

# SOVEREIGN DEBT: BASIC CONCEPTS AND THE CURRENT DEBATE

## A. BASIC CONCEPTS

- a. Gov't budget constraint
- b. Impact of different instruments for funding the deficit;
- c. External vs Internal/Domestic borrowing;
- d. Debt sustainability
- e. Other

## B. SOVEREIGN DEBT CRISES AND HOW TO COPE WITH THEM

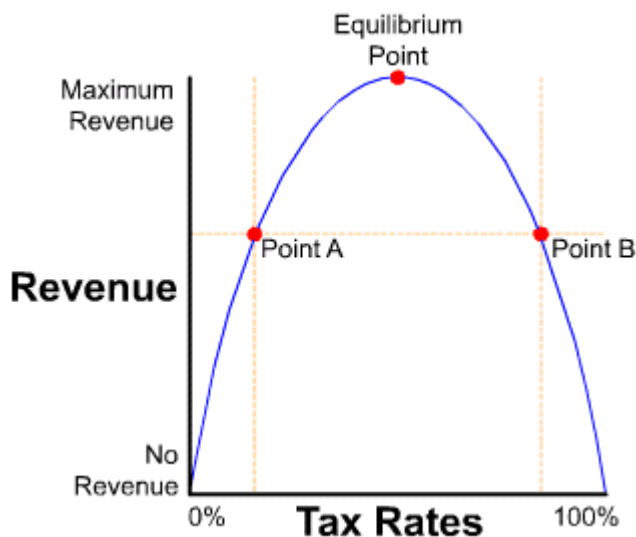
- a. Determinants of debt crisis;
- b. The moral hazard issue;
- c. Debt restructuring: pros and cons and how;

## BASIC CONCEPTS

### Government budget constraint

$$(1) \quad G = T + B + dM/p \quad (\text{all variables in real terms, except } M) \quad (dX = dX/dt)$$

T = Taxes: pros and cons (Laffer curve, incentive to work, progressive/regressive taxation; political acceptability...)



B = Bond issuing (domestic vs fx, see later)

dM = "printing money" (definition, differences with QE and with seignorage):

Limits to printing money, though!

$$MV = PY$$

if  $V$  constant, when  $y = y^*$ , then  $dM/M = \pi$

(see next page for explanation, if necessary)

