Lecture 3 Exchange Rates and Foreign Exchange Market

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E4310 Exchange Rates & Global Economics

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What Is Exchange Rate?

- A rate at which one currency exchanges for another
 - ► how much yen is one dollar? (¥97.385/\$)
 - ⇒ price of domestic currency in foreign currency
 - ▶ how much dollar is one yen? (\$0.01027/¥)
 - ⇒ price of foreign currency in domestic currency
- Why is it important
 - comparing prices of goods/services produced in different countries becomes easy
 - \$22,000 Ford v.s. ¥2,500,000 Nissan
 - ► ¥2,500,000 "=" \$2,500,000×0.01027

Exchange Rate Quotations

CURRENCIES

United Arab Emirates UAE Dirham

United Kingdom Pound Sterling

..One Month

3.6731 0.0001 3.8977

0.8127 0.0026

0.8128

		DOLLAR		EURO		POUND				DOLLAR		EURO		POUND	
		Closing	Day's	Closing	Day's	Closing	Day's			Closing	Day's	Closing	Day's	Closing	Day's
Jan 19	Currency	Mid	Change	Mid	Change	Mid	Change	Jan 19	Currency	Mid	Change	Mid	Change	Mid	Change
Argentina	Argentine Peso	15.9795	0.0015	16.9567	-0.1293	19.6613		Indonesia	Indonesian Rupiah	13373.5000	31.0000	14191.3620	-76.4156 1		-13.7391
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	Bahrainin 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	-0.0568	8.5267	-0.0269	One Month		115.2949	2.0198	122.3458	1.2156	141.8596	2.0449
Brazil	Brazilian Real	3.2087	-0.0094	3.4049	-0.0363	3.9480	-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	661.4250	2.0350	701.8740	-3.2428	813.8212	-0.0597	Kenya	Kenyan Shilling	103.9000		110.2539	-0.8512	127.8392	-0.4039
China	Chinese Yuan	6.8766	0.0424	7.2971	-0.0110	8.4610	0.0256	Kuwait	Kuwaiti Dinar	0.3054	0.0002	0.3240	-0.0023	0.3757	-0.0009
Colombia	Colombian Peso	2942.8500	7.4950	3122.8189	-16.0953	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	586.8608	-0.9380	680.4637	1.9971	Mexico	Mexican Peson	21.9550	0.1729	23.2976	0.0050	27.0136	0.1280
Czech Republic	Czech Koruna	25.4634	0.1957	27.0206	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	374.9662	-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	290.9580	3.0774	308.7513	0.9071	357.9963	2.6673	Peru	Peruvian Nuevo Sol	3.3408	-0.0062	3.5451	-0.0340	4.1105	-0.0206
India	Indian Rupee from WM Reuters Spot	68.1625	0.1060	72.3309	-0.4451	83.8675	-0.1342	Philippines	Philippine Peso	49.9875	0.1900	53.0445	-0.2064	61.5049	0.0402
India	Indian Rupee	68.1625 Rates and Mornin	0.1060 ngStar (latest ra	72.3309 tes at time of pro	-0.4451 duction). Son	83.8675 ne values are ro	-0.1342 unded. Currenc	Philippines	Philippine Peso	49.9875 ites printed in this	0.1900 table are also a	53.0445 vailable at www.	-0.2064 FT.com/mark	61.5049 etsdata	0.0402
India	Indian Rupee	68.1625 Rates and Mornin	0.1060 ngStar (latest rai	72.3309 tes at time of pro	-0.4451 duction). Som	83.8675 ne values are ro	-0.1342 unded. Currenc	Philippines	Philippine Peso	49.9875 ites printed in this	0.1900 table are also a	53.0445 vailable at www.	-0.2064 FT.com/mark	61.5049 etsdata	0.0402 UND
India Rates are derived	Indian Rupee from WM Reuters Spot	68.1625 Rates and Mornin DOLL Closing	0.1060 ngStar (latest rai	72.3309 tes at time of pro	-0.4451 duction). Son	83.8675 ne values are ro POI Closing	-0.1342 unded. Currenc JND Day's	Philippines y redenominated by	Philippine Peso 1000. The exchange ra	49.9875 Ites printed in this DOLI Closing	0.1900 table are also a	53.0445 vailable at www.	-0.2064 FT.com/mark	61.5049 etsdata PO Closing	0.0402 UND Day's
