FOREIGN EXCHANGE RATE DETERMINATION

Module 4

Introduction

The foreign exchange rate is the price of one currency in terms of another, reflecting the value of one currency relative to another. The determination of foreign exchange rates is a complex process influenced by various economic, political, and market factors

a. **Supply and Demand:** The balance between currency supply and demand influences its value.

b. **Interest Rates:** Higher interest rates attract foreign capital, strengthening a currency.

c. **Inflation Rates:** Lower inflation rates generally contribute to currency appreciation.

d. **Economic Indicators:** GDP growth, employment rates, and industrial production impact a country's currency.

e. **Political Stability:** Stable political environments attract investment, influencing currency strength.

f. **Trade Balances:** Surpluses strengthen a currency, while deficits may weaken it.

g. **Market Sentiment:** Trader perceptions, news, and geopolitical events can affect short-term rates.

h. **Central Bank Actions:** Central banks influence rates through monetary policy and interventions.

i. **Speculation:** Traders anticipate future rate movements based on analysis.

j. **Purchasing Power Parity (PPP):** Over time, exchange rates tend to equalize the prices of goods in different countries.

k. **Technical Analysis:** Charts and patterns help identify trends and turning points.

l. **Global Events:** Economic crises, natural disasters, and geopolitical tensions impact rates.

Purchasing Power Parity (PPP) Theory:

PPP is an economic theory that suggests exchange rates between two currencies should equalize the prices of a basket of goods and services in both countries.

If a product's price in one country is higher than in another, the exchange rate should adjust to make the product equally expensive in both countries when expressed in a common currency.

PPP is often seen as a long-term theory, suggesting that deviations from equilibrium will be corrected over time.

Absolute PPP focuses on the immediate equilibrium between identical goods.
Relative PPP looks at how inflation differentials influence exchange rates over time.
The Balassa-Samuelson Effect considers the impact of productivity growth on price levels and exchange rates, especially in different economic sectors.

Purchasing Power Parity (PPP) Theory:

PPP has implications for international trade, suggesting that currency values should adjust to maintain relative price levels.

Exchange Rate=Price Level in Foreign Country/Price Level in Domestic Country

Traders and investors may use PPP as a basis for assessing whether a currency is overvalued or undervalued, considering the relative prices of goods.

Empirical tests of PPP often face challenges due to the influence of various factors on exchange rates. Despite its limitations, PPP provides a framework for understanding long-term trends in exchange rates and influencing economic policies.

Three Forms of PPP

Absolute Purchasing Power Parity (PPP):

Definition: Assumes that identical goods in different countries should have the same absolute price when expressed in a common currency.

Implication*:* If a product costs $10 in the United States and an identical product costs €10 in the Eurozone, the exchange rate should be 1:1 to satisfy absolute PPP.

Relative Purchasing Power Parity (PPP):

Definition: Focuses on changes in price levels over time, suggesting that exchange rates should adjust to reflect inflation differentials.

Implication: If inflation is higher in one country than another, the exchange rate should adjust to compensate for the difference in price levels over time.

Balassa-Samuelson Effect:

Definition: Considers differences in productivity growth between tradable and non-tradable sectors, impacting price levels and exchange rates.

Implication: If a country experiences higher productivity growth in its non-tradable sectors (e.g., services) compared to other countries, it may see higher inflation and an appreciation of its currency.

Interest Rate Parity (IRP) Theory:

01. Definition

IRP is an economic theory that links interest rates, spot exchange rates, and forward exchange rates in a way that eliminates the possibility of arbitrage.

02. Basic Concept

The theory suggests that the difference in interest rates between two countries should be equal to the forward rate's discount or premium.

03. Implications

If interest rates are higher in one country than another, the forward rate should trade at a premium.

04. Arbitrage Free

IRP assumes that any discrepancy between interest rates and the forward rate will be quickly eliminated through arbitrage.