or

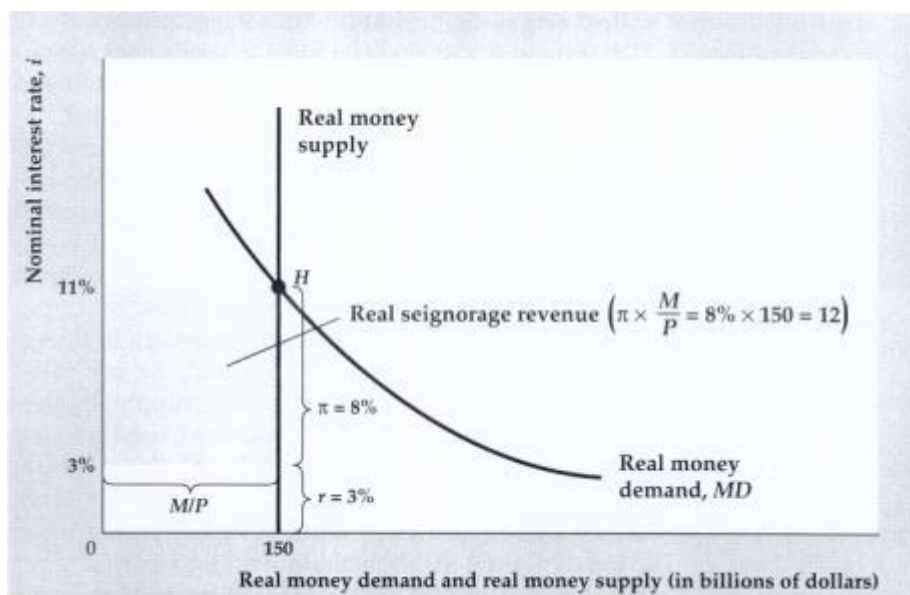
$$dM = \pi M$$

or

$$dM/p = \pi M/p \text{ (seignorage)}$$

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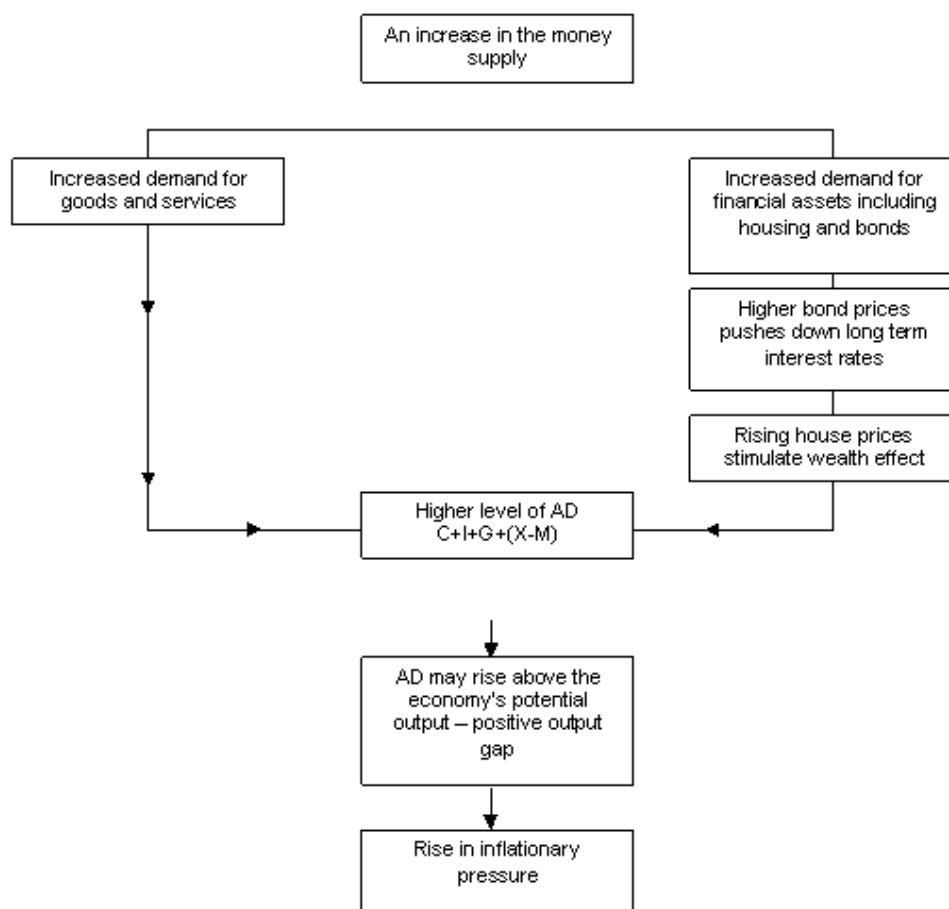
### A Detour (if needed): SEIGNORAGE



(a) Determination of real seignorage revenue for  $\pi = 8\%$

The downward-sloping curve, MD, is the money demand function for a given level of real income. The real interest rate is assumed to be 3%. When the rate of inflation is 8%, the nominal interest rate is 11%, and the real quantity of money held by the public is \$150 billion (point H). Real seignorage revenue collected by the government, represented by the area of the shaded rectangle, equals the rate of inflation (8%) times the real money stock (\$150 billion), or \$12 billion.

