Public Debt Sustainability

Conference 'Sovereign Debt: A Guide for Economists and Practitioners'
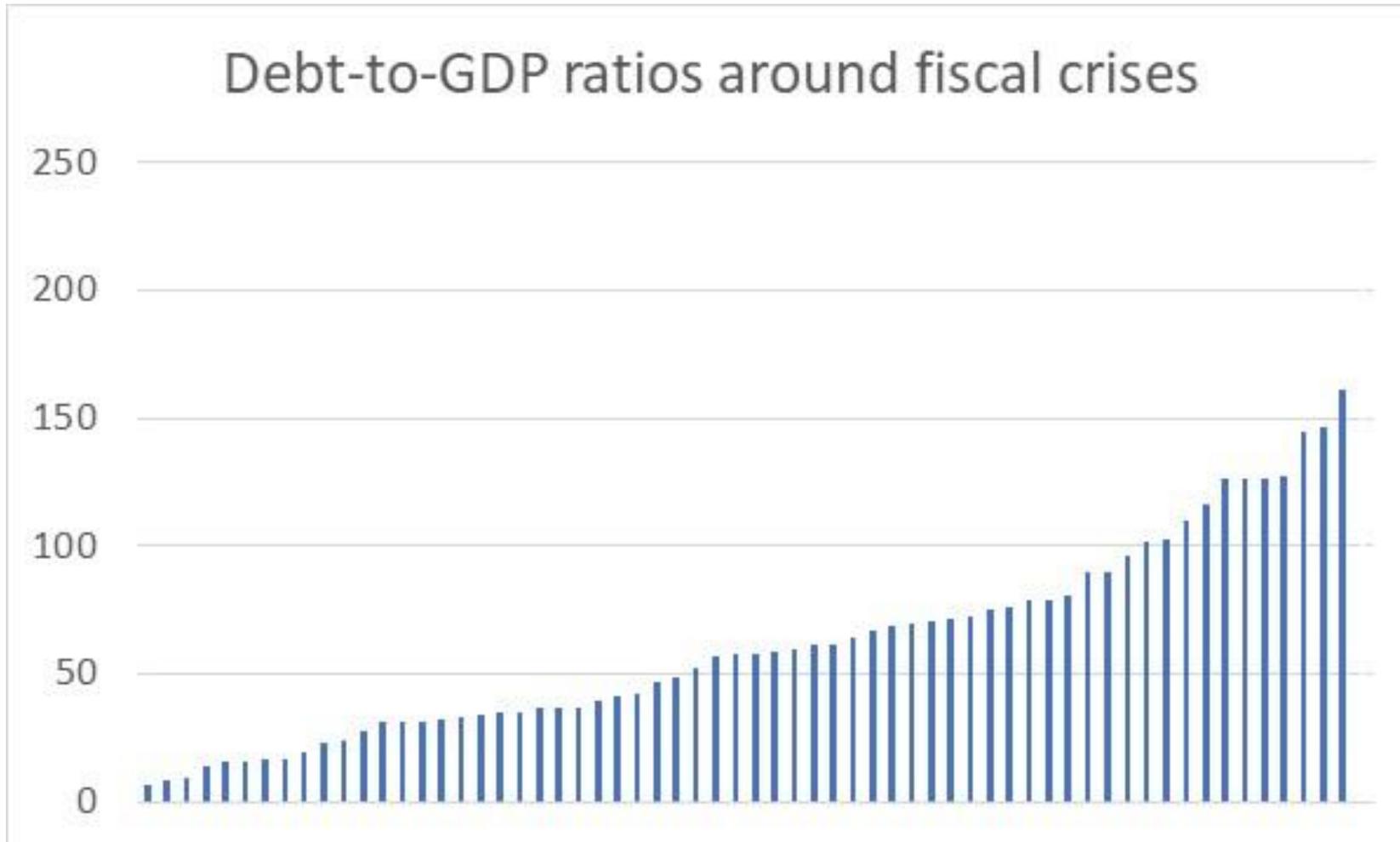
Xavier Debrun, IMF