India Rates are derived Jan 19	Indian Rupee from WM Reuters Spot Currency	68.1625 Rates and Mornin DOLL Closing Mid	0.1060 ngStar (latest rai AR Day's Change	72.3309 tes at time of pro EUR Closing Mid	-0.4451 duction). Son O Day's Change	83.8675 ne values are ro POI Closing Mid	-0.1342 unded. Currenc JND Day's Change	Philippines y redenominated by Jan 19	Philippine Peso	49.9875 stes printed in this DOLI Closing Mid	0.1900 table are also a AR Day's Change	53.0445 vailable at www.	-0.2064 FT.com/mark 80 Day's Change	61.5049 etsdata PO Closing Mid	0.0402 UND
India Rates are derived Jan 19 Poland	Indian Rupee from WM Reuters Spot Currency Polish Zloty	68.1625 Rates and Mornin DOLL Closing Mid 4.1188	0.1060 igStar (latest rar AR Day's Change 0.0378	72.3309 tes at time of pro EUR Closing Mid 4.3707	-0.4451 duction). Som O Day's Change 0.0067	83.8675 ne values are ro POI Closing Mid 5.0678	JND Day's Change 0.0306	Philippines y redenominated by Jan 19 Three Month	Philippine Peso 1000. The exchange ra	49.9875 stes printed in this Closing Mid 0.8130	0.1900 table are also a AR Day's Change 0.0026	53.0445 vailable at www. EUR Closing Mid 0.8623	-0.2064 FT.com/mark 80 Day's Change -0.0039	61.5049 etsdata PO Closing Mid	0.0402 UND
Jan 19 Poland Romania	Indian Rupee from WM Routers Spot Currency Polish Zlony Romanian Leu	68.1625 Rates and Mornin DOLL Closing Mid 4.1188 4.2381	0.1060 ngStar (latest rar Day's Change 0.0378 0.0334	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973	0 Day's Change 0.0067 0.0010	POI Closing Mid 5.0678 5.2146	JND Day's Change 0.0306 0.0248	Philippines y redenominated by Jan 19 Three Month One Year	Phillippine Peso 1000. The exchange ra Currency	49.9875 stes printed in this DOLI Closing Mid	0.1900 table are also a AR Day's Change 0.0026 0.0026	53.0445 vailable at www. EUR Closing Mid 0.8623 0.8616	-0.2064 FT.com/mark RO Day's Change -0.0039 -0.0039	61.5049 etsdata PO Closing Mid	0.0402 UND Day' Chang
India Rates are derived Jan 19 Poland Romania Russia	Indian Rupee Instruction WM Reuters Spot Currency Polish Ziony Romanian Leu Russian Ruble	68.1625 Rates and Mornin DOLL Closing Mid 4.1188 4.2381 59.8644	0.1060 gStar (latest rail AR Day's Change 0.0378 0.0334 0.5419	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254	0 Day's Change 0.0067 0.0010 0.0890	P00 Closing Mid 5.0678 5.2146 73.8575	-0.1342 unded. Currenc JND Day's Change 0.0306 0.0248 0.4361	Philippines y redenominated by Jan 19 Three Month One Year United States	Philippine Peso 1000. The exchange ra	49.9875 stes printed in this Closing Mid 0.8130	O.1900 table are also a AR Day's Change 0.0026	53.0445 vailable at www. EUR Closing Mid 0.8623 0.8616 1.0612	-0.2064 FT.com/mark RO Day's Change -0.0039 -0.0039 -0.0082	61.5049 etsdata PO Closing Mid	UND Day Chang
India Rates are derived Jan 19 Poland Romania Russia Saudi Arabia	Indian Rupee from WM Reuters Spot Currency Polish Zloty Romanian Leu Russian Ruble Saudi Riyal	68.1625 Rates and Mornin DOLL Closing Mid 4.1188 4.2381 59.8644 3.7505	0.1060 gStar (latest rai	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798	0 Day's Change 0.0067 0.0010 0.0890 -0.0308	P00 Closing Mid 5.0678 5.2146 73.6575 4.6146	-0.1342 unded. Currenc JND Day's Change 0.0306 0.0248 0.4361 -0.0147	Philippines y redenominated by Jan 19 Three Month One Year United States One Month	Phillippine Peso 1000. The exchange ra Currency	49.9875 stes printed in this Closing Mid 0.8130	O.1900 table are also a AR Day's Change 0.0026	53.0445 realiable at www. EUR Closing Mid 0.8626 0.8616 1.0612 1.0610	-0.2064 FT.com/mark RO Day's Change -0.0039 -0.0039 -0.0082 -0.1731	PO Closing Mid 1.2304 1.2305	0.0402 UND Day' Chang -0.003 -0.003
