Ppi and the big mac index

Estimating the Purchasing Power Parity (PPP) of currencies using the Big Mac Index™

Introduction

Purchasing power parity (PPP) is an important and critical topic in international economics. It arises when the purchasing power of an amount ofmoneyis the same in different countries. This is when prices of two different countries are converted to a common currency.

The idea is based on the law of one price, where in the absence of official trade restrictions, similar goods will have the same price in different markets, with the prices being expressed in the same (common) currency. Deviations from parity infer differences in purchasing power of goods across countries, which means that for the purposes of many international comparisons, countries' GDPs or other national income statistics need to be " PPP adjusted" and converted into common units. There can be a huge difference when adjusted by purchasing power and when converted via market exchange rates.

For ex:- If calculated at nominal exchange rates, India has the tenth largest economy while adjusting by PPP, India has the fourth largest economy. Thus, to remove this discrepancy, a common currency of measurement is highly essential. The Big Mac Index is an example of a measure of law of one price. It refers to the prices of a Big Mac burger in McDonald's restaurants in different countries. It helps in determining whether a currency is undervalued or overvalued and thus accordingly gives an idea about the direction in which currencies should move.

The Big Mac was selected because it is available for a common purpose in many countries around the world as local McDonald's franchisees have significantresponsibilityfor converting input prices(at least in theory). The Big Mac Index is useful because it is based on a very well-knownfooditem whose final price can be easily tracked in many countries. PPP and the Theory of One Price The One-Price Theory The theory of PPP and One price go hand in hand. It is imperative to understand the implication of " One Price" to understand the Purchase Power Parity as it is based on that.

The Law of One Price proposes that if a gadget costs $2 in USA and the same gadget costs Rs 5 in India , then the exchange rate should be 2/5 = 0. 40 for the real prices to be same in both the countries. Let us denote it empirically as Price of a good in one country A be X and Price of the same good in some other country B is X* , then equalization of both the prices can be done using exchange rate denoted by the formula Exchange Rate = X/X* Suppose in the above example where the exchange rate is calculated to be 0. 4, increases to 0. 6, and then the same gadget would cost Rs 8. 33 in India.

This would result in the inflow of gadgets to India from USA causing increase in the demand of dollars and increase in supply of Rupees. Law of One Price (LoOP) It states that identical goods should sell at same price in two different markets when there are no transportation costs and no differential taxes applied in two markets One Price Theory and PPP While this concept of one – price here in the example is being applied to one commodity, it can be applied universally to all other commodities in market as well. The Big Mac burger is one of the brightest examples of the application of One-Price to a commodity.

It looks at the price of a big Mac burger across different countries. This way Purchase Power Parity applies not just to a single commodity but on general price level. This way we can universally derive a relation of One-Price theory and Purchase Power Parity. The Big Mac was created by Jim Delligatti in the year 1967 and introduced throughout the US in 1968. The Big Mac is now available in around 120 countries around the world and its composition is generally the same throughout – two all beef patties, special sauce, lettuce, cheese, pickles, onions on a sesame seed bun.

Since beef is not consumed in India, a special Mac known as the “ Maharaja Mac” can be found with chicken patties replacing beef patties. In Islamic countries the Big Mac is made with Halal beef and in Israel it is made with Kosher beef. The price of a Big Mac in US is calculated by the average of 4 cities – Atlanta, New York, Chicago and San Francisco. The price of Big Mac in Euro area is calculated by the weighted average of prices in Euro area. The Purchasing Power Parity or the PPP rate is the price of Big Mac in local currency divided by the price in the US.

Price of Big Mac (and corresponding implied PPP rates from The Economist and is the latest). ++ The Over/Under valuation against the dollar is calculated using Exchangerate’s latest rates (i. e as of 09/12/2011): 100 x (P P P - Exchange Rate) / Exchange Rate (Source http://www. exchangerate. com/)

Observation

The most overvalued of currencies is the European Nordic countries’ currencies and most undervalued is the Indian Rupee. At market exchange rates, the Burger is 60% cheaper in India than in US. In other words, the Indian rupee is 60% undervalued against the dollar.

However it should be noted that cheap burgers in India don't mean that the Indian rupee is highly undervalued. Average prices should be lower in poor countries than in rich ones because labor costs are lower. The chart in the Appendix A shows a strong positive relationship between the dollar price of a Big Mac and GDP per person. Purchasing Power Parity is actually an indicator where exchange rates should move in the long run. For estimating the current fair value of a currency, a best fit line is drawn between Big Mac prices and GDP per person.

The price thus predicted after the best fit line is drawn is compared with the actual price and this provides a better estimation of the currency over and under valuation than the above index. The " beefed up" index shows that the Brazilian Real is the most overvalued in the world; the Euro is also slightly overvalued. However the two major developing countries – India and China appear to be almost equal to its fair values.

Alternative Indices

An index similar to the Big Mac index has also been developed by the financial company UBS as part of general compilation of differences in prices and incomes around the globe.

The Economist also comes out with variants of the same. For example in the month of January in 2004, it proposed a Tall Latte index by replacing the Big Mac with a Starbucks Tall Latte. Refer Appendix B for the same. Commonwealth Securities, an Australian bank's subsidiary, proposed to create the iPod index by using the concepts behind the Big Mac index. The banks contention that since the Big Mac index can be distorted by taxes, transport costs, labour laws and trade barriers in each country and the iPod was made in a single country – China, it made more sense to use the iPod as a measuring index.

Since the iPod was made in a single country, the price should be broadly be the same all over the world and if the price difference were substantial, customers would switch their purchases to other countries (thanks to internet). However it was found to be ineffective since freight charges vary from country to country and countries such as US may get volume discounts. Bloomberg LP also introduced an alternative index known as Billy index after the iconic Ikea’s bookshelf. The index was calculated after converting the bookshelf’s price to US dollars.