

ECON 1550: International Finance

# Exchange Rates and the Foreign Exchange Market: An Asset Approach

# A model of exchange rate determination

Exogenous variables		Endogenous variables			
Variable	Description	Variable	Description	Equation	Type of equation
$R$	Domestic interest rate	$E$	Exchange rate	$R = R^* + \frac{E^e - E}{E}$	Equilibrium condition
$R^*$	Foreign interest rate				
$E^e$	Expected exchange rate				

# A model of exchange rate determination

- Two investment opportunities
  - Domestic bond with return  $R_{\$}$  in Dollars
  - Foreign bond with return  $R^*$  in Euros
- To be indifferent between the two investments, the **uncovered interest parity condition** must hold:

$$\text{(UIP): } R_{\$} = R^* + \frac{E_{\$/\text{EUR}}^e}{E_{\$/\text{EUR}}} - 1$$

# Exchange Rates

# Bonds

# Realized vs Expected Returns

# Expected Returns of Foreign Bond

# Approximations

# Uncovered Interest Parity

- For both strategies to have the same expected return

$$1 + R_{\$} = \frac{E_{\$/\text{EUR}}^e}{E_{\$/\text{EUR}}} (1 + R^*)$$

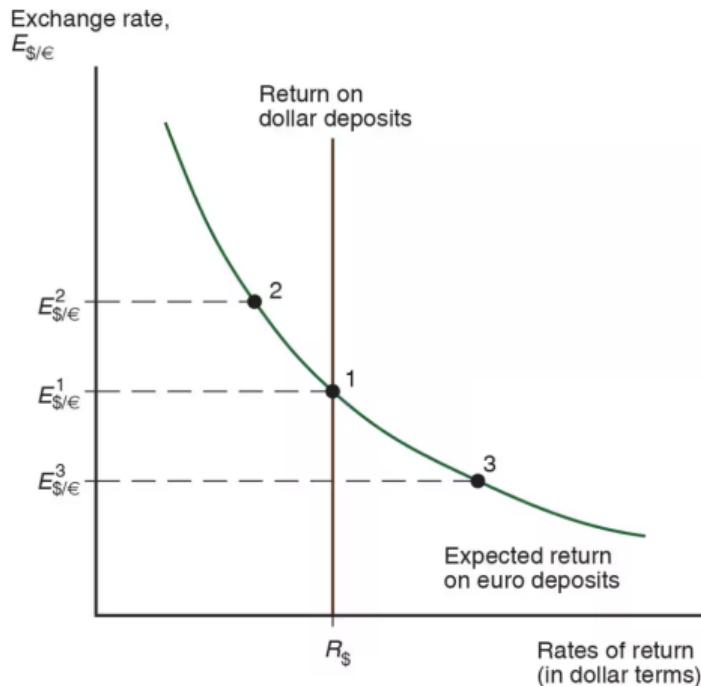
- Approximating

$$R_{\$} = R^* + \frac{E_{\$/\text{EUR}}^e}{E_{\$/\text{EUR}}} - 1$$

# Equilibrium in Foreign Exchange Market

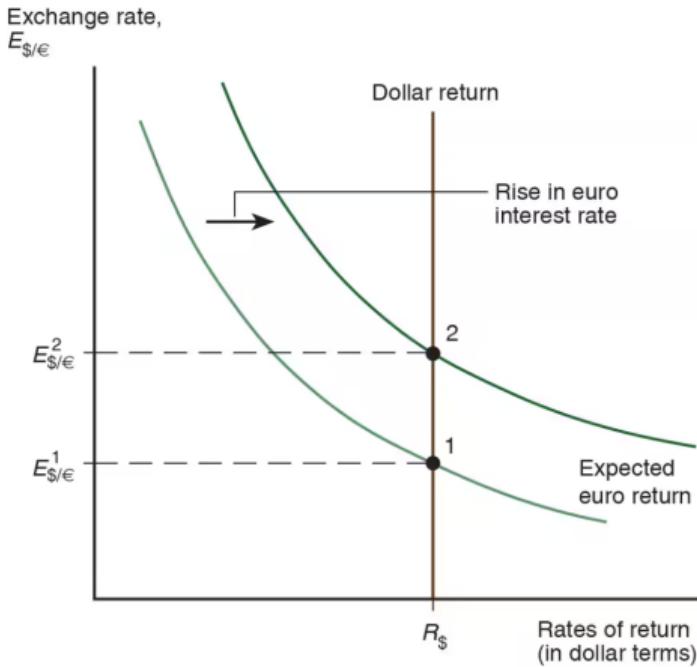
$$\text{UIP: } R_{\$} = R^* + \frac{E_{\$/\text{EUR}}^e}{E_{\$/\text{EUR}}} - 1$$

# Equilibrium in Foreign Exchange Market



$$\text{UIP: } R_{\$} = R^* + \frac{E_{\$/\text{EUR}}^e}{E_{\$/\text{EUR}}} - 1$$

# Shocks: Rise in Euro Interest Rate



# The carry trade

- Borrowing at “low” rate  $R$  and lending at “high” rate  $R^*$  is a **carry trade**

$$\frac{\text{expected return}}{\text{on carry trade}} = R^* + \left( \frac{E^e}{E} - 1 \right) - R + \text{risk premium}$$

- Risk: Future exchange rate is not known when we start the carry trade,  $E^e$  can be different from the realized future exchange rate