Jan 19 Poland Romania Raudi Arabia Singapore	Indian Rupee Inorm WM Reuters Spot Currency Polish Zloty Romanian Leu Russian Rubte Saudi Riyal Singapore Dollar	68.1625 Rates and Mornin DOLL Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296	0.1060 ngStar (latest ra	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170	0.4451 duction). Son Day's Change 0.0067 0.0010 0.0890 -0.0308 -0.0029	P00 Closing Mid 5.0678 5.2146 73.8575 4.6146 1.7590	-0.1342 unded. Currenc JND Day's Change 0.0306 0.0248 0.4361 -0.0147 0.0046	Philippines y redenominated by Jan 19 Three Month One Year United States One Month Three Month	Phillippine Peso 1000. The exchange ra Currency	49.9875 stes printed in this Closing Mid 0.8130	0.1900 table are also a AR Day's Change 0.0026	53.0445 vailable at www. EUR Closing Mid 0.8623 0.8616 1.0610 1.0607	-0.2064 FT.com/mark BO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1731	P0 Closing Mid - 1.2304 1.2305 1.2307	0.0402 UND Day' Chang -0.003 -0.003 -0.003
Jan 19 Poland Romania Russia Saudi Arabia Singapore South Africa	Indian Rupee Instruction Rupee Currency Polish Zloty Romanian Leu Russian Ruble Saudi Riyal Singapore Dollar South African Rand	68.1625 Rates and Mornin DOLL Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296 13.6088	0.1050 igStar (latest rai AR Day's Change 0.0378 0.0334 0.5419 -0.0001 0.0082 0.1300	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410	-0.4451 duction). Son Day's Change 0.0010 0.0890 -0.0308 -0.0029 0.0275	83.8675 ne values are ro P00 Closing Mid 5.0678 5.2146 73.6575 4.6146 1.7590 16.7443	-0.1342 unded. Currenc Day's Change 0.0306 0.0248 0.4361 -0.0147 0.0046 0.1075	Philippines y redenominated by Jan 19 Three Month One Year United States One Month Three Month One Year	Philippine Peso 1000. The exchange of Currency United States Dollar	49.9875 Interprinted in this DOLI Closing Mid 0.8130 0.8141	O.1900 table are also a AR Day's Change 0.0026 0.0026	53.0445 voilable at www. EUR Closing Mid 0.8623 0.8616 1.0612 1.0607 1.0697	-0.2064 FT.com/mark Day's Change -0.0039 -0.0089 -0.1731 -0.1731 -0.1732	FO Closing Mid 1.2305 1.2305 1.2307 1.2318	0.0402 UND Day' Chang -0.003 -0.003 -0.003 -0.003
Jan 19 Poland Romania Romania Saudi Arabia Singapore South Africa South Korea	Indian Rupee from WM Reusers Spot Currency Polish Zoty Romanian Leu Russian Ruble Saudi Riyal Singapore Dollar South Krican Rand South Krean Won	68.1625 Rates and Mornic DOLL Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296 13.6088 1177,6000	0.1050 gStar (latest ra Day's Change 0.0378 0.0344 0.5419 -0.0001 0.0082 0.1300 10.8500	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410 1249.6154	-0.4451 duction). Son Day's Change 0.0067 0.0010 0.0890 -0.0308 -0.0275 1.9545	83.8675 ne values are ro POI Closing Mid 5.0678 5.2146 73.8575 4.6146 1.7590 16.7443 1448.9259	-0.1342 unded. Currenc Day's Change 0.0306 0.0248 0.4361 -0.0147 0.0046 0.1075 8.8139	Philippines y redenominated by Jan 19 Three Month One Year United States One Month One year Yenezuela	Philippine Peso 1000. The exchange ra Currency United States Dollar Venezuelin Bolivar Fuerte	49.9875 stee printed in this DOLL Closing Mild 0.8130 0.8141	0.1900 table are also a Day's Change 0.0026 - - - 0.0050	53.0445 wailable at www. Closing Mid 0.8623 0.8616 1.0612 1.0610 1.0607 1.0589 10.6062	-0.2064 FT.com/mark IO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1732 -0.0765	P0 Closing Mid 1.2304 1.2305 1.2307 1.2318 12.2979	0.0402 UND Day Chang -0.003 -0.003 -0.003 -0.003
