A Model of the Twin Ds: Optimal Default and Devaluation

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- Quantitative study of the joint default and devaluation/capital controls properties. Analyze also pegging.

Discussion plan

- Overview of the model.
- Some thoughts about the setup.
- Some questions.

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- Production of non-tradeables with labor from a competitive firm.
- Labor markets do not clear due an ad hoc downward wage rigidity.
- Government: Taxes holdings of external debt, chooses exchange rate policy, provides transfers and decides each period to honor or not the private agent's liability.

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- Debt holdings:

$$(1 - \tau_t^d) q_t^d = \beta E_t \frac{U'(c_{t+1}) A_{1,t+1}}{U'(c_t) A_{1t}}$$

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- If unemployment $h_t < \bar{h} \Rightarrow$ wages do not adjust enough downwards, $W_t = \gamma W_{t-1}$. If $W_t > \gamma W_{t-1} \Rightarrow h_t = \bar{h}$.

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- Due to the nominal rigidity, real wage can be above the full-employment real wage, $F'(\bar{h})$.

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- Foreign lender: prices the default risk.

$$q_t = \frac{Prob_t(\text{repayment at } t+1)}{1+r^*}$$

Competitive equilibrium

- Given policy $\{\tau_t^d, \epsilon_t, I_t\}_{t=0}^{\infty}$: a price system $\{p_t, w_t, q_t\}$ and an allocation $\{c_t^T, c_t^N, h_t, d_{t+1}\}$ such that everybody maximizes and markets clear.

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- Optimal policy: choose $\{\tau_t^d, \epsilon_t, I_t\}_{t=0}^{\infty}$ to maximize utility of the household subject to conditions of the CE.

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- A model with centralized external borrowing delivers the same predictions as a model with the decentralized external borrowing, a government that can confiscate external payments as long as the government has free access to exchange rate policy and capital controls.

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- Choose capital controls as a *residual*:

$$1 - \tau_t^d = \beta(1 + r^*) \frac{E_t \frac{U_{T,t+1}}{U_{T,t}}}{Prob_t(\text{repayment})}$$

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- Is it possible to interpret the current setup as private agents borrowing from the government (at q_t^d) and government borrowing from abroad?

Mechanism for Twin D's

- Assume that $c_t^T \downarrow \Rightarrow$ demand for $c_t^N \downarrow \Rightarrow$ price p_t falls $\Rightarrow w_t/p_t \uparrow \Rightarrow$ demand for labor falls. To restore full employment need to reduce w_t by devaluing.

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- Devaluation+ Default.

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- Value of repayment

$$V^r(d, w_-, y) = \max_{c,h,d',w} U(A(c, F(h))) + \beta E_{y'|y} V(d', w, y')$$

subject to

$$\begin{aligned} c + d &= y + q(d', w, y)d' \\ w &= \frac{A_2(c, F(h))}{A_1(c, F(h))} F'(h) \\ w &\geq \gamma w_- \\ h &\leq \bar{h} \end{aligned}$$

Comparison of debt choice

- With optimal devaluation

$$u'(A)A_1(c, F(\bar{h}))\underbrace{[\frac{\partial q(d', y)}{\partial d'}d' + q(d', y)]}_{MR^{\text{optimal}}} = -\beta\frac{\partial}{\partial d'}E_{y'|y}V(d', y')$$

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- Play around with the intertemporal and intratemporal substitutability in order to see how default/repayment regions change. For the current exercise marginal utility of tradeables does not depend on labor.

Optimal firm subsidies and currency pegging

- Subsidize purchases of labor by firms. Finance firm-subsidy by lump-sum taxes on consumer.
- After-subsidy wage: $(1-\kappa)W$.
- Profits:

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- Would be interesting to see $\{\tau_t^d, \kappa_t\}$ induced by the optimal default allocation.