



RESEARCH NOTE

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International Comparisons of Economic Size, Living Standards and Price Levels

Gross domestic product (GDP) is the most frequently used measure to estimate the size of an economy and, on a per capita basis, the living standard of its residents. Since GDP is a function of both the volume of goods and services purchased and their price levels, it is argued that international comparisons of GDP should eliminate relative price differences that exist between countries. This is done using purchasing power parities (PPPs).

The purpose of this Research Note is twofold. The first is to explain, with the help of the Big Mac index, the concept of PPPs. The second is to explain how PPPs are used both as currency converters to generate volume measures with which to make international comparisons of GDP, and as price measures with which to compare international price levels.

The Big Mac Index

The Big Mac hamburger is an item of constant quality sold in over 100 countries. It can therefore be used to compare differences in price levels between countries. Table 1 shows, that of the countries listed, the price of a Big Mac hamburger is cheapest in Malaysia at US\$1.19. This compares with an average price of US\$2.54 in the United States and US\$1.52 in Australia.

Dividing the local price of a Big Mac by its price in the United States gives a relativity or implicit exchange rate that would leave a Big Mac costing the same in each country as in America. In other

Table 1. Big Mac Prices, April 2001

	Big Mac Prices		Implied PPP of the dollar (NCUs per US \$)
	In local currency	In US dollars	
United States	\$2.54	2.54	1.00
Australia	A\$3.00	1.52	1.18
Canada	C\$3.33	2.14	1.31
France	FFr18.5	2.49	7.28
Germany	DM5.1	2.30	2.01
Italy	Lire4300	1.96	1693
Malaysia	M\$4.52	1.19	1.78

NCU = national currency units
Source: *The Economist*

words, one arrives at an exchange rate that equalises the purchasing power of each currency so that an equivalent volume of goods (one Big Mac hamburger) can be purchased in each country. For example, dividing the price of a Big Mac in Australia (AU\$3.00) by its price in the United States (US\$2.54), yields an exchange rate (AU\$1.18 = US\$1.00) that equalises the price of a Big Mac in both countries. Similarly, the exchange rate that equalises the price of a Big Mac in Malaysia and the United States is M\$1.78 = US\$1.00. These rates are known as purchasing power parities.

Purchasing Power Parity

In the Big Mac example a PPP was calculated for just one product, but PPPs can also be calculated for product groups and for each of the various levels of aggregation up to gross domestic product. PPPs are still basically price relativities whether they refer to an individual product or to GDP. The difficulty is that in moving up the hierarchy of aggregation, the price relativities refer to increasingly complex

assortments of goods and services. Hence, according to data published by the OECD, the PPP for GDP between Australia and the United States is AU\$1.31 to US\$1.00. This means that for every dollar spent on GDP in the United States, \$1.31 would have to be spent in Australia to buy the same volume of goods and services. Purchasing the 'same volume of goods and services' doesn't mean that the same basket of goods and services would be purchased in each country but rather that each basket would provide an equivalent level of utility or satisfaction.

International Comparisons of Gross Domestic Product

Values of final expenditure on GDP are a function of both price and volume. Comparing the expenditure values of countries will not provide a comparison of the volume of goods and services purchased in those countries, unless the price differences that exist between them have been removed. PPPs are the currency conversion rates that achieve this objective.

Table 2. International Comparisons of Gross Domestic Product, 2000

	GDP		GDP per capita		National currency units per US\$		
	At current exchange rates US\$ billion	At current PPPs US\$ billion	At current exchange rates US\$	At current PPP US\$	Actual exchange rate	Purchasing power parity	Comparative price levels ^(a)
United States	9896.4	9896.4	33800	33800	1.00	1.00	100
Australia	382.6	502.0	19900	26100	1.72	1.31	76
New Zealand	49.2	74.1	12800	19400	2.19	1.46	67
Canada	687.7	862.4	22400	28100	1.48	1.18	79
Japan	4610.6	3246.6	36300	25600	108	153	142
Germany	1873.0	2048.3	22800	24900	2.12	1.94	92
Italy	1074.0	1413.6	18600	24500	2095	1597	76
United Kingdom	1415.6	1430.5	23700	23900	0.660	0.654	99
France	1290.9	1403.3	21300	23200	7.10	6.55	92

(a) Ratio of PPP to actual exchange rate multiplied by 100

Source: OECD

Table 2 compares the Australian economy's size and living standard with that of New Zealand and the Group of Seven major industrial nations. It shows that at year 2000 exchange rates, Australia's GDP was \$US382.6 billion, or just under 4 per cent the size of the US economy. Such a comparison, however, does not take account of the fact that average price levels in the US are almost a third as high again as they are in Australia. To eliminate this price difference it is necessary to multiply Australia's GDP at year 2000 exchange rates by its PPP. When this is done, the Australian economy is 5 per cent the size of the US economy.

In terms of its standard of living (or GDP per capita), Australia would be ranked as third lowest of those countries listed in Table 2, if GDP was measured at year 2000 exchange rates. By measuring GDP at year 2000 PPPs, however, Australia's ranking rises to third highest behind the United States and Canada.

A more dramatic illustration of the effect of using PPPs is the Japanese economy which shrinks in size from almost half that of the US economy, when GDP is valued at year 2000 exchange rates, to less than a third when valued at PPPs.

Comparative Price Levels

Differences in average price levels between countries can be determined by dividing the PPP for GDP in each country by the current exchange rate. Comparative price levels are shown in Table 2 and indicate the number of specified monetary units needed in each country to buy the same representative basket of goods and services. For example, \$US76 would be needed in Australia to buy the same basket of goods and services that \$US100 would buy in the United States. In other words, average price levels in the United States are 100/76 or 1.32 times as high as they are in Australia, at current exchange rates.

Conclusion

By eliminating price differences between countries, PPPs for GDP enable better comparisons to be made of an economy's size, and living standard of its residents. In practice, however, PPPs are subject to large errors and revisions. One source of error is the culturally diverse nature of the countries for which PPPs are calculated. Such diversity makes it difficult to select a representative basket of goods and services that provides equivalent utility in each country. Moreover,

PPPs provide a good indication of local purchasing power only if countries purchase their own GDP. However, countries also purchase the GDP of other countries at prices determined by the prevailing exchange rates and not PPPs.

Despite their limitations, PPP adjustments make possible several useful international comparisons. The main users of PPPs are international organisations such as Eurostat, the IMF, the OECD, the United Nations and the World Bank.

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