Jonathan D. Ostry, IMF
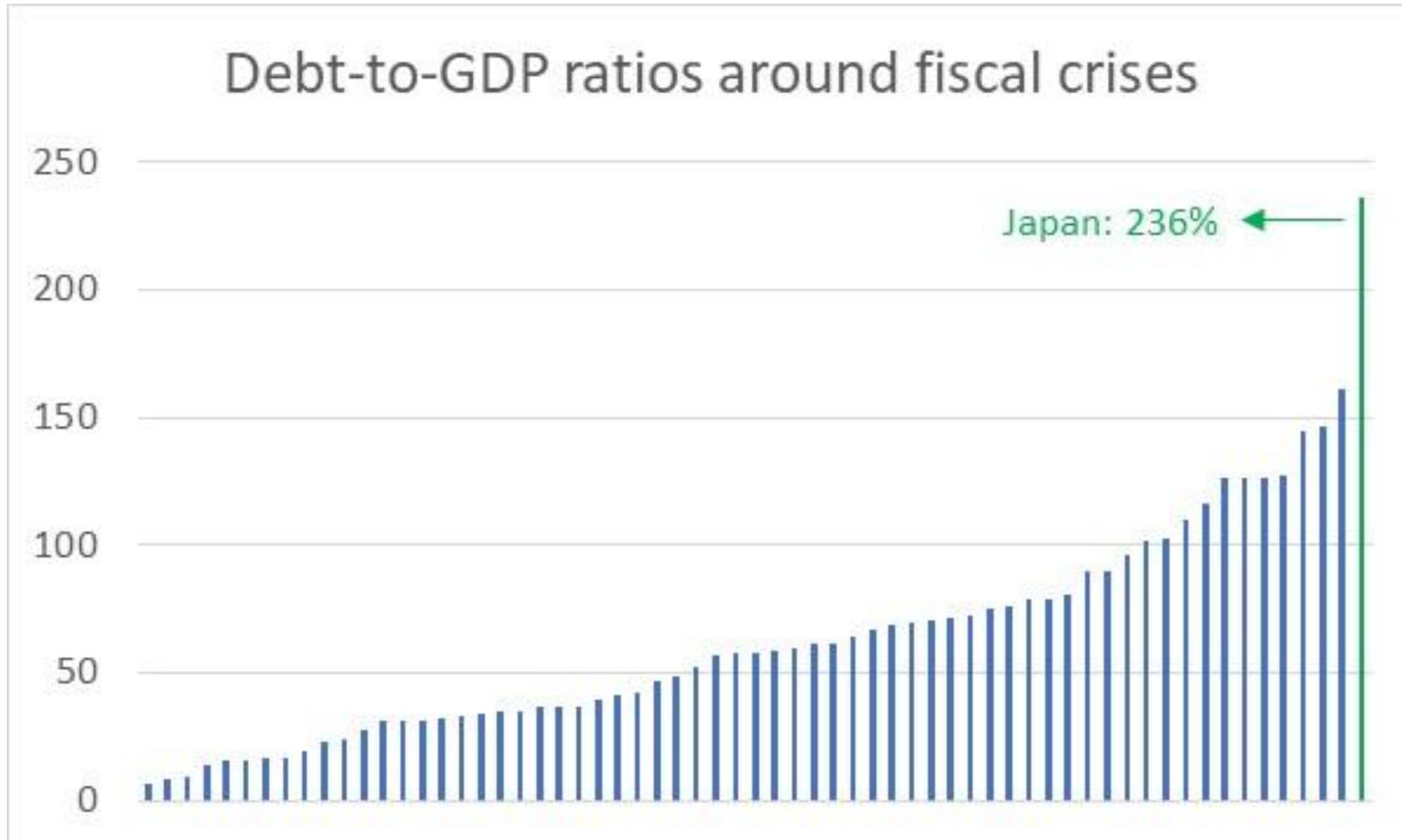
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Introduction (i)

Debt-to-GDP ratios around fiscal crises

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Debt-to-GDP ratios around fiscal crises

Japan: 236%

Introduction (ii)

- How is it possible that some governments continue to service debt >200% of GDP, while others default at levels <30%?

