

PURCHASING POWER PARITY

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PURCHASING POWER PARITY

"Purchasing power parity" or "PPP" expresses the notion that with a unit of purchasing power, say one dollar or one euro, it should be possible to purchase the same bundle of goods and services anywhere in the world. It is important in international economics for at least three reasons. First, it provides a particularly simple theory of exchange rate determination: it predicts that, if the relative price of two currencies is flexible, then it will adjust to equal the ratio of their price levels. Second, if this kind of adjustment does not take place, the ratio of price levels can nonetheless provide a reference point against which the current exchange rate can be deemed to be "under- or over-valued" relative to its PPP level. Finally, irrespective of whether PPP will ever occur in practice, deviations from it must be taken into account in making international and interregional comparisons of real income.

More or less precise statements of PPP can be discerned in the writings of many pre-Classical and Classical economists, especially Ricardo. Its first modern exponent and energetic populariser was the Swedish economist Gustav Cassel, who wrote during and after the First World War. It was taken up by Keynes, who used it in his 1925 pamphlet *The Economic Consequences of Mr. Churchill* to criticise the then Chancellor of the Exchequer (Finance Minister) for returning the UK to the gold standard at the pre-war parity. On the basis of some simple comparisons of UK and US price levels, Keynes argued prophetically that the return to gold left sterling over-valued relative to its PPP level, and that the competitiveness of UK manufacturing would suffer as a result.

PPP must hold if the prices of all goods are equalised internationally by arbitrage, leading to the "law of one price". However, detailed studies of individual markets have shown that deviations from this "law" are substantial. Reasons for this are not hard to find. Some goods and many kinds of services are not traded at all. Even traded goods face many barriers to arbitrage, including tariffs, transport costs, product differentiation, and price discrimination by firms with market power. There is now a growing body of evidence, summarised by Anderson and van Wincoop (2004), that such barriers are pervasive, implying that modern economies remain relatively unintegrated, despite the extensive trade liberalisation that has occurred in the half-century since the Second World War. Even when goods are traded freely, their prices to final consumers are affected by local distributional and related costs. Presumably for this reason, PPP is often found to hold better for producer prices than for consumer prices.

A huge empirical literature, surveyed in Froot and Rogoff (1995) and Taylor and Taylor (2004), documents the extent of deviations from PPP and attempts to determine whether they are permanent or temporary. This can alternatively be described as investigating the behaviour of the "real exchange rate", defined as the ratio of the home to the foreign price level expressed in terms of a common currency, p/ep^* . (Here p and p^* denote the home and foreign price level respectively, while e denotes the nominal exchange rate, measured as the price in home currency of a unit of foreign currency.) If PPP holds in its absolute version, p equals ep^* , and the real exchange rate is one. A weaker form of PPP is the relative version, which requires that p is proportional to ep^* , so the real exchange rate is constant.

This literature shows that PPP works better for countries with high inflation rates, and best of all in periods of hyperinflation. Such exceptional periods aside, short-run studies have difficulty rejecting the hypothesis that real exchange rates follow a random walk with no tendency to return to an equilibrium level. Studies using long-run data find evidence of reversion towards PPP but at a very slow rate: it takes between three and five years before half the deviation is eliminated. This generates what Rogoff (1996) has called the "PPP puzzle": in the post-Bretton Woods era of floating nominal exchange rates, real exchange rates are extremely volatile in the short run and converge very slowly to equilibrium. Short-run deviations from PPP can be explained by high volatility in the nominal exchange rate, presumably due to the volatility of its underlying financial determinants, combined with nominal price stickiness. But such short-run stickiness is hard to reconcile with the very slow rate at which deviations from PPP are eliminated. Recent research suggests a number of explanations for the puzzle, including non-linear dynamics, so reversion to PPP occurs rapidly for large deviations but much less so for small ones, and heterogeneity between goods in their rates of price convergence. However, a fully satisfactory explanation of the data remains elusive.

In fact there are many reasons why we should not expect PPP to hold even in the long run. Best known of these is the "Balassa-Samuelson effect" due to Balassa (1964) and Samuelson (1964). If high-income countries have a greater relative productivity advantage in the production of traded goods, they will produce such goods relatively more cheaply. If the law of one price applies to traded goods, so their nominal prices are equalised internationally, then the relative price of non-traded goods will be lower in low-income countries, implying systematic

deviations from PPP even in the long run. As shown in Neary (1988), the Balassa-Samuelson effect is only one source of potential long-run deviations from PPP. Another is the so-called "Dutch Disease", whereby a sudden increase in productivity in an export sector (due for example to a rapid development of natural resources) causes a real exchange rate appreciation, leading to a loss in competitiveness for other non-booming traded sectors. Other possible explanations include changes in the terms of trade (the external relative price of imports and exports), changes in the government's fiscal stance, and changes in a country's level of external indebtedness.

Because deviations from PPP are significant and persistent, international comparisons of GDP or of consumption per head give a misleading picture of international differences in productive potential or in living standards when they are made using market exchange rates. This poses an index number problem. To overcome it requires comparable data across countries and some index number formula which can combine them to produce a consistent set of "PPP-adjusted" data on real incomes. The most comprehensive data set of this kind is the Penn World Table, described by Summers and Heston (1991). (For a review of alternative approaches to international comparisons and a defence of the Penn World Table methodology, see Neary (2004).) This huge data set, giving annual data on 168 countries since 1950, has been widely used in international comparisons and in cross-country studies of growth and convergence.

(word count: 1127 words)

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