Critically evaluate the concepts of absolute and relative purchasing power parity.

1. Introduction

There are many factors which influence the exchange rates however, many economists consider that there is one factor which is of particular importance in analysing the changes in exchange rates and that is inflation. The theory behind the long-run connection between inflation and exchange rates is known as the purchasing power parity (PPP) principle. The concept was enforced by Gustav Cassell in the 1920's and plays a key role in international money and finance.

Although there has been much controversy surrounding the validity of PPP, the general consensus is that this theory does bring to light some important aspects surrounding exchange rate movements.

According to Johnson (2000), PPP is defined as, 'The concept that homogenous goods can not have more than one price measured in any one currency. If the price increases domestically, the domestic currency will depreciate so that the price of the goods denominated in the foreign currency remains the same. This is the law of one price.'

The law of one price is the connection between exchange rates and commodity prices and thus the foundations to PPP theory and this principle is what I will address first in the section following this introduction. Section 3 examines what PPP whilst the fourth section analyses the relationship between the law of pone price and PPP. Examination of the absolute PPP condition is presented in section 5 and the sixth section discussed the relative PPP form with the aid of empirical interpretation. Section 7 discusses the validity of PPP. Concluding remarks are made in section 8.

2. The Law of One Price.

'The Law of one price states that in competitive markets free of transportation cost and official barriers to trade, (such as tariffs), identical goods sold in different countries must sell for the same price when their prices are expressed in terms of the same currency,' (Krugman and Ostfield 2000). For example, since the dollar equivalent price of wine in Britain is $\mathbf{S(\$/£) \cdot P^{wineUK}}$ where $\mathbf{P^{wineUK}}$ is the price of wine in pounds in Britain. Given this, the law of one price states that,

$$1. \quad \mathbf{P^{wineUS} = S(\$/£) \cdot P^{wineUK}}$$

The dollar/euro exchange rate can also be represented in the following equation:-

$$2. \quad \mathbf{P^{i\,US} = (E_{\$/£}) \text{ x } (P^{i\,UK}) \text{ or equivalently } E_{\$/€} = P^{i\,US} / P^{i\,E}}$$

It is the ratio of good i's US and UK money prices. If the dollar/pound exchange rate is \$1.50 per pound, a bottle of wine that sells for \$18 in the US must sell for £12 in the UK. Conversely, the dollar price of a bottle of wine when sold in the UK is then (\$1.50 per pound) x (£12 per wine) = \$18 per bottle i.e. the same as its price in US. The law of one price must hold when trade is free and there is no trade barriers and no transport costs as buying decisions help restore the equality. For example, if $\mathbf{P^{wineUS}}$ = \$16 per bottle, $\mathbf{P^{wineUK}}$ = £10 per bottle and the **S (\$/£)** = 1.70, a bottle that sells for \$16 in US will sell for \$17 (\$1.70 per pound) x (£10 per bottle). As the US price is \$16 per bottle, wine buyers will have an incentive to purchase from the US

and not from the UK thus pushing up the US price and depressing the British price until they satisfy equation 1 and the prices were equal in the two locations.

In addition, this highlights an opportunity for *commodity arbitragers*, people who buy in one market and sell in another motivated by profit making opportunities. Commodity arbitrages eliminate any possible profit opportunities by bidding up the prices in the low-cost country and depressing the prices in countries where they are high. Once these opportunities are eliminated, the prices of the same commodity should be equal in all the different markets after accommodating for the transportation costs and any tariffs involved.

Even in the absence of commodity arbitragers, commodity prices should be uniform across countries due to the existence of outside buyers, like the wine buyers used in the above example, whom would select the lowest price. These outside buyers would purchase everything from the cheap supplier and none from the expensive supplier. As a result of this, transportation costs between countries merely represents a maximum on the possible price difference between the countries however, the actually price difference is in general smaller than this figure.

3. Purchasing Power Parity

Purchasing power parity (PPP) is a theory that states that exchange rates between currencies are in equilibrium when their purchasing power is the same in each of the two countries. This advocates that the exchange rate between two countries should equal the ratio of the two countries' price level of a representative fixed basket of goods and services. When a country's domestic price level is increasing (i.e., due to inflation), that country's exchange rate must depreciate in order to return to PPP. Since the domestic purchasing power of a countries currency is mirrored in the price levels prevailing in the country, the money price of a basket of goods and services, the PPP theory can be used to predict movements in foreign exchange markets. The theory predicts that a decrease in a currency's domestic purchasing power, which is characterised by an increase in the domestic price level, will result in a 'proportional currency depreciation in the foreign exchange market. Similarly, an increase in a currencies domestic purchasing power will be associated with a proportional currency appreciation,' (Krugman and Osbtfield 2000).

In order to evaluate PPP empirically, let P_{US} be the price in dollars of a reference basket of goods and services sold in the US and likewise P_{UK} for the price of the same Commodity basket in UK. The following \$/£ exchange rate will prevail under PPP theory;

$$3. \quad S(\$/£) = \frac{P_{US}}{P_{UK}}$$

Given this, if for example the reference basket costs \$300 in US and £250 in UK, the PPP implies a \$1.25 per UK pound \$/£ exchange rate (\$300 per basket/ £250 per basket). Even if the US price level doubled, the PPP will predict for this change

accordingly thus it would predict an exchange rate of $2.4 per UK pound (i.e. $600 per basket/ £250 per basket).

Equation 2 can be rearranged to obtain the following alternative interpretation of PPP;

$$4. \quad P_{US} = S(\$/£) \cdot P_{UK}$$

The left hand side of the equation basket represents the $ price of a reference commodity basket in the US and the right hand side portrays the $ price of the reference basket when purchased in Europe. One can see from this that if PPP holds, these two prices are the same. As a result, 'PPP thus asserts that all countries' price levels are equal when measured in terms of the same currency,'(Krugman and Obstfield 2000).

Moreover, the right hand side of the equation quantifies the purchasing power of a dollar when it is exchanges for euros to be used in Europe. In the situation where domestic purchasing power is always the same as for foreign purchasing power, at the prevailing exchange rate, PPP will therefore hold.