Why  $dM = dP$



Notice that if we are not at  $Y = Y^*$ ,

$dM/M = \mu$  and

$dM/p =$  becomes equal to

$$(M/p) = dM(1/p) - dp(M/p^2) = M/p (\mu - \pi) \quad \text{where } \mu = dM/M \text{ and } \pi = dp/p$$

**Also**, it could be that  $\mu < \pi$  (hyperinflation, expectations, substitution, velocity no longer stable etc)

Also, fiscal drag (higher nominal tax cohorts) and Tanzi-effect (collection lags when inflation is high)

**External vs. Internal debt:**

a matter of jurisdiction and of who is holding it

More interesting:

**Domestic currency debt vs. FX debt**

Repayment issue: domestic currency  $\longrightarrow$  print money, hence "INFLATION AS A FISCAL PROBLEM"

FX debt : how to generate FX?

**DEBT SUSTAINABILITY**

Debt / GDP (as expression of ability to pay)

$$(2) \quad d(D/Y) < 0$$

$$dD/y - dy D/Y^2 < 0$$

$$(D/Y) (dD/D - dY/Y) < 0$$

Change in debt is equal to:

$$G + rD = T + B \quad (\text{assume } dM = 0, \text{ independent central bank})$$

$$B = \text{bond issuance} = \text{change in debt} = dD$$

Also, assume primary balance = 0 (for simplicity)

$$\text{Hence: } dD = rD$$

$$DY/Y = g$$

The stability condition (2) becomes:

$$(2') \quad r < g$$

That is one reason why markets have had problems with the Greek adjustment programme:

In Greece's case:

$$g < 0; \quad r > 0 \quad (\text{how can there be } r \ll 0 \text{ with projected debt/gdp} = 150\% \text{ ?})$$

How to push up  $g$ ? Foreign help (IMF and the likes as stop-gap, then credible structural reforms)

How to push down  $r$ ? Confidence in the programme

Also, it could be that  $\mu < \pi$  (hyperinflation, expectations, substitution etc)

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### Primary balance, interest payments and public debt service

Abstracting from monetary financing that is forbidden in the European Union, the general government budget deficit is the sum of the primary deficit (the excess of purchases  $G$  over net tax receipts  $T$ ) and of debt service (the real rate of interest  $r$  times the existing debt stock  $D$ ).

To finance the deficit the government must borrow and issue new debt  $\Delta D$  :

$$\Delta D = G - T + rD \quad (1)$$

Dividing both sides of (1) by real GDP  $Y$  :

$$\Delta D/Y = G/Y - T/Y + r (D/Y) \quad (2)$$

*A bit of algebra*

$$\Delta(D/Y) = (Y \Delta D - D \Delta Y)/Y^2 = (Y \Delta D)/Y^2 - (D \Delta Y)/Y^2 = (\Delta D/Y) - (\Delta Y/Y)(D/Y)$$

$$\text{Therefore } \Delta D/Y = \Delta(D/Y) + (\Delta Y/Y)(D/Y).$$

Taking into account that  $\Delta Y/Y = g$  and inserting for  $\Delta D/Y$  into (2) we obtain:

$$\Delta(D/Y) + g (D/Y) = (G-T)/Y + r (D/Y) \quad (3)$$

and rearranging :

$$\Delta(D/Y) = (G - T)/Y + r (D/Y) - g (D/Y) \quad (4)$$

The change in the debt-GDP ratio (left side) equals to the primary budget deficit-GDP ratio (the first item on the right side) and the debt service-GDP ratio (the second item) adjusted for GDP growth rate (the third item).

