
ECN 160B Lecture 8

International Macroeconomics

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Brief on Money (next lecture)

- Currencies = Monies
- Money as a store of value, KO, p. 334
this is one of the functions of money
- Demand for Currency ~ Demand for Money
- Demand for Currency - two components
 - Demand by domestic residents
 - Demand by foreign residents
- Supply of Currency (next lecture & next chapter)

Value of Currency

- Currency is an asset
- How to determine asset returns?
(Or in which asset should one invest?)
All else equal, one should invest into the asset with the highest real rate of return
- As we have mentioned, asset value depends on
 - Liquidity & • Risk

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To simplify, in most cases, we will assume that risk and liquidity play a secondary role, i.e. we assume that demand for currency depends on its rate of return only.

ForEX Market Characteristics

- Rate of Return (+ we will relate this to arguments about **Interest Rate Parity(IRP)**)
 - Expected ???
 - Real ? What does this mean?
- All else equal, in equilibrium, real returns on all assets should be equal, but
- Risk (variability of returns)
- Liquidity (cost (ease) & speed of selling the asset)
 - What affects liquidity? Ex. Market volume

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KO, p. 334

Asset return = rate of return that the asset offers.

But – we do not know this rate → need to use expected rate of return

Expected, i.e., our best forecast of the asset value at the end of the period

Why do savers care of real rate of return? Because savers' ultimate goal is consumption

Real, i.e., in terms of goods and services of some broad "consumer basket" that a saver can buy in future, and which this saver consumes regularly

Interest Rates & Asset Returns

- Rate of Return & • Liquidity & • Risk
- Rate of Return depends on two factors:
- I. Interest rate that the currency offers (examples: $R_{\text{€}}$ and $R_{\text{\$}}$)
 - Interest rate is ?
 - II. Expected currency exchange rate against other currencies (ex. $E^e_{\text{\$/€}}$)

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To find which asset has a higher real rate of return one has to compare their returns measured in the same units, for example in “consumer baskets”

Currency interest rate is the amount that an individual can earn by lending a unit of currency for a year, KO, p. 336

$R_{\text{€}}$ interest rate on euro deposits

$R_{\text{\$}}$ interest rate on dollar deposits

Interest Rate Parity (IRP)

- IRP: return on \$ deposits in terms of €:

$$R_{\text{€}} + [(E_{\$/\text{€}}^e - E_{\$/\text{€}}) / E_{\$/\text{€}}] = R_{\text{\$}}$$

has to be equal to $R_{\text{\$}}$ (otherwise profits can be made via arbitrage) KO, 13-2

- The rate of depreciation of the dollar against the euro is

$$(E_{\$/\text{€}}^1 - E_{\$/\text{€}}) / E_{\$/\text{€}}$$

$E_{\$/\text{€}}^1$ dollar/euro rate in one year

$E_{\$/\text{€}}^e$ expected dollar/euro rate in one year

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The rate of depreciation of the dollar against the euro is the percentage increase in the dollar/euro exchange rate over a year.

FOREX Market Equilibrium

- Equilibrium Determination:

- Assumptions

$R_{\text{€}}$, $R_{\text{\$}}$ and $E_{\text{\$/€}}^e$
are given (i.e., fixed)

- Main conclusion:

FOREX markets adjust to make deposits of all currencies offer the same expected rate of return

- I.e., in equilibrium, IRP holds (KO, 13-2)

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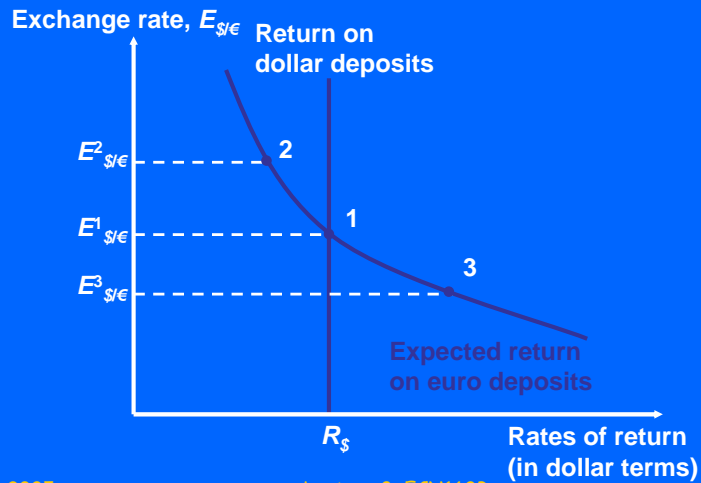
FOREX Market is in Equilibrium when supply= demand.

This occurs when interest parity condition (or interest rate parity or IRP) holds.

Why? Because if IRP holds, no arbitrage possibilities exist, otherwise – there are such possibilities.

