



Figure 9. Determination of date 0 exchange rate  $\theta_0$  given expected date 1 exchange rate  $\bar{\theta}_1$

given in (3).

Finally, we close the model by solving for the spot exchange rate at date 0, denoted by  $\theta_0$ , by positing exogenous imperfect substitutability of currencies in the spirit of the portfolio balance model (see Branson and Henderson (1985)).<sup>4</sup> Figure 9 depicts the determination of  $\theta_0$ .

Corporate borrowers have currency mismatch as depicted in Figure 3. Total dollar credit is  $C$ , so that corporate borrowers' demand for dollars at the date 0 spot market is a function of the spot rate and expected appreciation. Denote by  $-C(\theta_0, \bar{\theta}_1)$  the spot demand for dollars by corporates. We posit an exogenous demand for dollars on the spot market due to other sectors at date 0 denoted by  $D(\theta_0, \bar{\theta}_1)$ , so that the spot exchange rate  $\theta_0$  is determined by the market clearing condition

$$-C(\theta_0, \bar{\theta}_1) + D(\theta_0, \bar{\theta}_1) = 0 \quad (32)$$

We summarise the solution of the model. The exogenous elements of the model are the aggregate own funds of the regional and global banks,  $E_R$  and  $E_G$ , the risk-free US dollar interest rate  $i$ , the parameters  $\rho$ ,  $\beta'$ ,  $k$  and  $h$ .

<sup>4</sup>The portfolio balance approach to exchange rates has traditionally left the imperfect substitutability between currencies unmodeled. Gabaix and Maggiori (2013) provide a recent microfoundation in terms of dealer inventories.