- When is debt sustainable?

- Theory tends to equate 'debt sustainability' with 'solvency'
  - But solvency doesn't seem to be sufficient to guarantee sustainability...
    - At the same time, sustainability $\Rightarrow$ solvency
  - Still, solvency yields a useful starting point

Solvency

- Government's period t budget constraint:

$$G_t + (1 + r_t)D_{t-1} = T_t + D_t$$

- Defining the primary deficit $P_t \equiv G_t - T_t$:

$$D_t = (1 + r_t)D_{t-1} + P_t \Leftrightarrow D_t = \frac{1}{1 + r_t}(D_{t+1} - P_{t+1}) \ (1)$$

- Solving (1) forward:

$$D_t = -\sum_{j=1}^{\infty} \prod_{k=1}^{j} \frac{1}{1 + r_{t+k}} P_{t+j} + \lim_{T \to \infty} \prod_{j=1}^{T} \frac{1}{1 + r_{t+j}} D_{t+T}$$

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- Solvency: current debt stock is matched by the PDV of future primary surpluses
- Is always satisfied ex-post (possibly via inflation, financial repression, or default)
  - What is deemed acceptable to continue to speak of ex-ante solvency/sustainability?

Operational difficulties with solvency

- Solvency is forward-looking, while tests are backward-looking
  - Real question: are the government's future plans credible?

- Market beliefs can cause liquidity crises
  - Complicated world of multiple equilibria, where solvency $\nRightarrow$ sustainability

- Concept assumes that governments are committed to repaying, while they might not want to do so…
 - Need for a strategic angle if one wants to assess credit risk

From solvency to sustainability (i)

- Bohn (1998) showed that the solvency condition can be tested for by checking whether the primary balance *PB* responds to lagged debt:

$$PB_t = \beta_0 + \beta_1 \tilde{G}_t + \beta_2 \tilde{Y}_t + \rho D_{t-1} + \varepsilon_t$$

  - I.e.: $\hat{\rho} > 0$.

- Practical difficulties:
  - Backward-looking, long-run perspective: what if ρ occasionally switches sign?
  - Abstracts from liquidity considerations
  - Does not rule out uncomfortably high debt levels
    - Does not put an upper-bound on primary balances needed
    - Ostry et al. (2010) and Ghosh et al. (2013): "fiscal fatigue"