Hence:

$$\Delta(D/Y) = (G - T)/Y + (r - g) (D/Y) \quad (5)$$

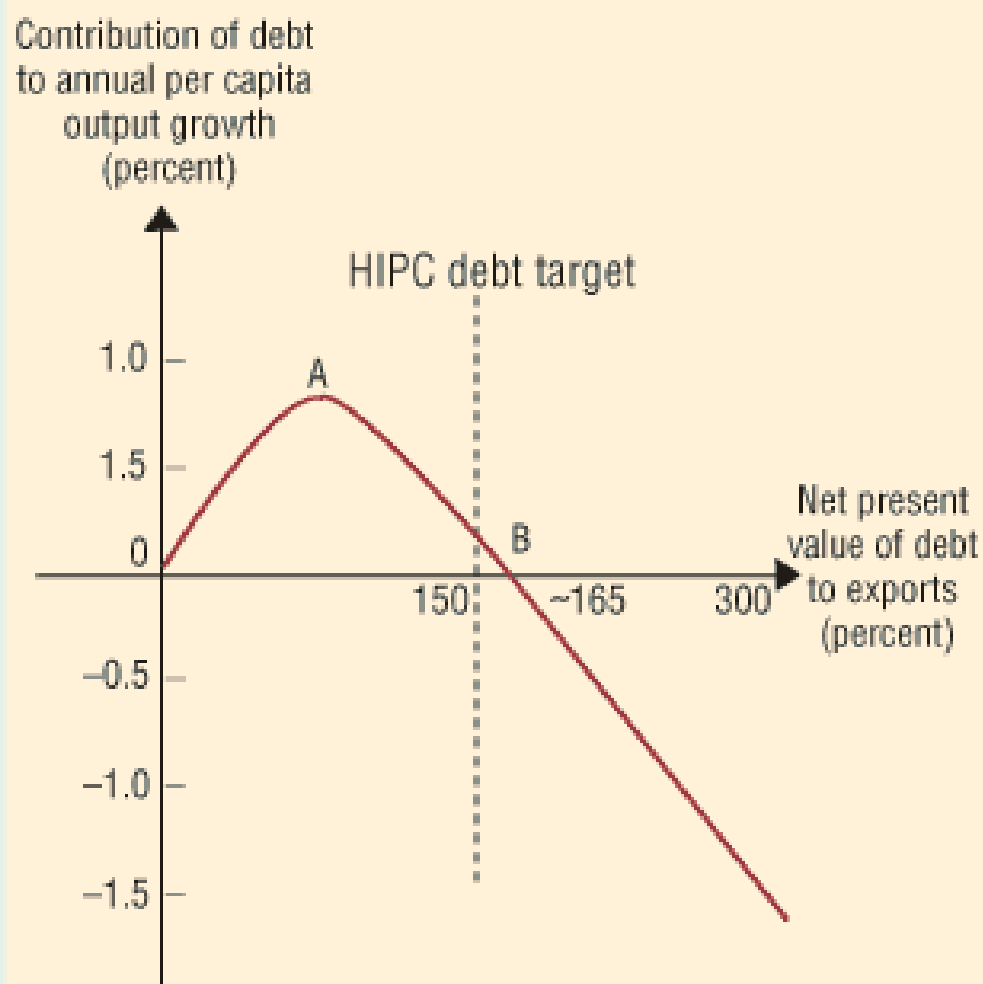
From (5), it is immediate to see that achieving a primary surplus helps to reduce the debt-GDP ratio,  $\Delta(D/Y) < 0$ , and that the higher the primary surplus, the less stringent the condition  $r < g$  is.

Notice the relationship between debt accumulation and growth

Chart 3

## Debt thresholds

Debt has an inverted-U relationship with growth. The effect is initially positive, but as debt ratios increase beyond point A, debt eventually slows growth. When debt reaches point B, the overall contribution of debt turns negative.



Source: Authors.

## ABILITY TO PAY VS WILLINGNESS TO PAY

Willingness to pay is a choice, ability to pay is a fact

History has shown that countries do not want to reimburse debt at debt/gdp levels that are not every high (60-70%), why?

Domestic political costs

In the past: What can foreigners do? Invade?

