

Discussion of
A Model of the Reserve Asset
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Summary

- What determines the world reserve asset?
- This paper proposes a theory that relies on two forces
 - ▶ Roll-over risk → Complementarity in investors' decisions
 - ▶ Fixed supply of assets → Substitutability in investors' decisions

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Model

- Two countries $i = 1, 2$
 - ▶ Each country must roll over s_i units of bonds
 - ▶ Extra resources $s_i\theta_i$
 - ▶ Each bond pays 1 next period and sells at p_i today
- Unit mass of risk-neutral investors
 - ▶ Total demand for safe assets $1 + f$
 - ▶ Fraction x of investors invest in country 1
- Prices satisfy

$$s_1 p_1 = (1 + f) x$$

$$s_2 p_2 = (1 + f) (1 - x)$$

- Default (investors get nothing) if

$$s_i \theta_i + p_i s_i < s_i$$

or

$$p_i < 1 - \theta_i$$

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Common knowledge _____

- Assume first that agents have common knowledge about θ_1 and θ_2 .
- Expected return from investing in country i 's bond

$$\begin{aligned} R_i &= \text{Probability of repayment} \times \text{Return if repayment} \\ &= 1 [p_i > 1 - \theta_i] \times \frac{1}{p_i} \end{aligned}$$

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Multiplicity ---

- Multiplicity of equilibria arises naturally
- Symmetric case $\theta_1 = \theta_2 = 1/2$, $s_1 = s_2 = 1$, $f = 0$
 - ▶ If everyone invests in asset 1 ($x = 1$)

$$R_1 = 1$$

$$R_2 = 0$$

so $x = 1$ is an equilibrium.

- ▶ If everyone invests in asset 2 ($x = 0$)

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- No default concerns ($\theta_1 = \theta_2 = 1$) \rightarrow unique equilibrium ($x = 1/2$)

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Global games ---

- Endow investors with private information about the relative strength of country 1
- Unique equilibrium under some condition
 - ▶ Proof trickier than usual (Goldstein Pauzner)
- Important result
 - ▶ All else equal, large country is less likely to be reserve asset if global savings decline

Model ---

- Very nice theory!
- Simple enough to be extended in many ways:
 - ▶ Positive recovery value in case of default
 - ▶ Introduce bonds common to both countries to consider Euro bond
 - ▶ Allow countries to adjust the size of their debt
 - Potential rat-race as two similar countries want to be the reserve asset.

Discussion

- Empirical evidence that U.S. debt is reserve asset?

Table 17 Official foreign exchange reserves: currency shares

(as a percentage of total identified holdings; end-of-year values)

	1999	2000	2001	2002	2003	2004
All countries						
US dollar	71.0	70.5	70.7	66.5	65.8	65.9
Euro	17.9	18.8	19.8	24.2	25.3	24.9
Japanese yen	6.4	6.3	5.2	4.5	4.1	3.9
Pound sterling	2.9	2.8	2.7	2.9	2.6	3.3
Swiss franc	0.2	0.3	0.3	0.4	0.2	0.2
Other currencies	1.6	1.4	1.2	1.4	1.9	1.8
Industrialised countries						
US dollar	73.5	72.5	72.7	68.9	70.5	71.5
Euro	16.1	17.1	18.0	22.4	22.1	20.9
Japanese yen	6.7	6.5	5.6	4.4	3.8	3.6
Pound sterling	2.2	2.0	1.9	2.1	1.5	1.9
Swiss franc	0.1	0.2	0.3	0.6	0.2	0.1
Other currencies	1.4	1.6	1.5	1.7	1.9	2.0
Developing and emerging market countries						
US dollar	68.2	68.2	68.6	64.0	60.7	59.9
Euro	19.9	20.6	21.8	26.1	28.9	29.2
Japanese yen	6.0	6.0	4.9	4.7	4.4	4.3
Pound sterling	3.7	3.6	3.6	3.8	3.9	4.8
Swiss franc	0.4	0.3	0.3	0.2	0.2	0.2
Other currencies	1.7	1.3	0.9	1.2	1.9	1.6

Source: IMF (2005).
 Note: Due to methodological changes, data are not comparable with previously available figures (see box 5).

Discussion ---

- Empirical evidence that U.S. debt is reserve asset?
 - ▶ Is the size of the U.S. debt abnormal?
 - Theory is ambiguous here (rat-race vs top-dog) and empirically size is pretty average as fraction of GDP.
 - ▶ Reserve asset would have lower probability of default and be more expensive given deep fundamentals. Hard to measure.
 - Credit-Default Swaps are cheaper on German and Swedish debt than on the U.S.'s

Discussion _____

- How important are **default concerns** for the determination of the reserve asset?
 - ▶ Are investors really concerned about default probability of U.S. debt vs German debt when making decisions?
 - Seems small compared to currency risk
 - Insuring U.S. default risk is cheap...maybe because it is the reserve asset!
 - Maybe small risk of default is enough
- Alternative theory of reserve asset that relies on *liquidity*
 - ▶ Still a coordination aspect. Investors buy bonds that other investors buy because they are easier to sell. (Pagano, 1989)
 - In that case we should see a liquidity premium in the data

Conclusion ---

- Very interesting, thought provoking paper
- Opens the door to a lot of future research