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Jan 19 Poland Romania Russia Saudi Arabia Singapore South Korea Sweden Switzerland	Indian Rupee from VM Reusers Spot Currency Polish Zloty Romanian Leu Russian Rubile Sauth Rifican Rand Surth Korean Won Swedish Krona Swiss Franc	68.1625 Rates and Mornis DOLL Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296 13.6088 1177.6000 9.0063 1.0107	0.1060 O.1060 OrgStor (latest rar Day's Change 0.0234 0.5419 -0.0001 0.0082 0.1300 0.08500 0.0963	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410 1249.6154 9.5571 1.0725	-0.4451 duction). Son Day's Change 0.0067 0.0010 0.0890 -0.0308 -0.0029 0.0275 1.9545 0.0292 0.0014	83.8675 ne values are ro Closing Mid 5.0678 5.2146 73.8575 4.6146 1.7590 16.7443 1448.9259 11.0814 1.2435	-0.1342 unded. Currenc JND Day's Change 0.0306 0.0248 0.4361 -0.0147 0.0046 0.1075 8.8139 0.0039	Philippines y redenominated by Jan 19 Three Month One Year United States One Month Three Month One Year Venezuela Vietam European Union	Philippine Peso 1000. The exchange ra Currency United States Dollar Venezuelin Bolivar Fuerte	49.9875 Ites printed in this DOLL Closing Mid 0.8130 0.8141 9.9950 22565.0000 0.9424	0.1900 table are also a Labra are also also also also also also also also	53.0445 wailable at www. Closing Mid 0.8623 0.8616 1.0612 1.0610 1.0607 1.0589 10.6062	-0.2064 FT.com/mark IO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1732 -0.0765	61.5049 etsidata PO Closing Mild - 1.2304 1.2307 1.2318 12.2979 27764.1271 1.1595	0.0402 UND Day Chang -0.003 -0.003 -0.003 -0.003 -0.003 -0.003 -0.003
Jan 19 Poland Romania Russia Saudi Arabia Singapore South Africa South Korea Sweden Switzerland Taiwan	Indian Rupee from WM Revens Spot Currency Polish Zory Romanian Leu Russian Relie Saudi Riyal Singapore Dollar Saudi Korean Won Swedish Krosan Won Swedish Krosan Rand Swedish Krosan Rand Revisian Rand Swedish Krosan Rand	68.1625 Rates and Mornin Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296 13.6088 1177.6000 9.0063 1.0107 31.5900	0.1060 ggStar (latest rar Day's Change 0.0378 0.03419 -0.0001 0.0082 0.1300 10.8500 0.0963 0.0963	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410 1249.6154 9.5571 1.0725 33.5219	-0.4451 fuction). Son Day's Change 0.0067 0.0010 0.0890 -0.0308 -0.0029 0.0275 1.9545 0.0292 0.0014 -0.0292	83.8675 ne values are ro Closing Mid 5.0678 5.2146 73.5575 4.6146 1.7590 16.7443 1448.9259 11.0814 1.2435 38.8685	-0.1342 unded. Currenc Day's Change 0.0306 0.04361 -0.0147 0.0046 0.1075 8.8139 0.0839 0.0839 0.0854	Philippines y redenominated by Jan 19 Three MonthOne Year United StatesOne MonthThree MonthOne Year Venezuela Vietnam European UnionOne Month	Philippine Peso 1000. The exchange ri Currency United States Collar Vienzueln Boliar Funts Vietnamese Dong	49.9875 tes printed in this Closing Mid 0.8130 0.8141	0.1900 tuble are also of tuble are also of tuble are also of Change 0.0026 0.0026 0.0050 - 8.0000 0.0072 0.0072	53.0445 wailable at www. Closing Mid 0.8623 0.8616 1.0612 1.0610 1.0607 1.0589 10.6062	-0.2064 FT.com/mark IO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1732 -0.0765	61.5049 etsidata PO Closing Miid - 1.2304 1.2305 1.2307 1.2318 12.2979 27784.1271 1.1595 1.1594	0.0402 UND Day Chang -0.003 -0.003 -0.003 -0.003 -0.032 -97.622 0.005 0.005
