ECON 1550 Spring 2026: Problem Set 6 Answer Key

1. (a) As shown in equation (5-2) in the textbook, relative PPP between the United States and Korea is

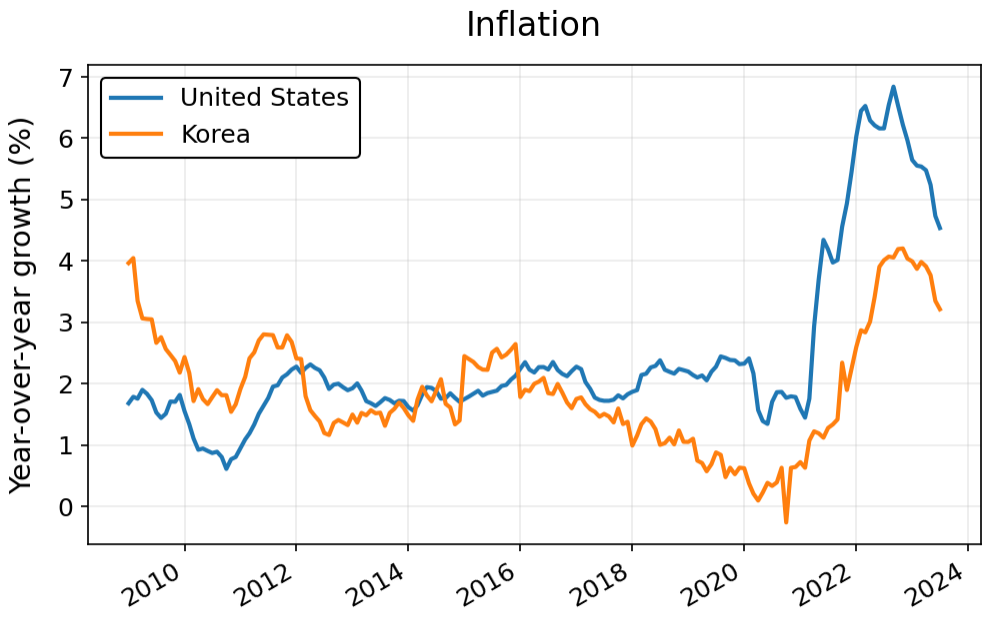
$$\frac{E_t - E_{t-1}}{E_{t-1}} = \pi_{\text{US},t} - \pi_{\text{Korea},t}$$

where $\pi_{\text{US},t}$ is U.S. inflation and $\pi_{\text{Korea},t}$ is Korean inflation.

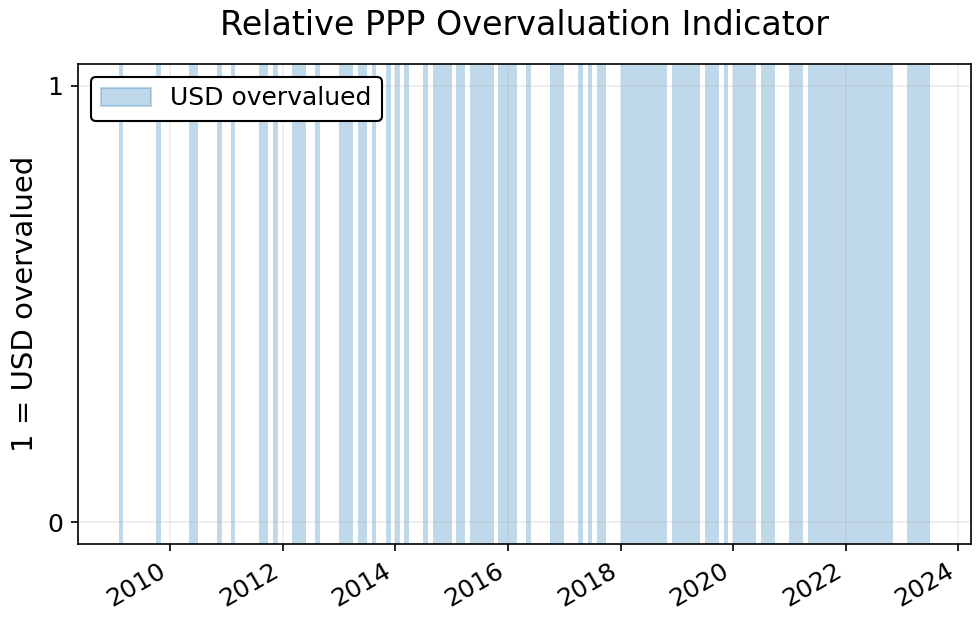
(b) The condition using relative PPP is

$$\pi_{\text{US},t} - \pi_{\text{Korea},t} - \left(\frac{E_t - E_{t-1}}{E_{t-1}}\right) > 0$$

