

First Midterm Exam

No points will be given by simply writing down formulas, and writing down definitions or irrelevant statements from the book, or saying "yes," will get you zero points. Justify all your answers. If you cannot prove something give some intuition. Good luck. Reminder: this is an open book exam, but no open notes.

Time: 1hr 25 minutes.

I.- Problems (10 points each).

1.- It is February 2003. Assume a U.S. speculator **sells** a December put option on Australian Dollars (AUD) of USD .06 per unit. There are 10,000 units in an AUD option. The strike price is USD .46. In December, you advise the *speculator*. Under the scenarios A, B, and C, determine:

- (i) if the buyer of the option will exercise the option
- (ii) the net profit of the operation for the speculator.

(A) Suppose $S_{Dec} = .40$ USD/AUD.

(B) Suppose $S_{Dec} = .46$ USD/AUD.

(C) Suppose $S_{Dec} = .52$ USD/AUD.

(D) Draw a graph, showing the net profit for the speculator for different S_{Dec} 's. Clearly state the maximum net profit.

2.- Suppose you use monthly European and U.S. data from the graph (1/1971-12/2002). You fit the following regression: $e_{f,t}(\text{USD/EUR}) = (S_t - S_{t-1})/S_{t-1} = \alpha + \beta (I_{\text{US}} - I_{\text{EUR}})_t + \varepsilon_t$.

$$R^2 = 0.00719$$

$$\text{Standard Error } (\sigma) = .03442$$

$$\text{F-stat (slopes=0 -i.e., } \beta=0) = 4.6080$$

$$\text{Residual SS (RSS)} = 0.4241$$

$$\text{Observations} = 360$$

	Coefficients	Stand Error
Intercept	-0.00236	0.00188
$(I_{\text{US}} - I_{\text{EUR}})$	0.37701	0.20987

(i) Using t-tests, test PPP at the 5% level.

(ii) Assume the sum of $\{e_{f,t} - (I_{\text{US}} - I_{\text{EUR}})_t\}^2$ during the estimation period is 0.4382. Using an F-test, test PPP at the 5% level.

(iii) Suppose $S_{\text{Dec}02} = 1.2915$ USD/EUR and $(I_{\text{US}} - I_{\text{EUR}})_{\text{Dec}02} = .006$. Assume inflation rates follow a Random Walk. Using the regression model, forecast the exchange rate for January 2003 ($S_{\text{Jan}03}$).

3.- Sternin Corporation wants to determine if changes in U.S. and South African interest rates ($i_{\text{USD}} - i_{\text{ZAR}}$) affect the value of the USD/ZAR (ZAR: South African Rand).

(A) Describe a regression model that could be used to achieve this objective. Using IFE, explain the expected sign of the regression coefficient.

(B) Assume interest rates in South Africa are reduced to 5%, while interest rates in the U.S. remain constant at 3%. Last month (January), the exchange rate, S_{Jan} , was 8.95 ZAR/USD. According to the IFE, what should be the exchange rate in February (S_{Feb})?

(C) Go back to question (B). Suppose the actual exchange rate in February is 9.05 ZAR/USD. According to the IFE, should we buy or sell USD? Why?

4.- Ms. Chambers , a U.S. arbitrageur, is looking for arbitrage opportunities. The one-year interest rate offered in the U.S. is 3%, while the one-year interest rate offered in Bolivia is 12%. The spot rate is 7.20 BOL/USD, that is, Bolivian Pesos 7.20 per USD. Ms. Chambers is offered a one-year forward contract at 7.80 BOL/USD.

(i) Is arbitrage possible? (Hint: Calculate the arbitrage-free one-year forward contract exchange rate.)

(ii) If arbitrage is possible, design the appropriate covered arbitrage strategy.

(iii) If arbitrage is possible, calculate the profits for the arbitrage strategy.

(iv) Compare the currency premium (p) with the interest rate differential. Then, describe the capital flows between the U.S. and Bolivia.

II. WSJ CASE (20 points)

Read the attached FT article (Feb. 11, 2003) and briefly answer the following questions:

Note: No points will be given by simply writing lines from the article.

1) According to the FT, traders reacted negatively to Mr. Greenspan's cautious comments about the slow U.S. economic recovery. What is the effect of a slow U.S. economy on the USD/EUR? Be precise about what theory you are using to justify your answer.

2) According to the linearized version of relative PPP, which currency (EUR, CHF, or CAD) had the highest daily inflation rate differential (in absolute value) with respect to the USD?

3) The Swiss have sounded another note of caution about the ongoing strength of the CHF. The head of the Swiss Central Bank, Jean-Pierre Roth, said a "margin of manoeuvre" still existed to lower interest rates. Show with a graph, the effect of a decrease in the Swiss interest rate on the CHF/USD exchange rate. Explain. (No graph, no points.)

4) According to the FT, "[The CHF] has recently hit four-year highs against the USD, benefiting from Switzerland's perceived safe-haven." Describe with a graph the effect of the Iraq situation on the USD/CHF exchange rate. (No graph, no points.)

5) According to the FT, Mr. Roth also said the Central Bank could intervene to defend the Swiss economy against a sudden shock –i.e., sudden appreciation of the CHF against the USD. Show how the Swiss Central Bank can intervene to counter an appreciation of the CHF against the USD. (Draw a graph). Will this FX intervention affect interest rates?