(1) $RER = \frac{EP^H}{P^F} = \frac{E\sqrt{P_A^H}\sqrt{P_B^H}}{\sqrt{P_A^F}\sqrt{P_B^F}}$

$$RER^2 = \frac{E^2 P_A^H P_B^H}{P_A^F P_B^F} = \frac{P_A^F P_B^F}{P_A^F P_B^F} = 1$$

$\Rightarrow$ $RER = 1$

(2) $EP_A^H = P_A^F$ | $EP_B^H = P_B^F$

(1) $E^\alpha P_A^{H\alpha} = P_A^{F\alpha}$ | (2) $E^{1-\alpha} P_B^{H1-\alpha} = P_B^{F1-\alpha}$

(3) $E = E^\alpha E^{1-\alpha}$

---

$$RER = \frac{EP^H}{P^F} = \frac{E(P_A^H)^\alpha (P_B^H)^{1-\alpha}}{(P_A^F)^{1-\alpha}(P_B^F)^\alpha}$$

using (3):

$$RE = \frac{E^\alpha (P_A^H)^\alpha E^{1-\alpha}(P_B^H)^{1-\alpha}}{(P_A^F)^{1-\alpha}(P_B^F)^\alpha} =$$

using (1) & (2):

$$\frac{(P_A^F)^\alpha (P_B^F)^{1-\alpha}}{(P_A^F)^{1-\alpha}(P_B^F)^\alpha}$$

$$= \left(P_A^F\right)^{2\alpha-1} \cdot \left(P_B^F\right)^{1-2\alpha}$$

$$= \left(\frac{P_B^F}{P_A^F}\right)^{1-2\alpha} = tot^{1-2\alpha}$$

$$\cancel{\text{③}\ RER = \frac{EP^H}{P^F} = \frac{E\left(P_T^H\right)^{\gamma}\left(P_N^H\right)^{1-\gamma}}{\left(P_T^F\right)^{\gamma}\left(P_N^F\right)^{1-\gamma}}}$$

$$\cancel{= \frac{E^{\gamma}\left(P_T^H\right)^{\gamma}}{\left(P_T^F\right)^{\gamma}} \cdot \frac{E^{1-\gamma}\left(P_N^H\right)^{1-\gamma}}{\left(P_N^F\right)^{1-\gamma}}}$$

~~this is just question 2~~

$$\cancel{= \left(tot^{1-2\alpha}\right)^{\gamma}}$$

③ $$RER = \frac{EP^H}{P^F} = \frac{E\left(P_T^H\right)^{\gamma}\left(P_N^H\right)^{1-\gamma}}{\left(P_T^F\right)^{\gamma}\left(P_N^F\right)^{1-\gamma}}$$

$$= \left(\frac{E\left(P_T^H\right)}{P_T^F}\right)^{\gamma}\left(\frac{E\left(P_N^H\right)}{P_N^F}\right)^{1-\gamma}$$

this is just question 2

$$= \left(tot^{1-2\alpha}\right)^{\gamma} \left(\frac{E\,(P_N^H)}{P_N^F}\right)^{1-\gamma}$$

$$X_J = \frac{P_N^J}{P_T^J} \Rightarrow P_N^J = X_J(P_T^J) \qquad (4)$$

using (4)

$$= \left(tot^{1-2\alpha}\right)^{\gamma} \left(\frac{E\;X_H(P_T^H)}{X_F(P_T^F)}\right)^{1-\gamma}$$

$$= \left(tot^{1-2\alpha}\right)^{\gamma} \left(\frac{E(P_T^H)}{P_T^F}\right)^{1-\gamma} \cdot \left(\frac{X_H}{X_F}\right)^{1-\gamma}$$

this is again the same as question 2

$$= \left(tot^{1-2\alpha}\right)^{\gamma} \left(tot^{-2\alpha}\right)^{1-\gamma} \left(\frac{X_H}{X_F}\right)^{1-\gamma}$$

$$= tot^{1-2\alpha} \left(\frac{X_H}{X_F}\right)^{1-\gamma}$$

(4) they argue that the US' current account deficit is unsustainable And that, in order to close the deficit, the RER will ~~[illegible]~~ fall:

- tot = Price of imports / Price of exports. the US needs to export more to close the deficit

So it might have to lower the price of its exports, causing tot to rise and as $\alpha > 0.5$, RER will fall.

- $X_j$ = nontradables / tradables. To reduce the deficit, the US must consume fewer tradables, so $X_H = \frac{P_N^H}{P_T^H}$, $P_T^H$ rises as demand increases and $P_N^H$ falls.
The opposite happens for $X_F$.

So, $\frac{X_H \downarrow}{X_F \uparrow}$ falls, causing RER to fall.

also cause deflation
goal is unclear

The RER falled even though the deficit grew.

(5) ~~& the current account balance (dollar) ... the RER ... so the prediction was good.~~

this is too short

(6) Engel argues that changes in RER are mainly a result of changes in traded good price (so the tot) and not nontradable/tradable ratios $\left(\frac{X_H}{X_F}\right)$

~~... the change ... might be ... dramatic ...~~

Engel's results are unconditional and do not depend on a specific shock.

OR's analysis is conditional on a particular period.