2. MARKET FORCES AND GOVERNMENT INCENTIVES IN CRISES

This section explores economic two models of self-fulfilling crisis that highlight the government's endogenous response to market expectations. In the first, devaluation expectations feed into interest rates and thus can sap the government's resolve to resist a validating realignment. In the second, expectations feed into wages and competitiveness, creating similar incentives by raising unemployment.

While the first model shows how strategic exchange intervention may alter the likelihood and severity of a crisis, both models assume that foreign reserves can be freely borrowed in the world capital market, subject only to the government's consolidated intertemporal budget constraint. Neither model assumes additional reserve constraints, nor assigns to reserve levels *per se* a special role in generating balance-of-payments crises.

2.1. The Role of Nominal Interest Rates

A factor often cited in explaining why a government accedes to devaluation pressures is the increased cost of servicing the public debt. Ultimately, accounts of crises based on limited foreign reserves must also be based on overall fiscal weakness: were the public fiscal position robust, it would be credible and feasible to borrow sufficient reserves to repurchase a large portion of the high-powered money supply and thereby fend off any attack. The model of this section extends the insightful contribution of Giavazzi and Pagano (1990) by modeling the intertemporal decisions of an explicity purposeful government (1). Two factors that turn out to play a key role in affecting the likelihood of crises are the maturity structure of the government's domestic obligations (as in the Giavazzi-Pagano analysis) and the currency composition of the overall public debt (2).

The world lasts for two periods, labeled 1 and 2. I will consider the position of a government that issues a domestic currency unit (called the "lira") but also participates in the market for a foreign currency (the "mark"). The government enters period 1 with obligations to pay to claimants the nonnegative amounts ${}_0D_1$ lire in period 1 and ${}_0D_2$ lire in period 2. In parallel notation, the government enters period 1 entitled to receive payments of ${}_0f_1$ marks in period 1 and ${}_0f_2$ marks in period 2. The levels of real government consumption in the two periods, g_1 and g_2, are given exogenously. Finally, the government can levy taxes on output at rate τ to balance its budget, but only in period 2.

The pair $\{{}_0D_1, {}_0D_2\}$ defines the maturity structure of the government's lira debt—its intertemporal endowment of domestic-currency liabilities. When ${}_0D_1 = 0$ any government debt is long-term, but when ${}_0D_2 = 0$ any government debt is short term and must be rolled over in period 1. This, as shown below, is a potential source of difficulties for a government that lacks credibility.

The assumptions of PPP and $E = P$ are retained from the last section. In period 1 lira/mark exchange rate is fixed at E_1, but in period 2 the rate may be changed to E_2. The letter i denotes the nominal interest rate on loans made in period 1 and repaid in period 2.

Public-sector "cash-flow" constraints (3) reveal how the government's maturity and currency exposure change its vulnerability to market developments. Denote by ${}_1D_2$ new lira obligations due in period 2 that are incurred by the government in period 1. The **period 1** constraint is

$$(10) \qquad {}_1D_2 = (1+i)\left[{}_0D_1 + E_1 g_1 - E_1({}_0f_1) + \frac{E_1({}_1f_2)}{1+i^*}\right].$$

(1) The model develops ideas sketched Obstfeld (1990a). Giavazzi and Pagano, as I do here, built on Calvo's (1988) important analysis of dual equilibria in markets for domestic-currency public debt. (See also Alesina, Prati, and Tabellini 1990.)

(2) Formal models of government behavior incorporating these factors were introduced by Lucas and Stokey (1983), Persson and Svensson (1994), and Persson, Persson, and Svensson (1987). Milesi-Ferretti (1993) explores political motivations for debt management in a monetary model.

(3) The terminology comes from Persson and Svensson (1984).