Purchasing Power Parity Theories: Absolute PPP

Operating Mode

P_{LCU}
P_{USD} $\longrightarrow$ e

Quotation of exchange rate:
Price (direct) quotation of Home
(e.g.)

$e_{\frac{LCU}{USD}} = 2 \Leftrightarrow 2\ LCU = 1\ USD$

Home (LCU)   *Foreign* (USD)

$Price_{LCU}$ $\xrightarrow{\text{Good in Airplane}}$ $Price_{LCU} \times \dfrac{1}{e_{\frac{LCU}{USD}}} = Price_{USD}$

$Price_{LCU} = Price_{USD} \times e_{\frac{LCU}{USD}}$ $\xleftarrow{\text{Good in Airplane}}$ $Price_{USD}$

Core Function

PPP absolute:

$$e_{PPP} = e_{\frac{LCU}{USD}} = \frac{P_{LCU}}{P_{USD}}$$

Variables und Symbols

LCU	Local Currency Unit (Home)	P	Price level
USD	US-Dollar (Foreign)	e	Exchange rate

Relevance

In absolute purchasing power parity, the price ratio determines the exchange rate (=e_{PPP}) at a point in time. Highlights the close connection between price levels and exchange rate. In efficient markets, no permanent arbitrage of goods should be possible, i.e. the purchasing power of a given money volume should be identical, no matter in which country a homogeneous good is purchased. Otherwise, arbitrage-related purchases / sales of goods will automatically press the exchange rate towards e_{PPP}. Can be considered as a long-run marker for the exchange rate. Popular application of the theory in the Big Mac index.

The relevance is also visible in two excursions: 1) Anchor function of a fixed exchange rate: If the exchange rate is fixed, causality is reversed: The domestic price level of the (smaller) fixing country is determined, i.e. is anchored at the foreign price level, with all advantages and disadvantages (e.g. Argentina in the 1990s). 2) Classical Dichotomy: If e_{PPP} is inserted in the real exchange rate, the result is $e_{real} = 1$. I.e. if the exchange rate can do its job (= is flexible), economies cannot diverge in their competitiveness. Monetary divergences would thus have no influence on the real economy (especially relevant for the euro area).

Limitations

The exchange rate is influenced by a variety of determinants, in particular e.g. the interest rate ratio (see CIP, UIP). In fixed exchange rate regimes, the central bank can prevent market-driven axchange rate change (for a certain time). Other assumptions are often not fulfilled, e.g. no transaction costs, free trade, homogeneous shopping basket.
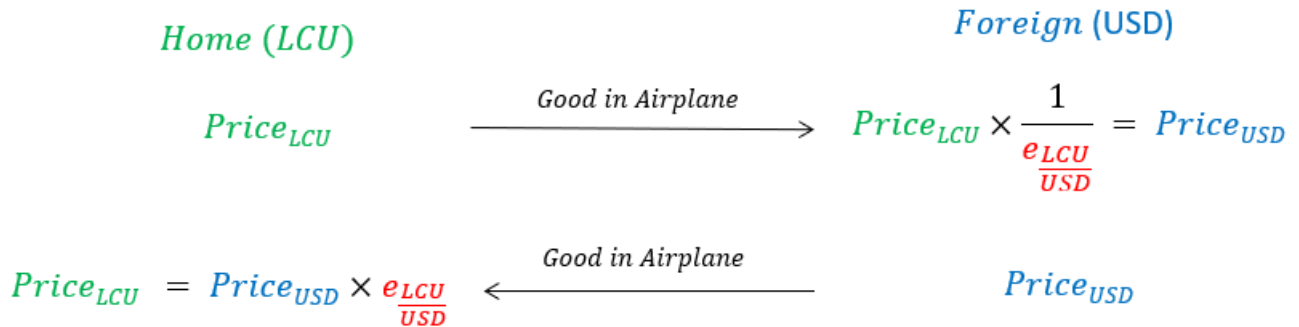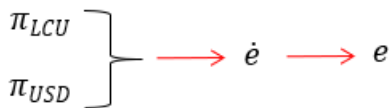
Purchasing Power Parity Theories: Relative PPP

Operating Mode

$$\left.\begin{array}{l} \pi_{LCU} \\ \\ \pi_{USD} \end{array}\right\} \longrightarrow \dot{e} \longrightarrow e$$

Quotation of exchange rate:
Price (direct) quotation of Home
(e.g.)

$$e_{\frac{LCU}{USD}} = 2 \Leftrightarrow 2\,LCU = 1\,USD$$

Core Functions

Driver:

$$\dot{e}_{\frac{LCU}{USD}} = \pi_{LCU} - \pi_{USD}$$

PPP relative:

$$e_{t1} \times (1 + \dot{e}) = e_{t2} = e_{PPP}$$

Variables and Symbols

LCU	Local Currency Unit (Home)	π	Inflation rate
USD	US-Dollar (Foreign)	e	Exchange rate
t	time	$\dot{e}$	Rate of change of the exchange rate

Relevance

In the relative purchasing power parity, the inflation ratio determines the exchange rate (=e_{PPP}) over time. Highlights the close connection between inflation and exchange rate. In efficient markets, no permanent arbitrage of goods should be possible, i.e. the purchasing power of a given money volume should be identical, no matter in which country a homogeneous good is purchased. Otherwise, arbitrage-related purchases / sales of goods will automatically press the exchange rate towards e_{PPP}. Can be considered as a long-run marker for the exchange rate.

An important derivable maxim is "countries with higher inflation are depreciation candidates" – at least this can be considered as an empirically well-secured result worldwide.

Limitations

The exchange rate is influenced by a variety of determinants, in particular e.g. the interest rate ratio (see CIP, UIP). In fixed exchange rate regimes, the central bank can prevent market-driven exchange rate change (for a certain time). Other assumptions are often not fulfilled, e.g. no transaction costs, free trade, homogeneous basket of goods.