Express, an International Journal of Multi Disciplinary Research
ISSN: 2348 – 2052 , Vol. 1, Issue 10, October 2014
Available at: www.express-journal.com

EMPIRICAL STUDY OF EXCHANGE RATE BEHAVIOR IN THE CONTEXT OF PURCHASING POWER PARITY (PPP)

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Abstract:

In the modern globalize world, international trade has assumed new dimensions. And these concepts of international trade have affected the foreign exchange and its concept has undergone a sea change. Today the economy of a country is not only affected by internal factors like inflation and interest rate but also external factors like exchange rate.

This paper attempts to intertwine the two factors. The exchange rate has been linked to the inflation level and a comparative analysis has been done. A numerical formula has been proved to understand the relationship. The whole concept of exchange rate behavior has been explained through the formula. In the next phase of this paper interest rate and actual realized return have been planned to show.

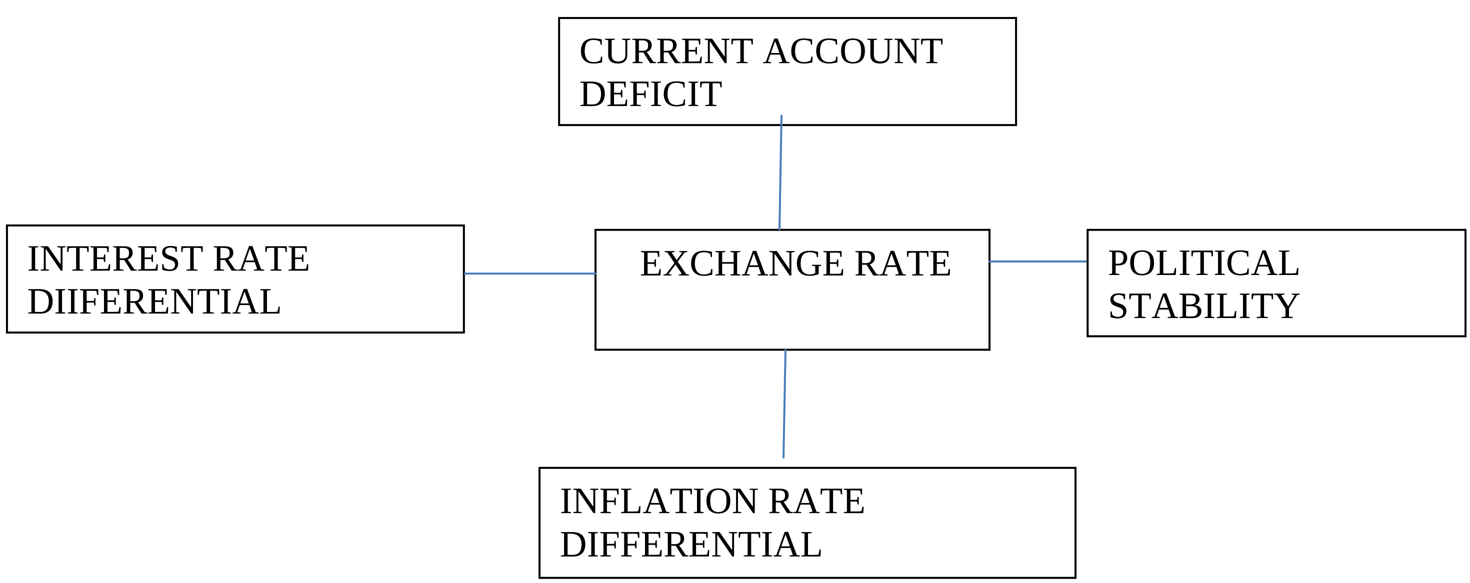
Conclusion have been drawn by keeping other confounding factors like interest rate ,political factors and trade relations etc. fully ignored except the affects of inflation rate on exchange rate of different countries.

Determinants of Exchange Rate:-

To understand the concept of valuation of currency, it is required to know exchange rate which is relative and expressed as a comparison of different currencies of different countries.

Here are some confounding factors that usually affect exchange rates of two or many countries.

In this paper apart from many factors inflation rate differential has been explored and other factors like interest rate differential, political stability, current account deficit have been just defined and partially explained in order to make relationship with exchange rate to determine appreciation and depreciation of different currencies.



CURRENT ACCOUNT DEFICIT:

Current Account Deficit is commonly known as balance of trade between any country and its counterparts. If there is any deficit in the current account of any country it means that specific country is emphasizing more on import of goods and services rather than export.

Due to this that country is borrowing more capital from its neighboring countries to balance its current deficit.

Hence the excess demand for foreign currency causes depreciation in value of currency.

POLITICAL STABILITY:-

Political stability is a major concern for determining exchange rate as well as valuation of currency since FIIs (Foreign Institutional Investors) and FDIs(Foreign Direct Investment) show and seek out countries with sound economic performance and having least possible risk factors.

Sound political stability leads appreciation of currency and accumulates more foreign capital in order to make investment in the concerned country.

INTEREST RATE DIFFERENTIAL:-

Interest rate is directly related with the valuation of currency of any country. It is analyzed that due to higher interest prevailing in an economy will generate higher deposits from investors and thus higher return to lenders as well.

Therefore higher interest rates attract foreign investors to invest their capital in the concerned country and yield higher return.

For an example if UK interest rates tend to rise, it will attract investors to deposit money in UK banks and financial institutions. Therefore demand for pounds will increase leads to an appreciation in the currency.