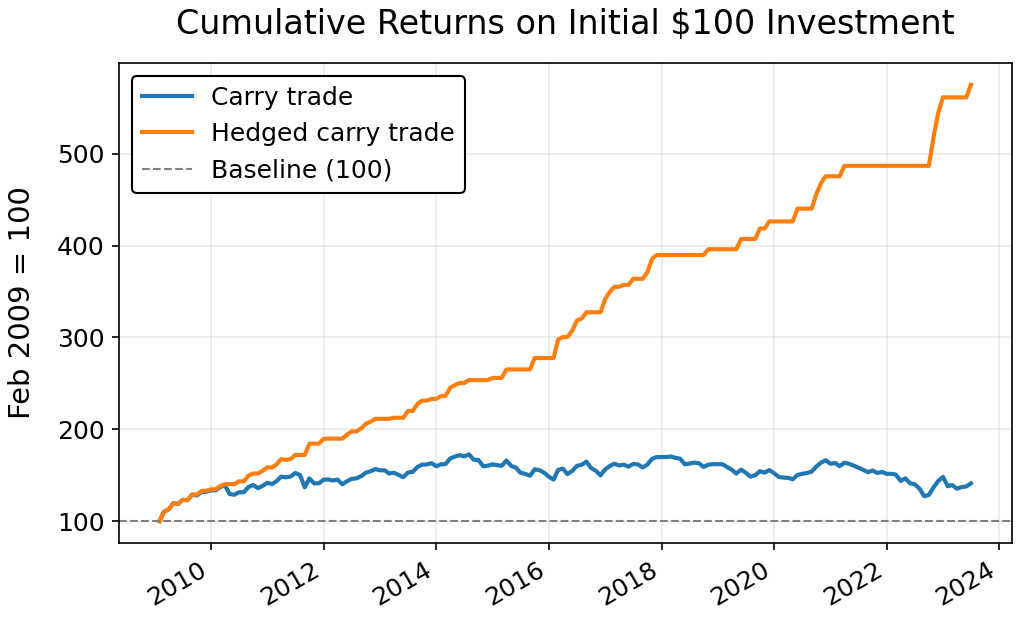
(c) The plot with both inflation rates is:



(d) The plot for the indicator variable is:



(e) The plot with cumulative returns for both strategies is:



By the end of the sample, the hedged carry trade has cumulative returns that are more than eleven times larger than the standard carry trade. This difference does provide some support to the idea that PPP holds in the long run. When relative PPP signals an overvalued dollar, the standard carry tends to have negative returns over the long run. The hedged carry trade has zero returns on those months. Since the standard carry trade borrows in dollars, the negative returns following the overvaluation signal suggest that the dollar depreciates in those periods, at least on average over our relatively long sample.

On the other hand, it could be possible that the negative returns are not due to a depreciation of the dollar but due to a reduction in the dollar-won interest rate differential. Whether the reduction in interest rate differential is evidence in favor or against relative PPP depends on how interest rates interact with inflation.

A spreadsheet with the data, calculations, and plots can be downloaded here.

2. (a) PPP means purchasing power parity. $MS = MD$ and $MS^* = MD^*$ mean (real) money supply equal to (real) money demand in the domestic and foreign countries, respectively.

(b) The exogenous variables are: $R, Y, M^s, R^*, Y^*, M^{s*}$. The endogenous variables are: E, P, P^*.

(c) Solve for P and P^* in the domestic and foreign money market equations to get: $P = M^s R/Y$ $P^* = M^{s*} R^*/Y^*$. Plugging into the PPP equation we get

$$E = \frac{\frac{M^s R}{Y}}{\frac{M^{s*} R^*}{Y^*}} = \frac{M^s}{M^{s*}} \frac{R}{R^*} \frac{Y^*}{Y}$$

(d) After a one-time permanent increase in M^s, P goes up, P^* remains unchanged and E goes up (there is a nominal depreciation). The changes in the short run and long run are identical, that is, immediately after the change in M^s we have a one-time permanent increase in P and E.

(e) From (d), we know that P^* remains unchanged. We also found that P and E increase permanently in the short run and remain at their new levels in the long run.

In equilibrium, relative output demand equals relative output supply and hence $Y/Y^* = q = \bar{Y}$. Because PPP is imposed in Model 1, $q = EP^*/P = 1$; therefore equilibrium in the added block requires $\bar{Y} = 1$ in levels. The key comparative-static result is that Y/Y^* and the real exchange rate q remain unchanged after the increase in M^s.