Jan 19 Poland Romania Russia Saudi Arabia Singapore South Korea Sweden Switzerland Taiwan Thailand	Indian Rupee from WM Reusers Spot Currency Pelish Zloty Romanian Leu Russian Rubile Saudi Riyal Singapore Dollar South Kiroan Rard South Korean Win Swedish Krona Swiss Franc New Bawan Dollar Tahai Baht	68.1625 Bates and Mornin DOLL Closing Mid 4.1188 4.2381 3.7505 1.4296 1.4296 1.4096 1.0107 31.5900 35.3785	0.1060 0.1060 pgStor (latest rai Day's Change 0.0334 0.5419 -0.001 0.0082 0.1300 10.8503 0.0091 0.0066	72.3309 EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410 124.6154 5.5571 1.0725 33.5219 37.5420	-0.4451 duction). Son Day's Change 0.0067 0.0010 0.0890 -0.0029 1.9545 0.0292 0.0014 -0.0292	83.8675 ne values are ro Closing Mid 5.0678 5.2146 73.5575 4.6146 1.7590 16.7443 11.0814 1.2435 38.8685 43.5299	-0.1342 unded Currenc Day's Change 0.0306 0.0248 0.4361 -0.0147 0.0046 0.1072 -0.072 -0.0724 -0.0724 -0.0724	Philippines y redenominated by Jan 19 Three Month One Year United States One Month Three Month One Year Venezuela Vietnam European Union One Month Three Month	Philippine Peso 1000. The exchange ri Currency United States Collar Vienzueln Boliar Funts Vietnamese Dong	49.9875 ttes printed in this DOLI Closing Mid 0.8130 0.8141 - 9.9950 22565,0000 0.9424 0.9422 0.9419	0.1900 table are also s AR Day's Change 0.0026 0.0026 0.0020 0.0020 0.0072 0.0072	53.0445 wailable at www. Closing Mid 0.8623 0.8616 1.0612 1.0610 1.0607 1.0589 10.6062	-0.2064 FT.com/mark IO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1732 -0.0765	61.5049 PO Closing Mid 1.2305 1.2307 1.2318 12.2979 27764.1271 1.1595 1.1594 1.1593	0.0402 Day's Change -0.003 -0.003 -0.003 -0.003 -0.005 -0.005 -0.005 -0.005 -0.005
Jan 19 Poland Romania Russia Saudi Arabia Singapore South Africa South Korea Sweden Switzerland Taiwan	Indian Rupee from WM Revens Spot Currency Polish Zory Romanian Leu Russian Relie Saudi Riyal Singapore Dollar Saudi Korean Won Swedish Krosan Won Swedish Krosan Rand Swedish Krosan Rand Revisian Rand Swedish Krosan Rand	68.1625 Rates and Mornin Closing Mid 4.1188 4.2381 59.8644 3.7505 1.4296 13.6088 1177.6000 9.0063 1.0107 31.5900	0.1060 ggStar (latest rar Day's Change 0.0378 0.03419 -0.0001 0.0082 0.1300 10.8500 0.0963 0.0963	72.3309 tes at time of pro EUR Closing Mid 4.3707 4.4973 63.5254 3.9798 1.5170 14.4410 1249.6154 9.5571 1.0725 33.5219	-0.4451 fuction). Son Day's Change 0.0067 0.0010 0.0890 -0.0308 -0.0029 0.0275 1.9545 0.0292 0.0014 -0.0292	83.8675 ne values are ro Closing Mid 5.0678 5.2146 73.5575 4.6146 1.7590 16.7443 1448.9259 11.0814 1.2435 38.8685	-0.1342 unded. Currenc Day's Change 0.0306 0.04361 -0.0147 0.0046 0.1075 8.8139 0.0839 0.0839 0.0854	Philippines y redenominated by Jan 19 Three Month One Year United States One Month Three Month One Year Venezuela Vietnam European Union One Month Three Month	Philippine Peso 1000. The exchange ri Currency United States Collar Vienzueln Boliar Funts Vietnamese Dong	49.9875 tes printed in this Closing Mid 0.8130 0.8141	0.1900 tuble are also of tuble are also of tuble are also of Change 0.0026 0.0026 0.0050 - 8.0000 0.0072 0.0072	53.0445 wailable at www. Closing Mid 0.8623 0.8616 1.0612 1.0610 1.0607 1.0589 10.6062	-0.2064 FT.com/mark IO Day's Change -0.0039 -0.0039 -0.0082 -0.1731 -0.1732 -0.0765	61.5049 etsidata PO Closing Miid - 1.2304 1.2305 1.2307 1.2318 12.2979 27784.1271 1.1595 1.1594	0.0402 UND Day's Change -0.003 -0.003 -0.003 -0.032 -97.622 0.0055 0.0056