ForEx Market Equilibrium

Figure 13-4: Determination of the Equilibrium Dollar/Euro Exchange Rate



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We can use equation 13-2 to deduce Figure 13-4

Figure 13-4: If $E^2 > E^1$ we have $R_{\epsilon} + [(E^2_{\$/\epsilon} - E^1_{\$/\epsilon}) / E^1_{\$/\epsilon}] < R_{\$}$

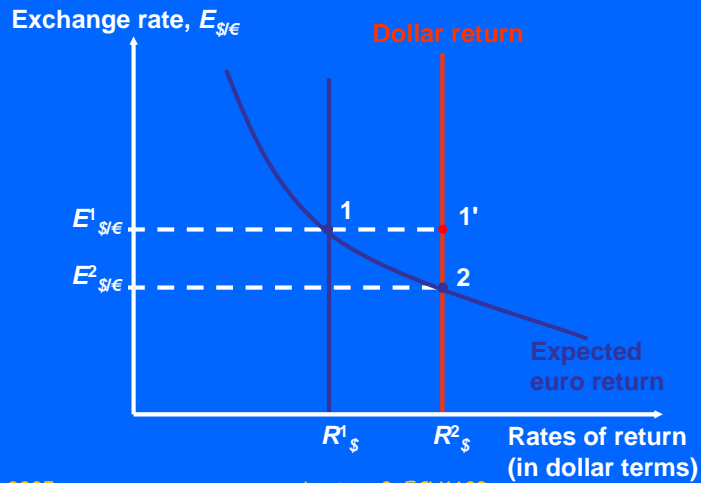
Then investing in \$ offers a higher return.

Then holding \$ gives a higher return, and holders of € would sell € and buy \$

→ E^2 will be falling till it reaches E^1

Interest Rates, Expectations & Equilibrium Effect of a Rise in $R_{\$}$ on $E_{\$/\text{€}}$

Figure 13-5: Effect of a Rise in the Dollar Interest Rate



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KO, p. 348, Figure 13-5

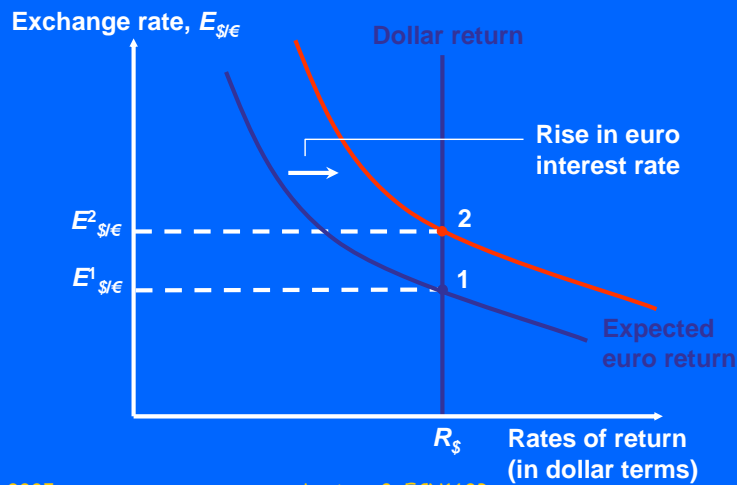
If R^1 rises to R^2 from IRP:

$$R_{\text{€}} + [(E^e_{\$/\text{€}} - E_{\$/\text{€}}) / E_{\$/\text{€}}] = R^1_{\$} < R^2$$

Then, sell € and buy \$ → agree for fewer \$ per € → $E^2 < E^1$ [13-5]

Interest Rates, Expectations & Equilibrium: Effect of a rise in R_ϵ on $E_{\$/\epsilon}$

Figure 13-6: Effect of a Rise in the Euro Interest Rate



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KO, p. 348, Figure 13-6

Effect of a rise in R_ϵ on $E_{\$/\epsilon}$ is the same as a rise in $E^e_{\$/\epsilon}$ + see handout

If R^1_ϵ rises, from IRP: $R^2_\epsilon + [(E^e_{\$/\epsilon} - E_{\$/\epsilon})/E_{\$/\epsilon}] > R^1_\$ = R^1_\epsilon + [(E^e_{\$/\epsilon} - E_{\$/\epsilon})/E_{\$/\epsilon}]$

Expected euro return increases at any $R_\$$ \rightarrow curve shifts outward and $E > E^1$
[13-6]

Non-covered versus Covered Interest Rate Parity

- Non-covered interest rate parity - the parity involves the expected future spot exchange rate
- Covered interest rate parity - involves parity condition based on forward exchange rate (not on the expected future spot exchange rate)

Next Lecture

- Money
 - Long run
 - Short run
 - Equilibrium
 - Connection with interest rates
- Exchange Rates Overshooting (time permitting)
 - covered
 - uncovered
- Your preparation: KO Ch. 14

Summary of Today

- Rate of return
- Rate of depreciation / appreciation
- Interest parity condition aka

Interest Rate Parity (IRP)

- FOREX market equilibrium; How equilibrium changes with R or E
 - Equilibrium in the foreign exchange market requires interest parity.
 - For given interest rates and a given expectation of the future exchange rate, the interest parity condition tells us the current equilibrium exchange rate.
 - A rise in dollar (euro) interest rates causes the dollar to appreciate (depreciate) against the euro.
 - Today's exchange rate is altered by changes in its expected future level.
- Have a Nice Day