consumption. The utility function is given by

$$u(c,c^*) \tag{1}$$

where c is the quantity of domestic goods consumed and c^* is the quantity of foreign goods consumed. We assume that $u(\cdot)$ is twice continuously differentiable, increasing, and strictly concave in its arguments.

The consumer's budget constraint is

$$pc+E[p^*|I]ec^* \leq y \tag{2}$$

where p is the domestic price, p^* is the foreign price measured in units of foreign currency, e is the nominal exchange rate measured as the amount of domestic currency that can be purchased with one unit of foreign currency, and y is income. The quantity $E[p^*|I]$ is the expected foreign price level conditioned on the information set I.

To close the model, we need to specify the information set available to consumers and how foreign price expectations are formed. We make the following assumptions:

1. Consumers know (with certainty) past foreign prices. Past price information defines a prior distribution that is normally distributed with mean $\bar{p}$ and variance γ^2.

2. Consumers know the value of p and e. According to purchasing power parity, expected foreign price is p/e. Deviations from the actual value of foreign prices and p/e are normally distributed with zero mean and variance α^2.

Expected foreign price, by Bayes Rule, is then

$$E[p^*|I]=\theta\bar{p}+(1-\theta)\frac{p}{e} \tag{3}$$