CORRECTED CORRECTIONS TO EXERCISE DUE 4/28

1. The errors

There are two minor errors in the exercise. The most minor is that in (iv) the "$E_{t-1}\varepsilon_t = 0$" should be "$E_{t-1}\varepsilon_t = 1$". The other somewhat minor one is that in (ii) the specification for the Y process should have $\theta = 1$, i.e. the θ should not be there at all. The linearized model can be solved with $\theta < 1$, but the conclusion you are pointed to, that there is an equilibrium with no borrowing or lending, does not hold unless $\theta = 1$.

The previous version of this correction said that there was also a major error: in (iii)-(v), the linearized model was said to have an indeterminate solution. It was also said that the economics of this result was that

> in this model, as in most equilibrium models with multiple assets, local linear expansions cannot use asset return variances and covariances to generate a determinate demand for assets. The linearized Euler equations simply enforce equal expected returns on all assets, and diversification and risk aversion effects on portfolio choice are 'linearized away'. Thus agents are treated as being indifferent among assets, and their demands for various assets are indeterminate.

This is true, but in some cases the *supply* of the assets fixes the portfolio, even though the linearized model simply implies that they all have the same expected return. In this model, if we had allowed trade across countries in the K_{it}'s, the quantities of assets held by agents would indeed have been indeterminate in equilibrium. But in the model as it stands, the requirement that the expected return on each K_{it} must match the return on bonds suffices to fix the quantity of each, and thus the equilibrium amounts in each country portfolio.

2. The errors

In case it could be useful to the rest of the class in tracking down errors, here are the two main errors made by me and by the student originally reporting a problem with the exercise.

In my solution, I kept all 7 endogenous variables (2 C's, 2 B's, 2 K's, and R) and seven equations, including $B_1 + B_2 = 0$. In preparing input for `gensys`, my most persistent error was having the sign of the coefficients on lagged K_i in the K FOC's wrong, implying that increasing K corresponded to increasing, instead of decreasing, R.

In the student solution, the mistake was writing the Π matrix, the coefficients on the expectational error terms, as if there were only two expectational errors, with the same expectational error in both the B and K FOC in each country. In fact, since $C_{i,t+1}$ and $A_{i,t+1}$ both appear in the K FOC's, but $C_{i,t+1}$ is the only $t+1$ dated variable in the B FOC, it is important to recognize that the errors in the two equations are not the same. The Π matrix has to be 7×4, in other words, not 7×2.

It does not matter, by the way, whether you linearize or log-linearize around steady state. The roots and the conclusions about existence and uniqueness are invariant to this. Of course one can't log linearize around a steady state value of 0 for B, but my own solution a linearized with respect to the log of everything except B, and w.r.t. the level of B, which made interpretation of results a little easier.