Today:

- Reputational costs;
- Access to capital markets (even Argy had to settle)
- But little (or zero) law enforcement

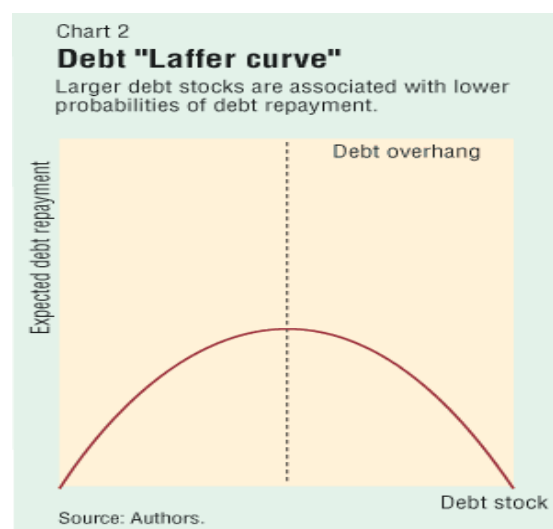
ILLIQUIDITY	VS.	INSOLVENCY
Short-term funding problem		Inability to pay
<ul style="list-style-type: none"> <li>- Bridge loan (IMF or similar);</li> <li>- Market willing to provide resources if the country has a long-term credible adjustment programme</li> </ul>		<ul style="list-style-type: none"> <li>- Rescheduling;</li> <li>- Default</li> </ul>

## DEBT RESCHEDULING

There is a limit to the amount of resources a country can devote to servicing its external debt (ability to pay) and, of course, a lot of game theory is involve here. "Why do large levels of accumulated debt lead to lower growth? The best-known explanation comes from "debt overhang" theories, which show that if there is some likelihood that, in the future, debt will be larger than the country's repayment ability, expected debt-service costs will discourage further domestic and foreign investment and thus harm growth. Potential investors will fear that the more a country produces, the more it will be "taxed" by creditors to service the external debt, and thus they will be less willing to incur costs today for the sake of increased output in the future." (External Debt and Growth; Catherine Pattillo, Hélène Poirson and Luca Ricci, Finance & Development, June 2002

Since the peak of the debt Laffer curve shows the point at which rising debt stocks begin acting as a tax on investment, policy reforms, or other activities that require up-front costs in exchange for future benefits, the peak may relate to the point at which debt begins to have a negative marginal impact on growth.

Rationale for investors: benefit/cost analysis: haircut in exchange of higher prob of reimbursement



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## ISSUES RELATED TO DEBT RESTRUCTURING

1. Deadweight losses (The net cost to society due to market imperfections or government interventions such as trade restrictions --ie, losses by consumers or producers that are not offset by gains elsewhere, such as increased government revenues):
  - a. Incomplete info (Nigeria's GDP???) or info that it is difficult to obtain, lead to "war of attrition" between creditors and debtor
  - b. One dissenting creditor might block the entire process, thus penalising other creditors and the country itself.
2. Moral hazard and how to beat it?

Definition: Moral hazard occurs when a party insulated from risk may behave differently than it would behave if it were fully exposed to the risk.

How to beat it:

- Private insurance (cds);
- Bankruptcy, but too big to fail?
- Bailing-in creditors (pros and cons);

### Statutory Approach (SDRM)

It is necessary/optimal to create a formal, institutionalised framework to deal with debt crises? Something like Chapter11... Or not?

Advantages of an SDRM:

