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. <u>Reminder</u>: this is an open book exam, but <u>no</u> open notes.
<u>Time</u>: 1hr 20 minutes.

I. Problems (10 points each).

1. Assume you are given the following exchange rates S_t=1.054 USD/EUR and S_t=1.369 AUD/EUR.
i. What is the cross rate USD/AUD?
ii. Suppose the 180-day forward rate is $F_{t,180}$=1.08 USD/EUR. Calculate the forward premium. Does the forward rate contain a premium or a discount?
iii. Suppose Kwiki Bank quotes S_t=.81 USD/AUD. Is arbitrage possible? (Why?)
iv. If yes, describe a triangular arbitrage strategy and determine an arbitrageur's profits.

2. It is February 2017. A Big Mac costs CZK 80 in the Czech Republic, while it costs USD 4.8 in the U.S. The spot rate is 25 CZK/USD (CZK= Czech Koruna).

(a) According to PPP, what should be the USD/CZK exchange rate in February 2017?

(b) Take the USD as the domestic currency. Calculate the real exchange rate, R_t. What is the over/under-valuation of the CZK relative to the USD?

(c) According to the R_t, which country is more efficient?

(d) The GDP per capita in the Czech Republic is CZK 440,000. Translate the GDP per capita in CZK to (nominal) USD and to PPP USD prices.

(e) Suppose in March 2017, the price of the Big Mac increases to CZK 88 in the Czech Republic, while it decreases to 4.56 in the U.S. According to the *linearized* version of PPP, what should the USD/CZK exchange rate be in March 2016?

(f) Assume that in March 2017 the exchange rate is. 045 USD/CZK. Generate a trading signal based on PPP.

3. Suppose you use monthly Swiss and U.S. data from January1971 to January 2017. You fit the following regression:

$e_{f,t}$ (CHF/USD) = $(S_t - S_{t-1})/S_{t-1}$ = $\alpha + \beta$ $(I_{SWIT} - I_{US})_t + \varepsilon_t$.

$R^2 = 0.022127$
Standard Error (σ) = .034494
Residual SS (SSR) = 0.63198
Observations = 539

	Coefficients	Stand Error
Intercept	-0.00096	0.001550
$(I_{SWIT} - I_{US})$	1.142955	0.395672

(i) Are the signs of the coefficients consistent with PPP?

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

(iii) Assume the sum of $\{e_{f,t} - (I_{SWIT} - I_{US})_t\}^2$ during the estimation period is 0.63291 –i.e., SSR(H_0). Using an F-test, test PPP at the 5% level.

(iv) Suppose S_{Jan17} = 1.01 CHF/USD and $(I_{SWIT} - I_{US})_{Jan17}$ = .0035. Assume inflation rates follow a Random Walk, that is $E_t[I_{SWIT} - I_{US}]_{t+1}$ = $[I_{SWIT} - I_{US}]_t$. Using the regression model, forecast the exchange rate for Feb 2017 (S_{Feb17}).

4. Bank A gives the following quotes: BOB/USD=7.00 - 7.01. The one-year interest rates for the BOB, i_{BOB}, and for the USD, i_{USD}, are 10.25% – 10.75% and 2.10% – 2.20%, respectively. Chivas Bank quotes $F^{CB}_{t,180}$ = 7.13 - 7.15 BOB/USD.

A. Is arbitrage possible? If so, design a covered arbitrage strategy to take advantage of Chivas Bank's quote.

B. Determine an arbitraguer's profits.

C. Describe the international capital flows between Bolivia and the U.S.

II. CASE (20 points)

Read the Seeking Alpha article (February 21, 2017) and briefly answer the following questions:
<u>Note</u>: No points will be given by simply writing lines from the article.

1) According to the article, the euro depreciated in the face of good economic results. What is the effect of higher than expected European GDP growth on the USD/EUR? Mentioned the theory you are using to justify your answer.

2) Suppose the ECB decides to intervene to stop the depreciation of the EUR against the USD. Draw a graph to show the effects on FX Markets and on Money Markets.

3) According to the article, the ECB is expected to have a loser monetary policy, while the U.S. Fed is expected to increase interest rates. What is the effect of the expected change in interest rate differentials on the USD/EUR exchange rate? Draw a graph.

4) Assume 1-year interest rates in Europe have been constant at 0.05% since the start of the year, while1-year interest rates in the U.S. are at 0.75%. Using the data from the article, using IFE forecast the USD/EUR one year from now.

5) According to the article, the Trump administration is creating policy uncertainty. What is the effect of this uncertainty on the USD/EUR exchange rate? Draw a graph.