-0.0142

Source: Financial Times, January 20, 2017

-0.0300 4.5194

-0.0039

-0.0039

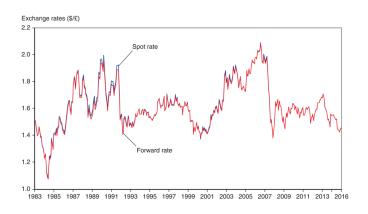
Changes in Exchange Rates

- Depreciation decrease in value of one currency <u>relative</u> to another
 - \$1/€↑\$1.2/€: dollar becomes less valuable relative to euro
 - a Nissan costs more as dollar depreciates from \$0.01027/¥ to \$0.011185/¥
 - ▶ price of exports ↓ relative to price of imports
- Appreciation increase in value of one currency <u>relative</u> to another
- ▶ domestic currency depreciates (appreciates) ⇔ foreign currency appreciates (depreciates)

Foreign Exchange Markets

- A set of markets where participants buy and sell foreign currencies
 - commercial banks (retail v.s. wholesale rates)
 - non-bank financial institutions (e.g. mutual funds)
 - non-financial businesses (e.g. corporations)
 - central banks
- ► Arbitrage ⇒ no significant difference in exchange rates across locations
- Other methods of currency exchange: swaps, futures, options

Spot Rate v.s. Forward Rate



 Dollar/pound spot and forward (90-day) exchange rates, 1983-2016 (source: Datastream)

The Road Ahead...

- Asset returns
- Currency returns
- Interest parity condition
- ► Equilibrium exchange rate

Asset Returns

- Nominal rate of return percentage change in monetary value of an asset during a time period
 - e.g. stock price = \$100 today, dividend = \$1, stock price = \$109 next year

nominal rate of return =
$$\frac{(\$109 + \$1) - \$100}{\$100} = 10\%$$

- Real rate of return inflation-adjusted rate of return
 - ex-ante real rate \approx nominal rate expected inflation
 - ex-post real rate \approx nominal rate actual inflation
- Demand for assets primarily depends on rate of return
 - secondary factors: risk, liquidity, etc.

