Purchasing Power Parities for cross-country productivity comparisons

Definition

Purchasing power parities (PPPs) are the rates of currency conversion that equalise the purchasing power of different currencies by eliminating the differences in price levels between countries. In their simplest form, PPPs are price relatives which show the ratio of the prices in national currencies of the same good or service in different countries. In this sense, they are spatial price comparisons.

Levels of GDP in a given year, when converted with PPPs, measure the size of economies in volume terms and so provide a more meaningful measure of the relative size of countries than simple exchange-rate based comparisons. Indeed, exchange rates reflect so many more influences than the direct price comparisons that are required to make volume comparisons. Furthermore, they tend to exhibit large movements over short periods of time, implying rapid changes in living standards which cannot have possibly occurred.

GDP and its components, converted using PPPs, provide a snapshot of relative volumes in a particular year. For many analytical purposes, the interest is in the evolution of GDP volumes between countries and over time. There are at least two ways of setting up such a comparison, each with its specific interpretation and use.

Current PPPs and expenditures (comparison at current international prices)

One approach for combining spatial and temporal observations is to use a sequence of current PPPs, i.e., a new set of price data for every period, compiled, weighted and aggregated to yield rates of currency conversion for total GDP and its expenditure components. With current PPPs, prices and price structures are allowed to vary over time. Volume levels of GDP are then obtained by applying these current PPPs, for every period, to GDP measures at current national prices. *For a given year*, (spatial) comparisons between countries are straightforward – volumes are measured with the same price structure. Comparisons of the resulting series over time, however, incorporate several effects: relative volume changes, changes in relative prices between countries and, possibly, changes in definitions and methodologies. The approach can also be described as comparisons at **current international prices or current PPPs**.

Constant PPPs and expenditures (comparison at constant international prices)

A second approach is to generate time series at constant prices and constant PPPs. With constant PPPs, a single year is chosen for the comparison of GDP levels and all other observations are obtained by applying relative rates of GDP growth, consistent with those derived in national currencies. This procedure ensures transitivity over space and time. The approach can also be described as comparisons at **constant international prices or at constant PPPs**. The key conceptual difference between using current and constant PPPs is that the former capture changes in volume as well as changes in weights, whereas the latter only capture volume changes. Put differently, even if the volumes of goods and services remain identical over time, a GDP comparison based on current PPPs may change over time if prices and price structures shift. Ignoring such shifts over longer periods can generate a biased picture of economic developments. This factor comes into play when some countries are large producers and exporters of products with marked price changes, for example Norway, which is an important oil exporter. Another consequence of fixing price structures to a base year is the sensitivity of results to the choice of the base year.

How are PPPs calculated?

PPPs are calculated in three stages:

- first for individual products,
- then for groups of products or basic headings and,
- finally, for groups of basic headings or aggregates.

The PPPs for basic headings are un-weighted averages of the PPPs for individual products. The PPPs for aggregates are weighted averages of the PPPs for basic headings.

The weights used are the expenditures on the basic headings. PPPs at all stages are price relatives. They show how many units of currency A need to be spent in country A to obtain the same volume of a product or a basic heading or an aggregate that X units of currency B purchases in country B.

In the case of a single product, the "same volume" means "identical volume". But in the case of the complex assortment of goods and services that make up an aggregate such as GDP, the "same volume" does not mean an "identical basket of goods and services".

The composition of the basket will vary between countries according to their economic, social and cultural differences, but each basket will provide equivalent satisfaction or utility.

Values at constant international prices of period t0 (at PPPs of period t0)

Values at constant international prices of period t0 (at PPPs of period t0) are series at current domestic prices converted to a common currency by way of constant PPPs of a given year.

Constant PPPs capture volume changes only.

A value index of this kind corresponds to a weighted average of the value changes in domestic prices, as PPPs are held fixed.

Values at constant international prices of period t-1 (at PPPs of period t-1)

Values at constant international prices of period t-1 (at PPPs of period t-1) are series at current domestic prices converted to a common currency by way of PPPs of year t-1.

A value index of this kind corresponds to a weighted average of the value changes in domestic prices, as PPPs are held fixed at their previous year's value. However, weights are continuously updated.

Values at current international prices (at current PPPs)

Values at current international prices (at current PPPs) are series at current domestic prices converted to a common currency by way of current PPPs. Because PPPs are price relatives of goods and services, this implies substituting the set of domestic prices by a set of international prices.

Current PPPs capture changes in volumes and in relative prices.

PPPs produced at the OECD are intended for whole economy cross-country comparisons of GDP and consumption across countries. They are derived through a collection of prices of final demand components and, as such, while they provide a sound basis for whole economy comparisons, they should not be used for comparisons across industries, especially for sectors whose prices are determined internationally.

Further reading

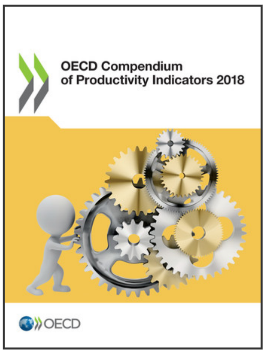
OECD/Eurostat (2012), Eurostat-OECD *Methodological Manual on Purchasing Power Parities (2012 Edition)*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264189232-en.

OECD (2008), *OECD Glossary of Statistical Terms*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264055087-en.

OECD, Purchasing Power Parities (PPP), http://www.oecd.org/std/prices-ppp/.

Bournot S., Koechlin F. and P. Schreyer (2011), "2008 Benchmark PPPs Measurement and Uses", *OECD Statistics Brief*, No. 17, OECD Publishing, Paris, http://www.oecd.org/std/47359870.pdf.

Schreyer P. and F. Koechlin (2002), "Purchasing power parities – measurement and uses", *OECD Statistics Brief, No. 3*, OECD Publishing, Paris, http://www.oecd.org/std/prices-ppp/2078177.pdf.



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