

A Parody Of Purchasing Power

The old saw attributed to Mark Twain, “Everyone talks about the weather, but nobody does anything about it,” is probably just as well when it comes to currency trading. It is safe to say most currency traders have an opinion on the fundamental value of whatever it is they are trading, but they seldom let their long-term fundamental opinion get in the way of their short-term technical and quantitative trading. Too much noise, such as economic reports, catastrophic events and political deals intercede in the process for even the best-constructed assessment to have any chance.

Besides – and this is a very important “besides” – macroeconomic data arrives with a lag and is spaced at long intervals such as monthly or quarterly. You cannot have a high-frequency model based on such data; you need to have source data of the same interval or shorter than your trading timeframe. One author recalls a meeting with a number of macroeconomic forecasters who were both amused and outraged at the high-frequency data available on a real-time basis for the financial model builders. The International Monetary Fund’s *International Financial Statistics* may be an authoritative compendium of macroeconomic data for emerging markets, but as the data arrives months after the fact, who in the trading community should care?

When the premise is wrong, all that follows is wrong. Too many political decision-makers and academic economists believe there is a market-clearing “fair” exchange rate. Nothing of the sort exists or, really, can exist. In a controlled interest arbitrage environment any spot and forward rate combination can be fair given the two short-term interest rate yield curves involved. If we change either yield curve, we must change the currency levels and vice-versa in a continuous dynamic feedback loop. This is the short-term currency trading nearly everyone reading this does and also serves as the basis for the forward rate ratio differentials used frequently in this series to spot emerging currency trends.

Fair Value

Fair value is a concept that requires an objective function. Some believe the current account balance is the goal and calculate, for example, to what level the yen or yuan would have to appreciate for the U.S. trade deficit with Japan or China to close. We should be able to dismiss this logic out-of-hand as it presumes the sole variable determining competitive advantage between all traded goods and services and all investment flows between two countries is the exchange rate. Let’s take an extreme example and ask what level the Brazilian real would have to reach for the U.S. to cease buying coffee and other agricultural products from Brazil? Or, let’s turn it around and ask how expensive the dollar would have to get to choke off U.S. exports of grain, high-tech equipment and software and military hardware?

One method of determining fair value, purchasing power parity (PPP) has remained in the game for years despite what we will see as its shortcomings. It is often known by the catchy name, “the Big Mac theorem;” its appeal derives from the sense there are common goods, such as the Big Mac, that should be priced equivalently in different cultures. As an important aside, this presumes there are common tastes and utility preferences for Big Macs around the world, which might be news in markets such as India where beef consumption encounters religious opposition.

PPP differs from interest rate parity (IRP) in the timeframes involved. IRP is based on the precept there is one “real” interest rate at any maturity worldwide, maintained by arbitrage, and different rates of expected inflation. If we add expected inflation to the real rate to reconstruct nominal interest rates per Fisher’s Law for each currency, we get the expected interest differential used to create forward currency rates. However, Fisher’s Law does not apply mechanically in the construction of the yield curve. Factors such as bond and currency volatility often outweigh expected inflation in the calculation of the liquidity premium.

PPP Calculation

PPP looks backward at reported inflation averaged over a long period; the calculations available on *Bloomberg* are based on January 1982 – June 2000 averages. Relative deviations in price levels (Π) from both consumer and producer price indices multiplied by the exchange-rate average produced the PPP number:

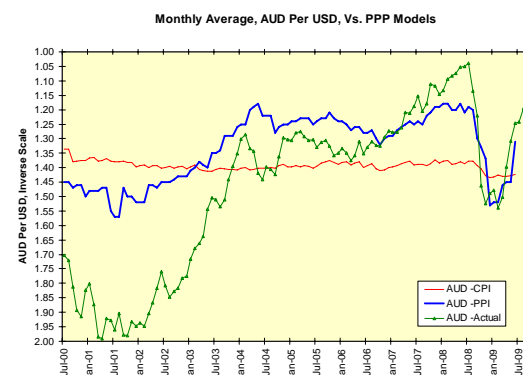
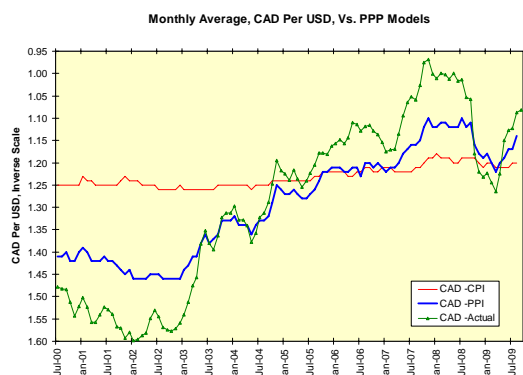
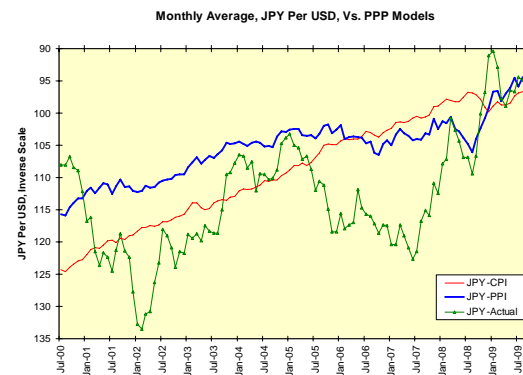
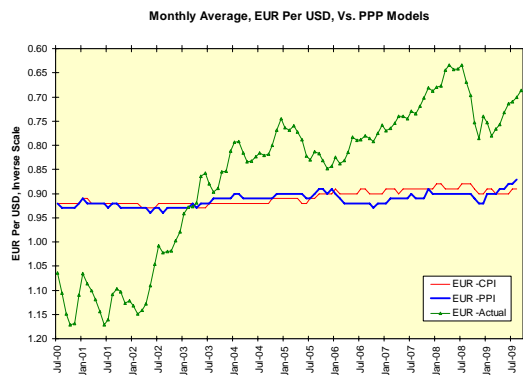
$$PPP = \frac{1}{N} * \sum_{j=Jan1982}^{July2000} \frac{FX_{for_j}}{USD_j} * \left[\frac{\Pi_{for_{t_0}}}{\left(\frac{1}{N} * \sum_{j=Jan1982}^{July2000} \Pi_{for_j} \right)} \right] \left/ \frac{\Pi_{USD_{t_0}}}{\left(\frac{1}{N} * \sum_{j=Jan1982}^{July2000} \Pi_{USD_j} \right)} \right.$$

