Topic 3: Parity Conditions

(Reading: Eun and Resnick Chapter 6)

NOTE:

1. Questions covered in the tutorials are indicated by an **(*)**.
2. For the formulas of parity conditions, the text assumes direct quotes (i.e., domestic currency per unit of foreign currency). In the lecture slides, you would've noticed that I make no assumptions about the type of quote. It is just A/B, with A (B) the currency in the numerator (denominator).

1. Discuss the implications of interest rate parity for exchange rate determination.
2. Explain purchasing power parity, both the absolute and relative version. What causes deviations from purchasing power parity?
3. Discuss the implications of the deviations from purchasing power parity for countries' competitive positions in the world market.
4. Suppose that the treasurer of IBM has an extra cash reserve of $100 million to invest for six months. The six-month interest rate is 8 percent per annum in the United States and 7 percent per annum in Germany. Currently, the spot exchange rate is €1.01 per dollar and the six-month forward exchange rate is €0.99 per dollar. The treasurer of IBM does not wish to bear any exchange risk. Where should he or she invest to maximize the return?
5. The annual inflation of Netherlands is given to be 4.22% and that of the US is 3.8%. According to purchasing power parity (PPP) will the US dollar will appreciate or depreciate? And by (approximately) how much? **(*)**
6. Derive the relative PPP formula using Absolute PPP.
7. When PPP fails, does it imply the presence of profit-making opportunities?
8. Currently, the spot exchange rate is $1.50/£ and the three-month forward exchange rate is $1.52/£. The three-month interest rate is 8.0 percent per annum in the U.S. and 5.8 percent per annum in the U.K. Assume that you can borrow as much as $1.5 million or £1 million. **(*)**
   (a) Determine whether interest rate parity is currently holding.
   (b) If IRP is not holding, how would you carry out covered interest arbitrage? Show all the steps and determine the arbitrage profit.
   (c) Explain how IRP will be restored as a result of covered arbitrage activities.

9. In July, the one-year interest rate is 12% on British pounds and 9% on US dollars **(*)**

   (a) If the current exchange rate is $1.63: 1 GBP. What is the expected future exchange rate in one year?

   (b) Suppose a change in expectations regarding future US inflation causes the expected future spot rate to decline to $1.52: GBP 1. What should happen to the U.S. interest rate?

10. Assume the interest rate is 16% on Pounds and 7% on Deutsche marks. At the same time, inflation is running at an annual rate of 3% in Germany and 9% in England. **(*)**

(a) If the Deutsche mark is selling at a one-year forward premium of 10% against the pound, is there an arbitrage opportunity? Explain.

(b) What is the real interest rate in Germany? In England?

11. If the USD/Yen spot rate is Yen 218/USD and the interest rates in Tokyo and NY are 6% and 12% respectively. What is the expected USD/Yen exchange rate one year hence?

12. Discuss the impact of transaction costs on the interest rate parity condition.

13. Suppose the pound is pegged to gold at 7 Euros per ounce, while the dollar is pegged at $14 per ounce. The current exchange rate is $2.3 per pound. If shipping costs are £1 per ounce, we can make money by buying gold low and selling gold high. Explain.

Past exam question (*)

Circle one: TRUE / FALSE / UNCERTAIN

14. The following information on interest rates and exchange rates is available to all with access to any of the finance data providers:

Currency	Spot	1 Month	3 Months	6 Months	12 Months
Euro	2.0310/20	22/18	64/54	128/105	227/228
GBP*	1.4890/00	55/22	160/156	302/289	560/523
Yen	154.20/30	8/6	33/27	75/62	164/137

* The quote for the British Pound (GBP) is AUD per GBP. For the Euro and Yen it is foreign currency per AUD. For ***most*** currency pairs, a point is 1/100th of 1% (i.e., 0.0001); the Japanese Yen currency pair is the only exception to this rule. Swap points for Japanese Yen currency pairs (e.g., Yen per AUD) are quoted to two decimal places only, so one point is 1/100.

2021 exam question (*)

The table below provides bid and ask interest rates on the Australian dollar (AUD), the Euro, the British Pound (GBP) and the Japanese Yen. These rates are quoted on a per annum basis.

Currency	1 Month	3 Months	6 Months	12 Months
AUD	5.6785-5.8125	5.5000-5.6250	5.5000-5.6250	5.6250-5.7500
Euro	4.4375-4.5625	4.3125-4.4375	4.3125-4.4375	4.3125-4.4375
GBP	10.0625-10.1875	9.8750-9.9375	9.6875-9.7500	9.6250-9.7500
Yen	5.1250-5.1875	4.7500-4.8125	4.6250-4.6875	4.6250-4.6875

(a) An investor who runs a family office expects the Japanese Yen to depreciate against the Australian dollar by 7% over the next three months. How can this investor try to profit on these expectations through (a) transactions in the spot market only (b) forward market transactions only? Assume that there are no regulatory restrictions whatsoever.

Calculate the profit (or loss) on a $1 million position for each of the two cases. What other factors should this investor incorporate in his decision when he considers using spot versus forward markets to execute the transaction?

(b) Now suppose this investor expects a GBP 2 million payment in a month from client based in Glasgow. While he doesn't have a strong opinion on how the exchange rate is likely to move, he is intent on eliminating the uncertainty around the value of the GBP. What options does he have and what are the costs of eliminating this risk? Which approach should he utilise? Provide your answer in dollar terms.

15. **2022 exam question (*)**

The iTunes store, owned by Apple Inc. sells songs, movies and tv shows. These stores operate in several countries and the songs are priced in local currency terms.

	iTunes Song Price (Local currency)	PPP exchange Rate	Current US$ exchange rate	Over (+)/under (-) valuation (**iTunes**)	Over (+)/under (-) valuation (**Big Mac**)*
USA	US$ 0.99	-	-	-	-
Australia	A$1.69	A$1.70	A$1.33	+28%	-21%
Canada	C$0.99	C$1	C$1.12	-11%	+1%
Japan	¥200	¥202	¥112	+80%	-28%
UK	£0.79	£0.79	£0.53	+51%	+18%

Source: The Economist

What factor(s) could potentially explain the different prices charged for songs on iTunes? What advantage does the iTunes index have over the Big Mac index?

Question 16 2022 exam question (*)

(1) According to purchasing power parity, high inflation countries tend to experience nominal appreciations. True or False? Explain in no more than two or three sentences.

(2) If purchasing power parity held exactly, then the yen would trade at one yen to the dollar. True or False? Explain in no more than two or three sentences.

(3) If Country A has a current account surplus with the rest of the world, citizens in Country A are saving more than the rest of the world. True or False? Explain in no more than two or three sentences.

(4) By closing off the financial account to the rest of the world Arcadia (a fictious country) finds it hard to maintain high levels of investment. Agree or disagree? Explain in no more than two or three sentences.