The Twin Ds: Optimal Default and Devaluation
Na, Schmitt-Grohé, Uribe and Yue
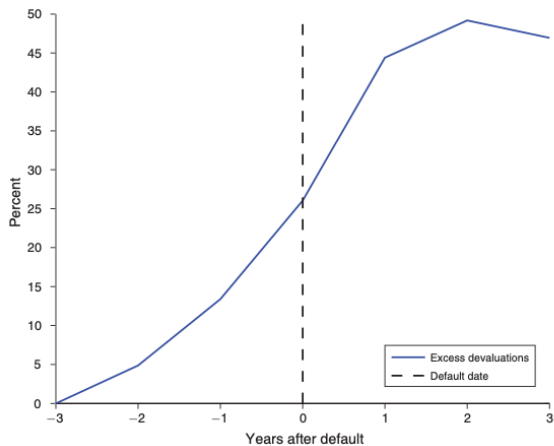## (AER, 2018)

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Motivation

Figure: Excess Devaluation around Default from 1975-2013

Source: Na, Schmitt-Grohé, Uribe and Yue.

Introduction

- **Main question:** Does default and devaluation of exchange rates are joint optimal decisions after a string of increasingly negative shocks to output?

  - **Sub-question:** How does the results change when we have a fixed exchange rate regime?

- **Methodology:** Sovereign default model à la Eaton and Gersovitz (1981) and Arellano (2008) with downward nominal wage rigidity.

- **Data:** They calibrate the model to the Argentine economy. Why Argentina? In 2001 we observed a default with an important devaluation of the local currency (i.e., a Twin Ds phenomenon).

Model

- The authors develop a sovereign default model à la Eaton and Gersovitz (1981) with two main frictions: (i) limited commitment to repay external debt and (ii) downward nominal wage rigidity.

- There are four agents in the model:

  1. **Households:** maximize the expected discounted flow of utility associated to consume a composite of tradable and nontradable goods $c_t = A\left(c_t^T, c_t^N\right)$, supplies labor inelastically, receives a stochastic endowment of tradable goods and owns the firm.

  2. **Firms:** using labor and a technology that exhibits DRS produces nontradable goods. The firm is subject to the downward nominal wage rigidity.

  3. **Government:** charges a debt tax to households and, in case of default, it confiscates any payment from households to foreign lenders and returns the proceeds to households in a lump-sum fashion.

  4. **Foreign lenders:** they are perfectly competitive and risk neutral such that they satisfy in equilibrium a break-even condition. The interest that they charge to the SOE contains a risk premium.

- As in Arellano (2008), default is punished with exclusion of the international financial market and an output cost (i.e., reputation cost).
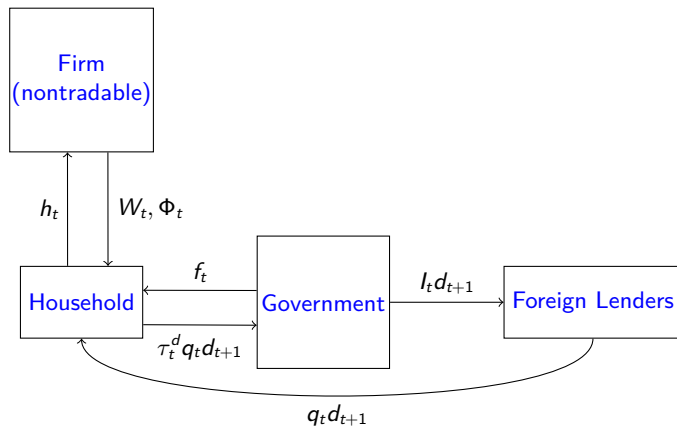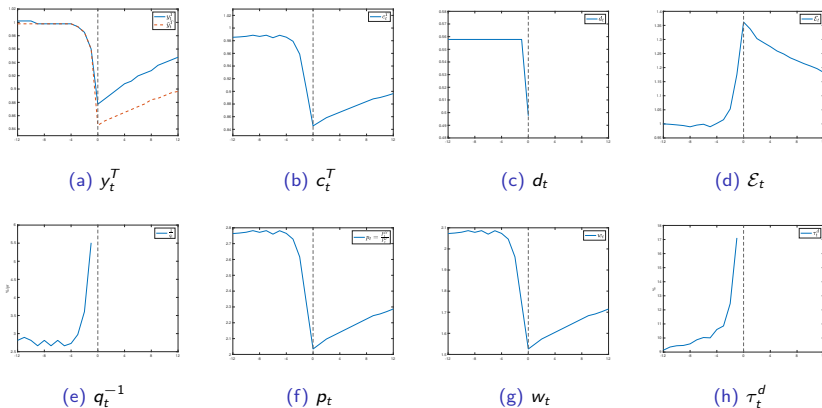
Model (cont.)

Figure: Description of the Economy

Results

- **Mechanism:** $\downarrow y_t^T \Rightarrow \downarrow c_t^T$, $\downarrow c_t^N$ and $I_t d_{t+1} = 0 \Rightarrow \downarrow P_t^N \Rightarrow \uparrow u_t \Rightarrow \uparrow \mathcal{E}_t \Rightarrow \downarrow w_t$

Figure: Macroeconomic variables

(a) y_t^T (b) c_t^T (c) d_t (d) $\mathcal{E}_t$

(e) q_t^{-1} (f) p_t (g) w_t (h) τ_t^d

Source: Na, Schmitt-Grohé, Uribe and Yue (2018) replication files.

Results (cont.)

- For plausible calibrations of the model, the minimum devaluation rate consistent with full employment is found to be over **40 percent**.

- Under a fixed exchange rate, the authors find that a default is accompanied by involuntary unemployment. Under plausible calibrations of the model, the unemployment rate increases by about **20 percentage points** around the typical default.

- In terms of the sensitivity analysis made by the authors:
  1. When adding long-term debt, the predicted dynamics in both economies are fairly similar.
  2. When allowing for incomplete pass-through, larger is the minimum devaluation required to maintain full employment.
  3. As $\uparrow \beta$, a larger devaluation will be required to ensure that real wages fall to clear the labor market (it takes a larger contraction in output to default).

Comments

- It is very interesting that we can decentralize a sovereign default model à la Eaton and Gersovitz (1981) using devaluation and taxation.

- We could potentially extend the analysis by allowing that the income process for tradable goods has a distribution with fat tails (e.g., Mallucci (2022)).

- How does the predictions of the model will change if we have a production economy? What will the capital dynamics be when there is default? What if we enrich the way we model the lenders side as in Morelli et al. (2022)?

References

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