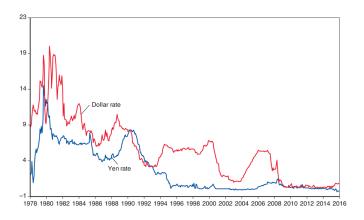
Currency Returns

- Two pieces of information needed to compare currency returns (e.g. dollar v.s. euro)
 - interest rate on each currency (\$ rate = 2%, € rate = 4%)
 - Expected change in exchange rate (from \$1/€ to \$0.97/€)
- Which currency is more desirable?
 - step 1: dollar rate of return in dollar = 2%
 - step 2: euro rate of return in dollar

$$\frac{\$1}{\$1/\$} \times (1+4\%) \times \$0.97/\$ - \$1 = 0.88\%$$

step 3: 2% > 0.88% ⇒ hold dollar

Interest Rates on Dollar and Yen



Annualized 3-month interest rates (source: Datastream)

Currency Returns (Cont'd)

A useful approximation

$$\text{euro return in dollar} \approx R_{\text{\in}} + \underbrace{\frac{E_{\text{$f\in$}}^{\ell} - E_{\text{$f\in$}}}{E_{\text{$f\in$}}}}_{\text{expected rate of euro appreciation}$$

- Some notations
 - ► R_{\in} = today's euro interest rate
 - R_{\$} = today's dollar interest rate
 - ► $E_{s/e}$ = today's dollar/euro exchange rate
 - ► $E_{\$/\!\!\in}^e$ = expected dollar/euro exchange rate next year
- What if we measure both returns in euro?

dollar return in euro
$$\approx R_{\$} - \underbrace{\frac{E_{\$/\$}^e - E_{\$/\$}}{E_{\$/\$}}}_{\text{expected rate of dollar depreciation}}$$

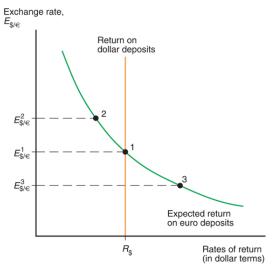
Equilibrium Exchange Rate

Interest parity condition

$$\underbrace{R_\$}_{\text{dollar return in dollar}} = \underbrace{R_{\texttt{E}} + \frac{E_{\$/\texttt{E}}^e - E_{\$/\texttt{E}}}{E_{\$/\texttt{E}}}}_{\text{euro return in dollar}} \quad (\text{no arbitrage})$$

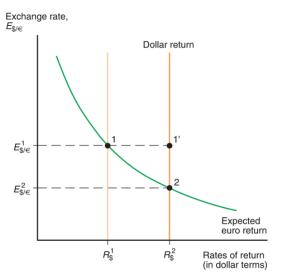
- Equilibrium happens when interest parity holds
 - suppose not, e.g. LHS > RHS
 - excess supply for € ⇒ dollar price of euro ↓
 - excess demand for \$ ⇒ euro price of dollar ↑
 - ► $E_{\$/\in} \downarrow$ until LHS = RHS

Equilibrium Exchange Rate (Cont'd)



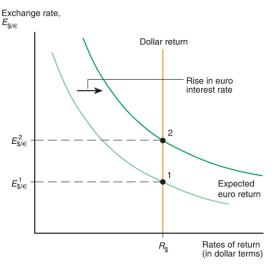
- Graphical illustration of interest parity condition
- ► Exogenous: $(R_{\$}, R_{\in}, E_{\$/\in}^{e})$; endogenous: $E_{\$/\in}$

Effect of Higher Dollar Rate



- Excess demand for dollar, excess supply of euro
- ▶ Dollar appreciates $(E_{\$/\!\!\in} \downarrow)$ to restore equilibrium

Effect of Higher Euro Rate



- Excess demand for euro, excess supply of dollar
- ▶ Euro appreciates ($E_{\$/\in} \uparrow$) to restore equilibrium

Readings & Exercises

- Readings
 - ► KOM: chapter 14
- Exercises
 - KOM: problem 1, 5
 - Derive interest parity condition (in-class quiz)
 - What is effect of expected euro appreciation? Has euro actually appreciated? (self-fulfilling prophecy)