Two Forms of IRP:

Uncovered Interest Rate Parity (UIRP)

$$\text{Forward Premium/Discount} = \frac{\text{Interest Rate Differential}}{1 + \text{Interest Rate in the Foreign Country}}$$

Covered Interest Rate Parity (CIRP)

$$\text{Forward Premium/Discount} = \frac{\text{Interest Rate Differential} + \text{Cost of Hedging}}{1 + \text{Interest Rate in the Foreign Country}}$$

o Covered Interest Rate Parity (CIRP): Accounts for the cost of hedging against exchange rate risk by using forward contracts.

o Uncovered Interest Rate Parity (UIRP): Assumes no hedging and deals with expected future spot rates.
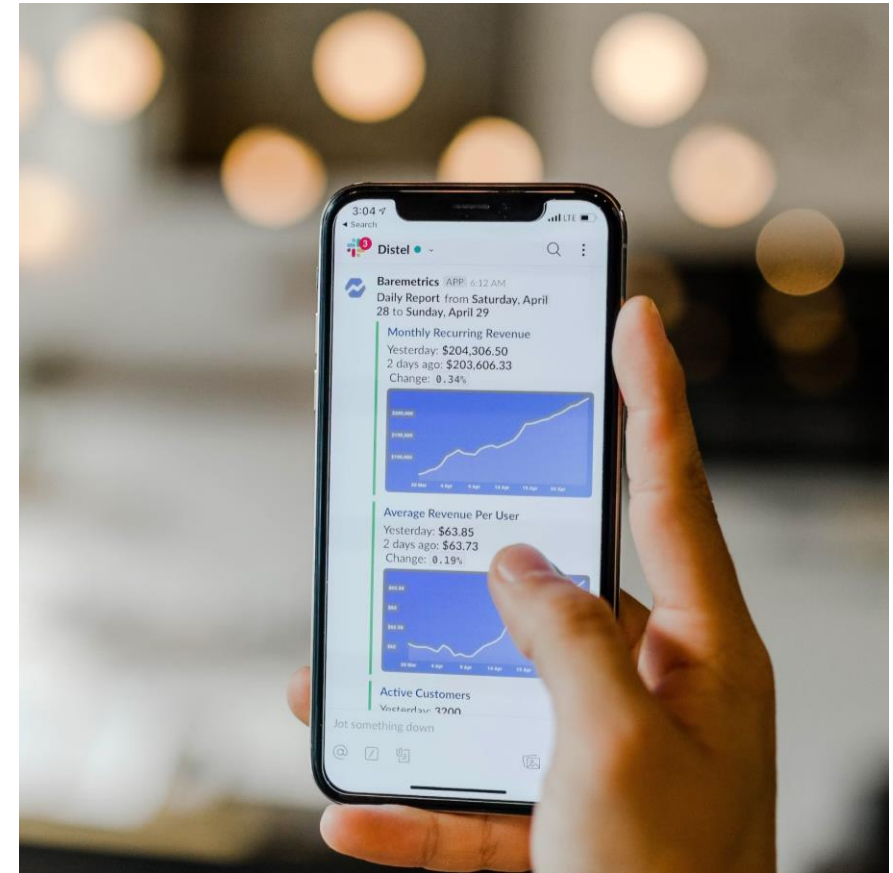
International Fisher Effect (IFE):

01

Definition

The International Fisher Effect is an economic theory that suggests that nominal interest rates in two different countries should move in line with the expected changes in their exchange rates. It builds on the Fisher Effect, extending it to the international realm.

02

Basic Concept

The theory posits that the difference in nominal interest rates between two countries is equal to the expected change in the exchange rate over a specified period.
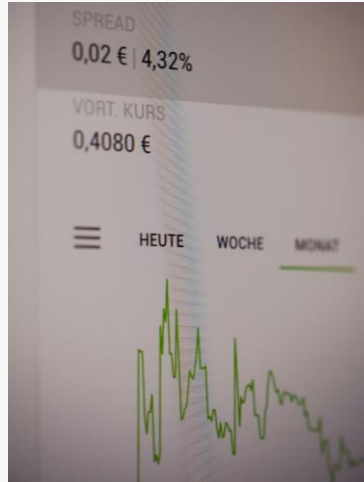
Work Experience

01
Fisher Equation

$$1+i=(1+r)\times(1+e)$$

i = Nominal interest rate in the domestic country
rr = Real interest rate
ee = Expected inflation rate

02
International Fisher Effect Equation

Expected Change in Exchange Rate=Nominal Interest Rate in the Foreign Country−Nominal Interest Rate in the Domestic Country

03
Implications

If the nominal interest rate is higher in the foreign country, the domestic currency is expected to depreciate, and vice versa.

