Lecture 15 & 16

Lecture 15/16 will use the following material along with Figures 1-8 and Tables 1 and 2 of Chapter 7 of the textbook
The Foreign Exchange Market

Definitions:
1. Spot exchange rate
2. Forward exchange rate
3. Appreciation
4. Depreciation

Currency appreciates, country’s goods prices ↑ abroad and foreign goods prices ↓ in that country

1. Makes domestic businesses less competitive
2. Benefits domestic consumers

**FX traded in over-the-counter market**
1. Trade is in bank deposits denominated in different currencies
Law of One Price

Example: American steel $100 per ton, Japanese steel 10,000 yen per ton
If $E = 50$ yen/$ then prices are:

<table>
<thead>
<tr>
<th></th>
<th>American Steel</th>
<th>Japanese Steel</th>
</tr>
</thead>
<tbody>
<tr>
<td>In U.S.</td>
<td>$100</td>
<td>$200</td>
</tr>
<tr>
<td>In Japan</td>
<td>5000 yen</td>
<td>10,000 yen</td>
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If $E = 100$ yen/$ then prices are:

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Law of one price $\Rightarrow E = 100$ yen/$
Purchasing Power Parity (PPP)

PPP ⇒ Domestic price level ↑ 10%, domestic currency ↓ 10%

1. Application of law of one price to price levels
2. Works in long run, not short run

Problems with PPP
1. All goods not identical in both countries: Toyota vs Chevy
2. Many goods and services are not traded: e.g. haircuts
### Expected Returns and Interest Parity

**$RET^e$ for**

<table>
<thead>
<tr>
<th></th>
<th>Europeans</th>
<th>Americans</th>
</tr>
</thead>
<tbody>
<tr>
<td>$ \text{D Deposits} $</td>
<td>$ i^D + \frac{(E_{t+1}^e - E_t)}{E_t} $</td>
<td>$ i^D $</td>
</tr>
<tr>
<td>$ \text{F Deposits} $</td>
<td>$ i^F $</td>
<td>$ i^F - \frac{(E_{t+1}^e - E_t)}{E_t} $</td>
</tr>
<tr>
<td>Relative $ RET^e $</td>
<td>$ i^D - i^F + \frac{(E_{t+1}^e - E_t)}{E_t} $</td>
<td>$ i^D - i^F + \frac{(E_{t+1}^e - E_t)}{E_t} $</td>
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</table>

**Interest Parity Condition:**

$ \text{D and F deposits perfect substitutes} $  

$i^D = i^F - \frac{(E_{t+1}^e - E_t)}{E_t}$

**Example:**  

if $ i^D = 10\% $ and expected appreciation of $\$,  

$ \frac{(E_{t+1}^e - E_t)}{E_t} = 5\% \Rightarrow i^F = 15\% $
Deriving $RET^F$ Curve

Assume $i^F = 10\%$, $E_{t+1}^e = 1$ euro/$

Point
A: $E_t = 0.95 \quad RET^F = .10 - (1 - 0.95)/0.95 = .048 = 4.8\%$
B: $E_t = 1.00 \quad RET^F = .10 - (1 - 1.0)/1.0 = .100 = 10.0\%$
C: $E_t = 1.05 \quad RET^F = .10 - (1 - 1.05)/1.05 = .148 = 14.8\%$

$RET^F$ curve connects these points and is upward sloping because when $E_t$ is higher, expected appreciation of $F$ higher, $RET^F \uparrow$

Deriving $RET^D$ Curve

Points B, D, E, $RET^D = 10\%$: so curve is vertical

Equilibrium

$RET^D = RET^F$ at $E^*$

If $E_t > E^*$, $RET^F > RET^D$, sell $\$, $E_t \downarrow$
If $E_t < E^*$, $RET^F < RET^D$, buy $\$, $E_t \uparrow$
Why Exchange Rate Volatility?

1. Expectations of $E^e_{t+1}$ fluctuate
2. Exchange rate overshooting