depreciation is zero and nominal money demand is, by (4), constant at $\bar{M} = EAe^{-\eta i^*}$. Thus $\dot{M} = \dot{C} + E\dot{f} = 0$, so if ω_f is the share of reserves in M,

$$(8) \qquad \frac{\dot{f}_t}{f_t} = -\frac{(1-\omega_f)}{\omega_f}\gamma < 0.$$

While a shrinking resource stock arises endogenously in the resource model, it is imposed exogenously, through (7), in this foreign-exchange case. The equilibrium of the model still involves a speculative attack provided there is some lower limit on foreign-exchange reserves. This lower limit is taken (arbitrarily) to be zero.

The resource model assumed that the government refrained from intervention after the collapse of the price-fixing scheme. This outcome is not inevitable; the government could reset the price at a new level above $\bar{p}$ and (temporarily) regain its stockpile (enriching speculators in the process). Such a move is analogous to a devaluation in the foreign-exchange setting (1). To keep to the analogy with the resource model, however, I assume that once foreign reserves touch their lower limit of zero, the authorities institute an indefinite float of the currency.

In the present context the analog of the resource shadow price is the shadow exchange rate, introduced by Flood and Garber (1984b). The shadow exchange rate $\tilde{E}_t$ is the floating rate that clears the foreign exchange market, given the stock of domestic credit C_t, after all foreign-exchange reserves have passed into private hands. Under perfect foresight the natural logarithm of that rate is (2)

$$(9) \qquad \log \tilde{E}_t = \eta(i^* + \gamma) + \log C_t.$$

Figure 2 shows how the fixed exchange rate collapses under these assumptions. Panel (a) graphs the shadow floating exchange rate (9) along with the pegged rate. The schedules' intersection determines the time T^* of the speculative attack. (The reasoning pinpointing the collapse of price fixing in the resource model applies here as well.) Panel (b) shows money-supply behavior along the economy's equilibrium path. Panel (c) shows the path of foreign reserves implied by (8) (3).

The key feature of the equilibrium is that reserves take a discrete jump to zero at T^*, rather than declining smoothly to zero at time $\hat{T}$. This drop in reserves is the result of a sudden attack in which market participants, taking advantage of the central bank's commitment to sell foreign exchange at the price $\bar{E}$, strip it of its remaining reserves. A discrete jump in reserves is necessary to avoid a discrete jump in the exchange rate: because the expected rate of currency depreciation rises from 0 to γ at time T^* and i rises from i^* to $i^* + \gamma$, the money market can remain in equilibrium at the initial price level $P = \bar{E}$ only if the nominal money supply falls enough exactly to accommodate the implied fall in real money demand.

Critical to the preceding result is an assumption that η, the interest-sensitivity of money demand, is positive. Otherwise expectations don't matter: if $\eta = 0$, foreign reserves hit zero only at time $\hat{T}$ because the transition to a float occasions no sharp fall in money demand. Obviously, the bigger is η the earlier the date of attack, other things equal.

This type of speculative-attack model was extended to a discrete-time environment with stochastic domestic-credit growth by Flood and Garber (1984b) (4). In their model, domestic credit growth fluctuates randomly around a positive trend growth rate. Now T^* is a random variable rather than a perfectly foreseen date. Realistically, the stochastic model predicts that as reserves decline, the nominal interest rate rises as the probability increases that an unexpectedly large domestic-credit shock pushes reserves to zero and knocks out the exchange-rate peg. On the date the collapse occurs, the home currency suffers a discrete—albeit unanticipated—depreciation.

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(1) If resource speculators anticipate with certainty that an attack will set off a discrete rise in $\bar{p}$, however, the only equilibrium is an immediate attack. Similarly, if foreign-exchange speculators expect an attack to cause a devaluation with certainty, they strike immediately and reap the gains. If the price changes occur only after a transitional period of floating, then an attack may not take place right away.

(2) This solution is based on the normalization $A = 1$.

(3) The vertical scales in panels (b) and (c) are not intended to be the same.

(4) Goldberg (1991) has added additional stochastic elements to produce a richer account.