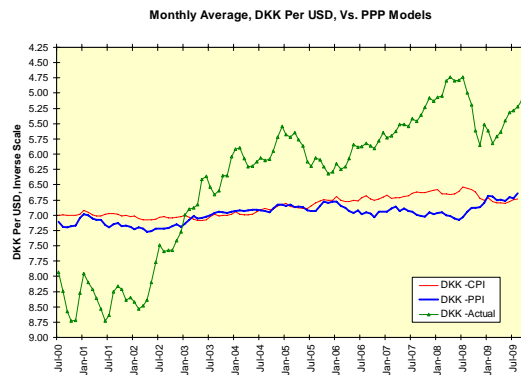
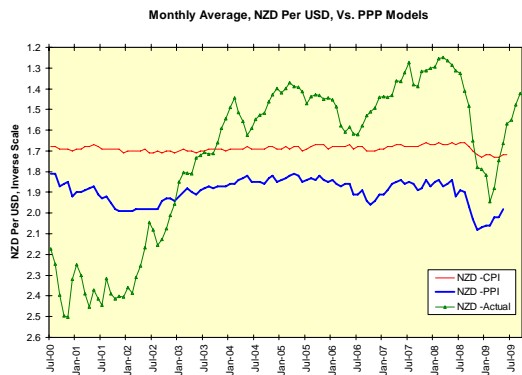
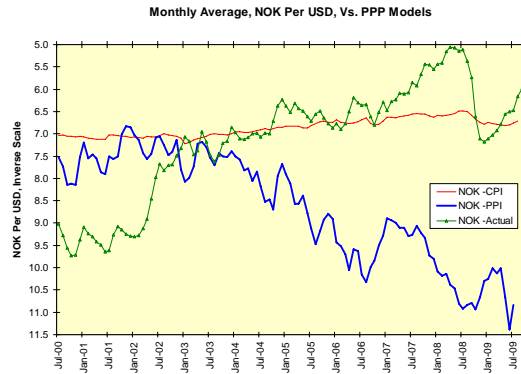
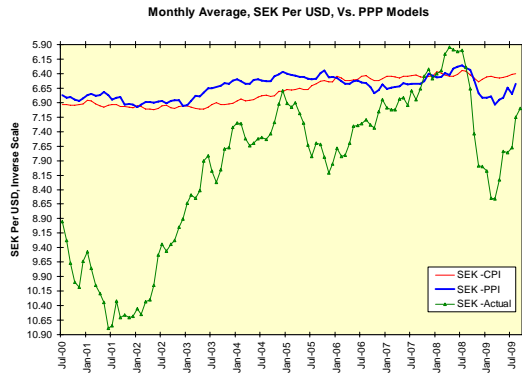
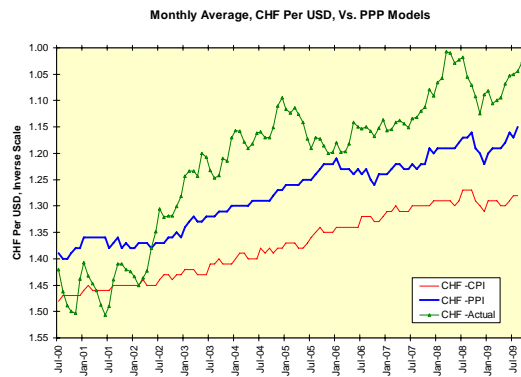
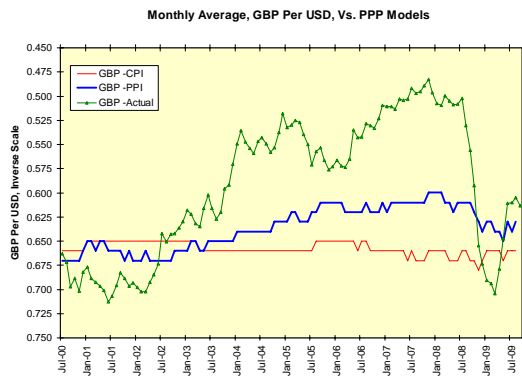
No realistic observer should expect PPP to produce tradable short-term currency forecasts; the idea is PPP will provide a longer-term equilibrium attractor for the current exchange rate. PPP calculations ignore a number of factors we have seen to be important in currency analysis such as prospective relative returns on assets, physical flows, monetary policies not reflected in reported inflation, savings preferences, insurance factors, pressures from the unwinding of carry trades and political risk factors.

The PPP calculation measures deviations in relative rates of inflation as measured by either the Producer Price or Consumer Price indices. Those measures move slowly, are subject to errors in reporting and political pressures and are inherently backward-looking. We should, however, expect relative inflation over a long period of time to be reflected in the long-term trend of a currency (see “*Mexican Peso: Who’s Your Padre?*” February 2007).

The Evidence

Let’s get right to the point with a strong conclusion: The inability of PPP measures for a group of ten currencies to conform to observed monthly averages from July 2000 onwards is striking. The charts below depict the PPI and CPI-created PPP levels (blue and red lines, respectively) and the actual exchange rate (green line). All are expressed in units per USD and displayed on an inverse scale. They will be presented with minimal comment as they provide their own commentary.





Policy Warning

Policymakers everywhere engage in currency manipulation and both encourage and excoriate their counterparts for doing likewise, depending on which way the wind happens to be blowing. This is despite very minimal evidence currencies have an effect on trade weights (see “*Currencies and Federal Reserve Trade Weights*,” July 2007).

The presumption of a currency being overvalued or undervalued must rest on some sense of what a fair value is or even if it is higher or lower than the present value. As noted above, anyone engaging in covered interest arbitrage can state unequivocally a given spot and forward rate are instantaneously fair given the interest rates involved, but as interest rates change constantly, the resulting exchange rate carries no macroeconomic information, only financial information.

The charts above should dissuade any and all from relying on PPP for ascertaining the fair value of a currency based thereon. Quite simply, if we were to remove the labels from those charts, it would be impossible to tell whether the red and blue lines were derived from the same process as the green line.