INFLATION RATE DIFFERENTIAL:-

Like interest rate, inflation rate also plays one the most significant roles in determining value of currency. Inflation Rate vs exchange rate is our major concern in this paper to make our study more meaningful.

If there is low inflation rate in any country having potential for investment, its demand for products and services will increase and consumers will buy products from it.

In this paper detailed and comparative studies have been shown.

The foreign exchange market is one of the largest markets in the world. By some estimates, about 2 trillion USD worth of currency changes hands every day.

An exchange rate quotation is given by stating the number of units of "term currency" or "price currency" that can be bought in terms of 1 "unit currency" For example, in a quotation that says the EURUSD exchange rate is 1.5877 (1.5877 USD per EUR), the term currency is USD and the base currency is EUR.

For an example take a look at the following:

1 USD = INR 62.50

It means '$' can be converted in forex market at 62.50 INR . Exchange rate is determined globally by some factors like inflation rate , interest rate , income level , govt control & some other expected factors. In short there are many confounding factor that can affect or

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determine exchange rate of any currency world wide. in this regard many theories have been given as purchasing power parity (PPP) where it is considered that only inflation is the major factor that affects the exchange rate. PPP is based on law of one price which states that in any country prices of identical products should be same and there should not be any market imperfection. In PPP, inflation rate differential is the major factor that affects exchange rate which will be shown by this example as given below-

AFFECTS OF INFLATION RATE:

Consider there are two countries U.S. and India involved in producing some identical products. As per PPP, the prices should be same in both the countries but due to differential inflation rate there will be shifting of demand from lower inflation rate to higher inflation rate. In order to reach equilibrium between two nations

Particulars	**India**	**U.S.**
Inflation rate	**7%**	**5%**
Demand for Identical goods	⇩	⇧

From the above example it is clear that in India there is higher inflation rate whereas in U.S. there is lower inflation rate. As a result, Indian consumers will prefer U.S. goods rather than Indian goods because demand for U.S. goods will increase due to lower inflation rate i.e. 5% and the demand for U.S. goods will increase and hence attract consumers from Indian market. Even it will attract U.S. buyers and they will still be taking goods from their own country. PPP theory states that this process will continue until both markets equate themselves. Further some results will emerge due to inflation mentioned as follows-

	India	**U.S.**
Inflation	9%	7%
Value of Currency	**Lower**	**Higher**

As mentioned in this table, the value of U.S. currency will increase and as per PPP theory this value should increase by at least 2%. If it happens then Indian consumers will have to pay more for U.S. goods which will appear costly and no longer cheaper due to lower inflation rate in the U.S. hence re-shifting of demand would take place in both the countries and their nationals would start purchasing products from their own country which is the objective of 'Law of One Price' i.e. PPP theory.

DERIVATION TO DETERMINE THE RELATIONSHIP BETWEEN INFLAION RATE AND EXCHANGE RATE:

We will see further that due to inflation how much appreciation or depreciation in the value of currency should take place. This will be shown with the help of price index theory of home country (India) and the foreign country (U.S.) as given below-

Consider following-

Price of identical product in home country is (Ph) and price of identical product in foreign country is (Pf), as per PPP the prices should be same but practically not true due to inflation rate differential of both the countries.

Now consider (Ih) and (If) are inflation rates in the home country and foreign country respectively.

Therefore price index in home country would be

(Ph)(1+Ih)

And price index in foreign country would be

(Pf) (1+If) -----(1)

If exchange rate in the foreign country is (Ef), then price index in the foreign country would be as follows-

Pf(1+If) (1+Ef) -----(2)

Hence to reach equilibrium;

Ph(1+Ih) = Pf(1+If) (1+Ef)

If Ph = Pf as PPP says;

(1+Ih) = (1+If) (1+Ef)

(1+Ef) = 1+Ih /1+If

Ef = (1+Ih/1+Ef)-1

By this formula we can find and determine actual exchange rate appreciation & depreciation in the global market.

Now consider this,

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Particulars	**U.K.**	**U.S.**
Inflation Rate	9%	10%
Demand	↑	↓
Value	↑	↓
	Appreciation	**Depreciation**

Ef % = (1+Ih1/1+If)-1 *100

= [(1+0.09 /(1+0.10) -1]* 100

= [(1.09/1.10)-1]*100

= [-0.9091]* 100

= -0.91 % i e -1% approximately

Depreciation must take place in the value of foreign currency then only reshifting of demand from U.S. to U.K. shall take place.

Now consider a situation where inflation rate in U.S. & U.K. is as follows:-

Particulars	**U.K.**	**U.S.**
Inflation Rate	9%	10%
Value of currency	1% ↑	

If the situation remains as mentioned above U.S. buyers will purchase from U.K. because still its goods will seem cheaper for U.S. investor and they will purchase goods from U.K. because of low inflation rate. And as per the PPP(Purchasing Power Parity) to be in the equilibrium position the value of currency must come down to at least by 1% then it will seem that purchasing power in both the countries appear same and there will be no affect on the demand of the product and services in both the countries.

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CONCLUSION:

On the basis of above theory and derivation it is clear that there is direct impact on valuation of currency due to many confounding factors like interest rate and inflation rate.

In determining the valuation of currency here only one factor i.e. inflation rate theory has been used in detail that shows different aspects of appreciation of currency as well as depreciation of currency.

In this paper it has been made an effort to establish direct relationship between inflation rate differentials and exchange rate of two or more countries with the help of many examples.

Though importance of other factors like interest rate can not be ignored as it also has impact on determining appreciation and depreciation of various countries.

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