From solvency to sustainability (ii)
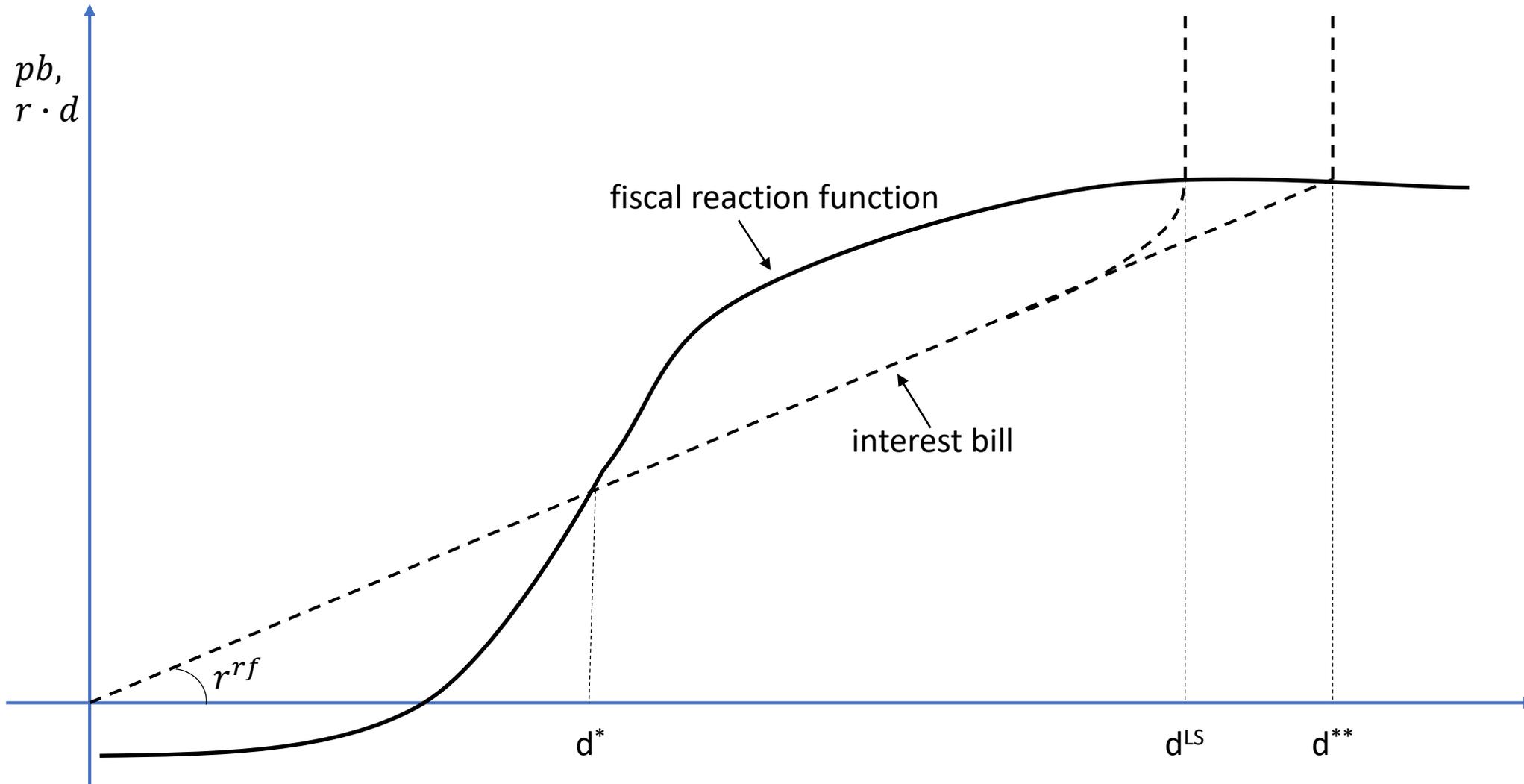
From solvency to sustainability (iii)

- Sustainability not only requires solvency (through credible policies), but also absence of liquidity issues

- Hard to capture in one encompassing framework, especially as the pure theoretical concept involves the infinite future
  - Pragmatism leads to analyzing medium-term projections for debt (service) indicators, taking account of institutional factors
    - Sustainability $\Rightarrow$ solvency
  - Model-based insights can still be useful

A practical way forward

- Combine debt dynamics equations with economic projections to analyze trajectories for debt (service) indicators going forward

- Debt sustainability should rule out explosive debt trajectories
  - Imposes a condition that is stricter than Bohn's ('$\rho > 0$')
  - Are the required primary balances realistic/feasible?
  - Upper-bound on feasible primary balances leads to a debt limit
    - Empirical analysis (even though backward-looking) can guide our judgement
  - Need to reflect the fact that the future is uncertain
    - Stress tests
    - Fan charts
    - Analysis of the government's balance sheet

Remaining difficulties

- Accounting for liquidity remains important
  - Can make projections for debt service indicators…
  - … but it's very hard to foresee future mood swings in sovereign bond holders

- Countries with sustainable debt might default too
  - Cost-benefit analysis (Eaton and Gersovitz, 1981)
  - Rating agencies often take default histories into account
    - Some countries are more 'debt intolerant' than others (Reinhart, Rogoff, and Savastano, 2003)
    - Past defaults may lower the costs of future defaults

Conclusion

- DSA is hard
  - Theoretical anchor ('solvency') doesn't impose a lot of constraints
  - Empirical tests are of limited value, as they are backward-looking
  - Have to settle for arbitrary sufficient conditions

- Must rely on ad-hoc approaches with a medium-term focus
  - Preferably model-based and stochastic

- Future is bright(er), as data accumulates
  - Challenge: maintain transparency and communicability