Econ 842                                                                                           Prof. Kasa
International Monetary Economics                                                    Spring 2016

MIDTERM EXAM - March 8

Answer the following questions True, False, or Uncertain. Briefly explain your answers. (10 points each).

1. If the foreign exchange market is efficient, exchange rates follow random walks.

2. The intertemporal current account model discussed in class makes no sense, since it predicts current accounts should be procyclical, while in the data they are countercyclical.

3. Fama regressions suggest the risk premium is more volatile than expected exchange rate changes.

4. The current account is a meaningless concept in a world of Arrow-Debreu complete markets.

   The following questions are short answer. Briefly explain your answer. Clarity will be rewarded.

5. (30 points). **Precautionary Savings and the Current Account**. Consider a small open economy that can borrow or lend all it wants at a fixed world interest rate. Preferences are given by

$$U(C_1) + \beta E[U(C_2)] \qquad U(C) = -\frac{1}{\gamma} e^{-\gamma C}$$

   where $E[\cdot]$ denotes the expectations operator. The intertemporal budget constraint is $C_1 + \frac{1}{1+r}C_2 = Y_1 + \frac{1}{1+r}Y_2$. Suppose the rate of time preference equals the interest rate, so $\beta(1+r) = 1$.

   (a) Write down the agent's Euler equation. Suppose output grows deterministically, $Y_2 = (1+g)Y_1$, with $g > r$. Combine the Euler equation with the budget constraint to derive an expression for first period consumption. Show that the country will run a current account deficit.

   (b) Now suppose output is stochastic, $Y_2 = (1+g)Y_1 + \varepsilon$, where $\varepsilon \sim N(0, \sigma^2)$. Repeat the analysis in part (a). Under what conditions on $\gamma$ and $\sigma^2$ will the country now run a current account surplus instead, despite the rapid growth in income. (Hint: Use the budget constraint to sub out $C_2$ in the Euler equation, and then use the formula for the mean of a log-normal, $Ee^{ax} = e^{a\mu_x + \frac{1}{2}a^2\sigma_x^2}$.)

6. (30 points). **Exchange Rates and Commodity Prices**. In class we discussed *two* theories of exchange rates - The Balassa-Samuelson model of real exchange rates, and the monetary model of nominal exchange rates. This question asks you to combine the two. As in the monetary model, suppose agents are risk-neutral, so UIP holds: $i_t = i_t^* + E_t s_{t+1} - s_t$, where $s_t$ is the log of the nominal exchange rate, defined as the price of foreign currency. Also, continue to assume money demands take the form $m_t - p_t = y_t - \alpha i_t$, where $\alpha$ is the interest rate (semi)elasticity of money demand. Now, however, suppose PPP *doesn't* hold, due to the presence of nontraded goods, as in the Balassa-Samuelson model. In particular, suppose $p_t = p_t^* + s_t + q_t$, where $q_t$ is the log of the real exchange rate (defined as the relative price home goods).

   (a) Combine UIP, money demands, and the real exchange rate equation to derive a stochastic difference equation for $s_t$. Solve this equation by iterating forward. How does the current exchange rate depend on expectations of the future real exchange rate?

   (b) By using the logic of the Balassa-Samuelson model, discuss how an expected increase in a country's (exogenous) Terms of Trade would affect $q_t$, and therefore $s_t$.

   (c) Following Engel & West (JPE, 2005), explain why exchange rates should help to predict future commodity prices. (For more discussion, see Chen, Rogoff, & Rossi (QJE, 2010), *Can Exchange Rates Forecast Commodity Prices?*.