Assumptions of Fisher's Equation

Traders and investors may use the IFE as a basis for evaluating potential currency movements based on interest rate differentials.

While PPP focuses on long-term equilibrium in exchange rates, IFE is more concerned with short-term expectations and interest rate differentials.

The IFE assumes perfect capital mobility, risk neutrality, and rational expectations.

It also assumes that capital flows freely between countries, allowing investors to take advantage of interest rate differentials

Pure Expectations Theory:

The Pure Expectations Theory is a term structure theory that suggests that the shape of the yield curve (the relationship between interest rates and the time to maturity of debt) is determined solely by investors' expectations of future short-term interest rates.

According to this theory, long-term interest rates are an average of current and expected future short-term rates. Investors are indifferent between investing in short-term or long-term securities based on their expectations.

01

Pure expectation Theory Equation

- $R_{\text{long-term}} = \dfrac{\text{Average of Current and Expected Future Short-Term Rates}}{1 + \text{Expected Inflation Rate}}$

The pure expectations theory is often associated with the expectations hypothesis, which posits that the yield curve reflects market expectations of future interest rates.

Key Assumptions: Investors are assumed to be risk-neutral, meaning they are indifferent between investing in short-term or long-term securities.

Use: Investors and analysts use the pure expectations theory to interpret yield curve movements and make decisions in bond markets.

Efficiency: The theory implies that markets are efficient and reflect all available information, allowing investors to make rational decisions based on expectations.
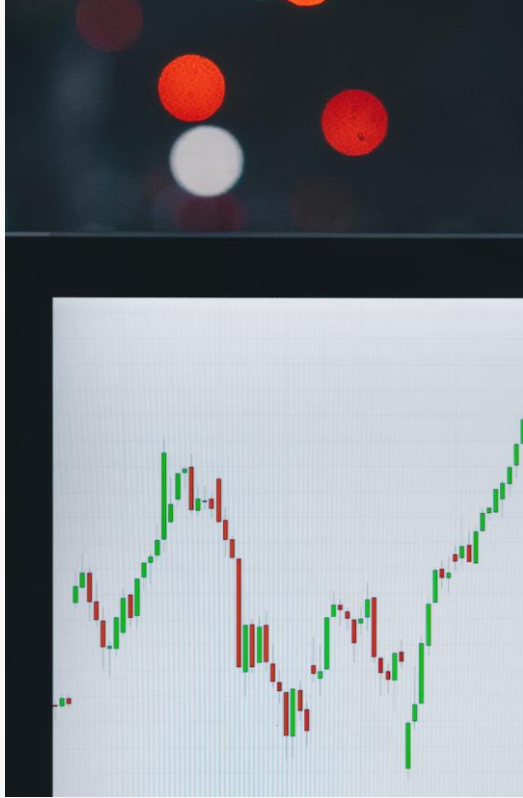
02 Yield Curve Shapes:

Normal (Upward Sloping): If investors expect future short-term rates to rise, the yield curve will slope upward.

Inverted (Downward Sloping): If investors expect future short-term rates to fall, the yield curve will slope downward.

Flat: If investors expect future short-term rates to remain relatively constant, the yield curve will be flat.

Limitations: Assumes that investors are solely driven by expectations and do not consider other factors such as risk or uncertainty.

