example, after the Danish vote on Maastricht in the summer of 1992—could allow a devaluation equilibrium to emerge where none existed before.

Equations (18) and (20) show that the lira interest rate i enters the government's period 2 reaction function only *via* ${}_1d_2$, the new debt incurred in period 1; this new debt would in turn be absent [see (18)] if the condition

$$(22) \qquad {}_0d_1 + g_1 - {}_0f_1 + \frac{{}_1f_2}{1+i^*} = 0$$

held true—that is, if the government had a zero total cash flow on date 1. (If equality (22) holds, the government reaction function in figure 5 is horizontal.)

Abstract for the moment from mark assets and liabilities. Then the government will have no reason to fear self-fulfilling devaluation expectations if ${}_0d_1 + g_1 = 0$, that is, if no domestic-currency debt needs to be issued or rolled over in period 1. The government will be closer to this happy state, as Giavazzi and Pagano (1990) stress, if ${}_0d_1 = 0$, so that all the government's debt is long-term. But, as explained in Obstfeld (1990a), this is not enough: debt management should try to match total short-term expenditure commitments to net short-term cash receipts, including repayment of principal (and, in general though not in this model, tax receipts) (1).

So far little has been said about reserve losses, which are at center stage in Krugman's (1979) story. Indeed, the assumption of interest-inelastic money demand in equation (14) means that period 1 expectations do not influence international reserves—a highly unrealistic feature of the model which, if relaxed, would only make self-fulfilling attacks more likely. Nonetheless, international reserves—more generally, any government positions in foreign currencies—can play a strategic role in the model. This point is seen by abandoning the temporary assumption that the foreign-asset terms in (22) are zero (2).

In principle, the option of official mark borrowing can eliminate the possibility of multiple equilibria even when the government has a substantially negative lira cash flow on date 1. As (22) shows, any foreign-currency receipts (principal or interest) due in period 1 will mitigate cash-flow needs then. But by setting ${}_1f_2/(1+i^*) = -({}_0d_1 + g_1 - {}_0f_1)$, that is, by borrowing enough marks to entirely cover payments due, the government can sidestep the domestic band market altogether and thus head off a domestic funding crisis that could lead to devaluation (3).

This defensive foreign-currency borrowing would have to be huge if, as in the case of Italy, floating interest rates on public debt mean that most of it must effectively be refinanced each period. Some observers would judge such borrowing to be infeasible. Yet if the debt can be rolled over in domestic currency it should be possible to roll it over in foreign currency: in equilibrium the government faces the same intertemporal budget constraint under either choice.

While sufficient mark borrowing can remove the multiplicity problem in this model, and thus the possibility of a self-fulfilling attack on the lira, a small amount of foreign currency borrowing can make matters worse by lowering the depreciation tax base in period 2 but not radically reducing the government's incentive to devalue. Figure 7 shows how a relatively small amount of borrowing shifts the government reaction function downward but doesn't flatten it enough to avoid a high interest rate equilibrium worse than the original one (4). Foreign currency borrowing insufficient to eliminate a potential second equilibrium makes the government worse off if that potential is realized.

The model set out above captures aspects of the Italian crisis in September 1992, when the government was forced to rely heavily on Bank of Italy financing to cover sharply higher cash-flow

(1) This is not a balanced-budget prescription, since principal repayments are included in cash flow. Notice that if the government is exposed to the period 1 lira interest rate, there is always an asymptotic intersection at which $i = +\infty$ and $\varepsilon = 1$: the government's nominal commitments then are infinite and the only way to meet them is to eradicate their real value entirely through a confiscatory inflation. I don't consider this intersection at infinity to be an equilibrium.

(2) In Obstfeld (1990b) I discuss this strategic role of reserve use in the context of sterilized foreign-exchange intervention. Calvo (1991) presents a model that illustrates a related point, that sterilization of reserve inflows in the course of inflation stabilization may raise inflationary expectations by increasing the outstanding stock of domestic-currency government debt.

(3) In essence, the government is issuing consumption-indexed debt in this case.

(4) The broken reaction function comes from keeping all the settings of figure 5 except that for ${}_1f_2$, which is lowered from 0 to – 0.25.