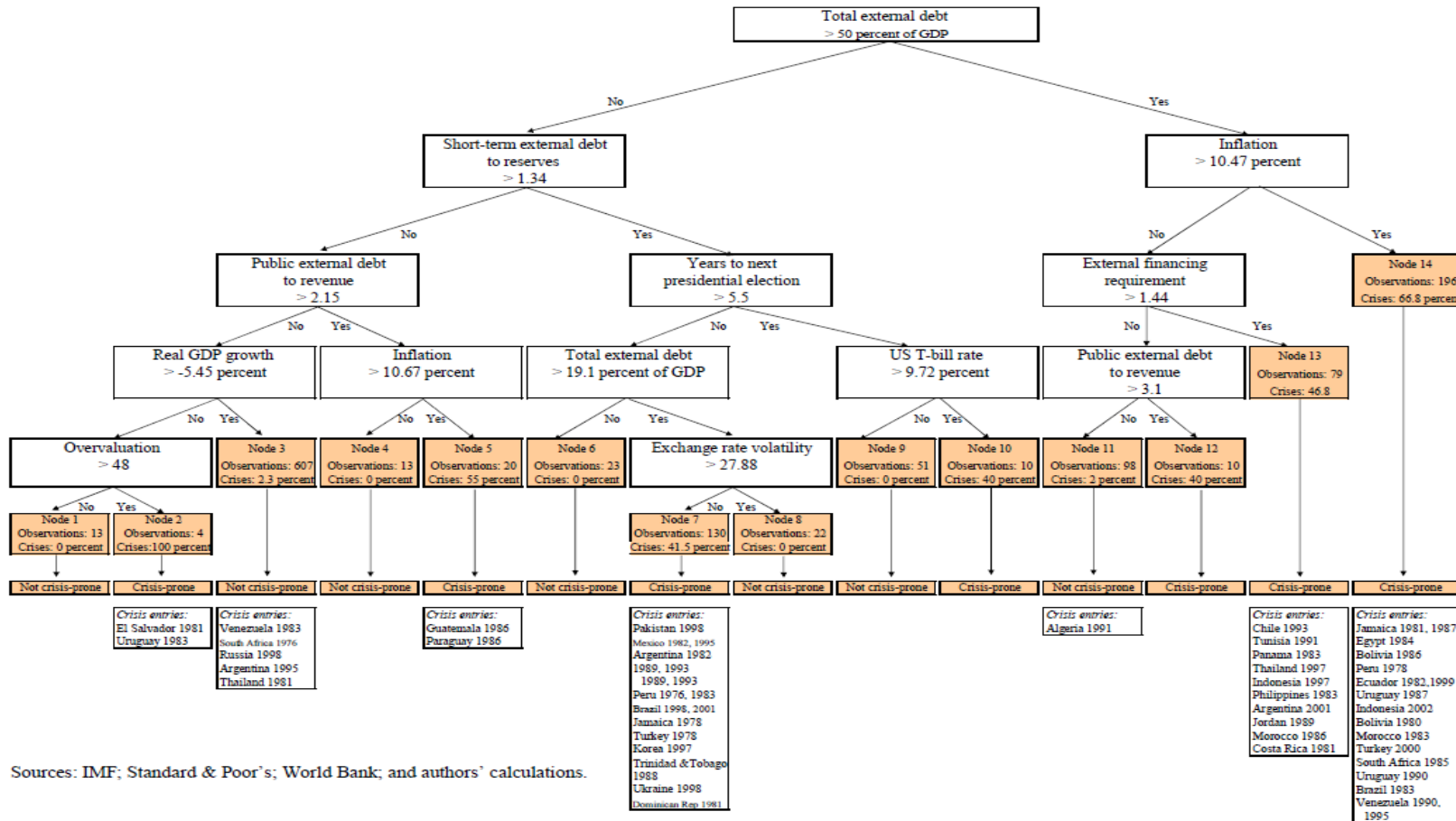
1. Transparency;
2. Universality (all creditors treated equally).

Issues to be debated:

- d. Burden sharing;
- e. Transition period;
- f. What other instrument to include (bonds vs loans);
- g. Borrowing costs (higher ex ante)

BUT, WHAT ARE THE DETRMINANTS OF A CRISIS?

Figure 1. The Empirical Tree



From Manasse-Roubini

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Main culprits:

- a. Excessive indebtedness (i.e., poor fiscal policies in the past)
- b. Inflation (i.e., poor monetary policies)
- c. Exchange rate volatility (i.e., poor and inconsistent policies or fixed exchange rate in presence of a. and b.)

i.e., external debt crises are rooted in poor domestic policies, cannot blame the bond vigilante!