Real-world factors like liquidity preferences and risk aversion may influence bond markets differently.
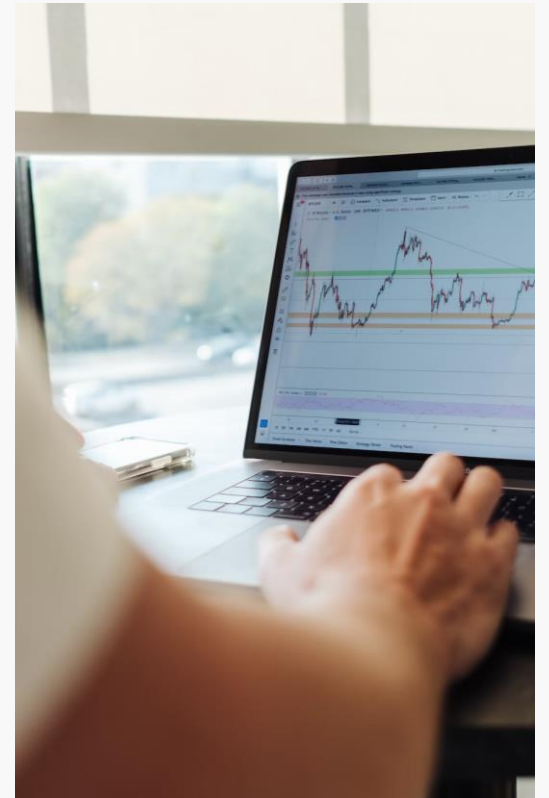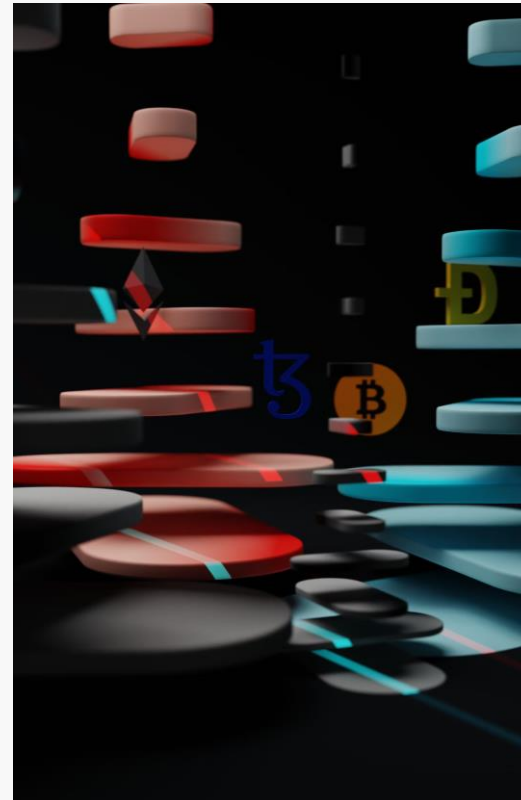
Difference Between these 4 concepts

Criteria	Purchasing Power Parity (PPP)	Interest Rate Parity (IRP)	International Fisher Effect (IFE)	Pure Expectations Theory
Focus	Long-term equilibrium in exchange rates	Link between interest rates and exchange rates	Relationship between nominal interest rates and expected exchange rate changes	Relationship between short-term and long-term interest rates based on expectations
Underlying Concept	Equality of relative price levels	Equalization of returns on investments in different currencies	Link between nominal interest rates and expected exchange rate changes	Relationship between short-term and long-term interest rates based on expectations
Time Horizon	Long-term	Short to medium term	Short-term	Short to medium term
Assumptions	Perfect capital mobility, risk neutrality	Perfect capital mobility, rational expectations	Perfect capital mobility, rational expectations	Risk-neutral investors, rational expectations
Use in Forex Markets	Guides long-term investment decisions	Evaluates potential currency movements based on interest rate differentials	Assesses short-term expectations and their impact on currency values	Interprets yield curve movements in bond markets
Real-World Considerations	Faces challenges due to transaction costs, capital controls, and non-rational behavior	Affected by real-world factors such as transaction costs, risk aversion, and market imperfections	Real-world factors like transaction costs, capital controls, and non-rational behavior can impact results	May not perfectly align with complexities of real-world financial markets

Thanks !

Choose a better institution next time!