

International Economics

January 19, 2020

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Problem Set 6 - Exchange Rates and Foreign Exchange Market

References: Ch. 14 of Krugman-Obstfeld-Melitz

Exercise 1: Arbitrage

Consider the exchange rates reported in the Table below (taken from the Krugman-Obstfeld-Melitz textbook)

TABLE 14-1 Exchange Rate Quotations

CURRENCIES

Jan 19	Currency	DOLLAR		EURO		POUND		Jan 19	Currency	DOLLAR		EURO		POUND	
		Closing Mid	Day's Change	Closing Mid	Day's Change	Closing Mid	Day's Change			Closing Mid	Day's Change	Closing Mid	Day's Change	Closing Mid	Day's Change
Argentina	Argentine Peso	15.9755	0.0015	16.9567	-0.1293	19.6613	-0.0603	Indonesia	Indonesian Rupiah	13373.5000	31.0000	14191.3620	-76.4156	16454.6381	-13.7381
Australia	Australian Dollar	1.3250	0.0031	1.4061	-0.0076	1.6303	-0.0014	Israel	Israeli Shekel	3.8222	0.0157	4.0559	-0.0145	4.7029	0.0045
Bahrain	Bahraini Dinar	0.3771	0.0000	0.4001	-0.0030	0.4639	-0.0014	Japan	Japanese Yen	115.2950	2.0200	122.3458	1.2155	141.8596	2.0450
Bolivia	Bolivian Boliviano	6.9300	-	7.3538	-0.0588	8.5267	-0.0269	One Month		115.2949	2.0198	122.3458	1.2156	141.8596	2.0449
Brazil	Brazilian Real	3.2097	-0.0094	3.4049	-0.0363	3.9490	-0.0241	Three Month		115.2945	2.0191	122.3458	1.2156	141.8594	2.0445
Canada	Canadian Dollar	1.3327	0.0233	1.4142	0.0139	1.6398	0.0235	One Year		115.2927	2.0155	122.3459	1.2156	141.8596	2.0437
Chile	Chilean Peso	861.4250	2.0350	701.8740	-3.2428	813.8212	-0.0597	Kenya	Kenyan Shilling	103.9000	-	110.2539	-0.8512	127.8382	-0.4038
China	Chinese Yuan	6.8766	0.0424	7.2971	-0.0110	8.4610	0.0256	Kuwait	Kuwait Dinar	0.3054	0.0002	0.3240	-0.0023	0.3757	-0.0009
Colombia	Colombian Peso	2942.8500	7.4950	3122.8189	-18.0953	3620.9004	-2.1895	Malaysia	Malaysian Ringgit	4.4490	0.0045	4.7211	-0.0316	5.4741	-0.0117
Costa Rica	Costa Rican Colon	553.0400	3.3600	580.8009	-0.5960	690.4037	-1.9971	Mexico	Mexican Pesos	21.9550	0.1729	23.2978	0.0050	27.0136	0.1280
Czech Republic	Czech Koruna	25.4634	0.1957	27.0005	0.0007	31.3303	0.1426	New Zealand	New Zealand Dollar	1.3942	0.0049	1.4795	-0.0061	1.7154	0.0007
Denmark	Danish Krone	7.0073	0.0534	7.4358	-0.0003	8.6218	0.0387	Nigeria	Nigerian Naira	304.7500	-10.0000	323.3868	-13.1902	374.8662	-13.5278
Egypt	Egyptian Pound	18.9085	0.0350	20.0648	-0.1175	23.2651	-0.0303	Norway	Norwegian Krone	8.4894	0.0389	9.0086	-0.0279	10.4454	0.0151
Hong Kong	Hong Kong Dollar	7.7569	0.0008	8.2313	-0.0626	9.5441	-0.0291	Pakistan	Pakistani Rupee	104.8050	-	111.2143	-0.8587	128.9527	-0.4075
Hungary	Hungarian Forint	260.9580	3.0774	300.7513	0.9071	357.9963	-2.6673	Peru	Peruvian Nuevo Sol	-3.3468	-0.0062	3.5451	-0.0340	4.1105	-0.0206
India	Indian Rupee	68.1625	0.1860	72.3309	-0.4451	83.8675	-0.1342	Philippines	Philippine Peso	49.9875	0.1900	53.0445	-0.2064	61.5049	0.0402

Rates are derived from WM Reuters Spot Rates and MorningStar (latest rates at time of production). Some values are rounded. Currency redenominated by 1000. The exchange rates printed in this table are also available at www.FI.com/marketsdata

Figure 1: Caption

The table reports exchange rates not only against the U.S. dollar, but also against the euro and the pound sterling. (Each row gives the price of the dollar, euro, and pound, respectively, in terms of a different currency.) At the same time, the table gives the spot dollar prices of the euro (1.1332 USD per euro) and the pound sterling (1.4518 USD per pound). Pick any five currencies from the table and show that the three quoted spot exchange rates (in terms of dollars, euros, and pounds) approximately rule out triangular arbitrage. Why do we need to add the word "approximately"?

Exercise 2: (Uncovered) Interest Parity Condition

Suppose the Mexican peso (MXN) interest rate and the Indian rupee (INR) interest rate are the same, 5% per year. What is the relation between the current equilibrium MXN/INR exchange rate ($E_{MXN|INR}$) and its expected future level? Suppose the expected future $E_{MXN|INR}$ exchange rate, 3.40 INR per Mexican peso, remains constant as India's interest rate rises to 10% per year. If the Mexican interest rate also remains constant, what is the new equilibrium $E_{MXN|INR}$?

Exercise 3: (Uncovered) Interest Parity Condition (II)

In October 1979, the U.S. central bank (the Federal Reserve System) announced it would play a less active role in limiting fluctuations in dollar interest rates. After this new policy was put into effect, the dollar's exchange rates against foreign currencies became more volatile. Does our analysis of the foreign exchange market suggest any connection between these two events?

Exercise 4: Covered Interest Parity and Forward Premium

Take the two currencies—South African Rand (ZAR) and Indonesia Naira (NGN). Suppose the one-year forward exchange rate is 23 NGN per ZAR and the spot exchange rate is 20 NGN per ZAR. What is the forward premium on NGN (the forward discount on ZAR)? What is the difference between the interest rate on one-year ZAR deposits and that on one-year NGN deposits (assuming no repayment risk)?

Exercise 5: Open Question: Vehicle Currency

Does any of the discussion on Foreign Exchange Market lead you to believe that dollar deposits may have liquidity characteristics different from those of other currency deposits? If so, how would the differences affect the interest differential between, say, US dollar and Mexican peso deposits? Do you have any guesses about how the liquidity of euro deposits may be changing over time?