and \( \tilde{b} \) have same market value

- Theorem 2 not proved for many maturities case?

Minor points

- How did we get here if \( \beta(1 + r) = 1? \)
- More generally, empirical relevance?
- Run extension; acceleration assumption
Conclusion

A deep paper

• Makes several points that are partly connected
• Standard and non-standard assumptions are key

Sometimes only scant intuition (proofs don’t help)

Links to literature should be discussed

• Debt overhang

• Prop. 5 in Niepelt (2014): With risk neutrality, only short-term debt issuance (although $\lambda \not \perp b$)
References