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## The Big Mac Index

### Food for thought

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#### The world economy looks very different once countries' output is adjusted for differences in prices

HOW fast is the world economy growing? How important is China as an engine of growth? How much richer is the average person in America than in China? The answers to these huge questions depend crucially on how you convert the value of output in different countries into a common currency. Converting national GDPs into dollars at market exchange rates is misleading. Prices tend to be lower in poor economies, so a dollar of spending in China, say, is worth a lot more than a dollar in America. A better method is to use purchasing-power parities (PPP), which take account of price differences.

The theory of purchasing-power parity says that in the long run exchange rates should move towards rates that would equalise the prices of an identical basket of goods and services in any two countries. This is the thinking behind *The Economist's* Big Mac index. Invented in 1986 as a light-hearted guide to whether currencies are at their "correct" level, our "basket" is a McDonalds' Big Mac, which is produced locally in almost 120 countries.

The Big Mac PPP is the exchange rate that would leave a burger in any country costing the same as in America. The first column of our table converts the local price of a Big Mac into dollars at current exchange rates. The average price of a Big Mac in four American cities is \$2.90 (including tax). The cheapest shown in the table is in the Philippines (\$1.23), the most expensive in Switzerland (\$4.90). In other words, the Philippine peso is the world's most undervalued currency, the Swiss franc its most overvalued.

The second column calculates Big Mac PPPs by dividing the local currency price by the American price. For instance, in Japan a Big Mac costs ¥262. Dividing this by the American price of \$2.90 produces a dollar PPP against the yen of ¥90, compared with its current rate of ¥113, suggesting that the yen is 20% undervalued. In contrast, the euro (based on a weighted average of Big Mac prices in the euro area) is 13% overvalued. But perhaps the most interesting finding is that all emerging-market currencies are undervalued against the dollar. The Chinese yuan, on which much ink has been spilled in recent months, looks 57% too cheap.

The Big Mac index was never intended as a precise forecasting tool. Burgers are not traded across borders as the PPP theory demands; prices are distorted by differences in the cost of non-tradable goods and services, such as rents.

Yet these very failings make the Big Mac index useful, since looked at another way it can help to measure countries' differing costs of living. That a Big Mac is cheap in China does not in fact prove that the yuan is being held massively below its fair value, as many American politicians claim. It is quite natural for average prices to be lower in poorer countries and therefore for their currencies to appear cheap.

The prices of traded goods will tend to be similar to those in developed economies. But the prices of non-tradable products, such as housing and labour-intensive services, are generally much lower. A hair-cut is, for instance, much cheaper in Beijing than in New York.

One big implication of lower prices is that converting a poor country's GDP into dollars at market exchange rates will significantly understate the true size of its economy and its living standards. If China's GDP is converted into dollars using the Big Mac PPP, it is almost two-and-a-half-times bigger than if converted at the market exchange rate. Meatier and more sophisticated estimates of PPP, such as those used by the IMF, suggest that the required adjustment is even bigger.

### The hamburger standard

	Big Mac price in dollars*	Implied PPP† of the dollar	Under (-)/over (+) valuation against the dollar, %
United States†	2.90	–	–
Argentina	1.48	1.50	-49
Australia	2.27	1.12	-22
Brazil	1.70	1.86	-41
Britain	3.37	1.54‡	+16
Canada	2.33	1.10	-20
Chile	2.18	483	-25
China	1.26	3.59	-57
Czech Rep.	2.13	19.5	-27
Denmark	4.46	9.57	+54
Egypt	1.62	3.45	-44
Euro area	3.28**	1.06††	+13
Hong Kong	1.54	4.14	-47
Hungary	2.52	183	-13
Indonesia	1.77	5,552	-39
Japan	2.33	90.3	-20
Malaysia	1.33	1.74	-54
Mexico	2.08	8.28	-28
New Zealand	2.65	1.50	-8
Peru	2.57	3.10	-11
Philippines	1.23	23.8	-57
Poland	1.63	2.17	-44
Russia	1.45	14.5	-50
Singapore	1.92	1.14	-34
South Africa	1.86	4.28	-36
South Korea	2.72	1,103	-6
Sweden	3.94	10.3	+36
Switzerland	4.90	2.17	+69
Taiwan	2.24	25.9	-23
Thailand	1.45	20.3	-50
Turkey	2.58	1,362,069	-11
Venezuela	1.48	1,517	-49

**MORE COUNTRIES** Data for the countries below are not provided in printed editions of *The Economist*

	Big Mac price in dollars*	Implied PPP† of the dollar	Under (-)/over (+) valuation against the dollar, %
Aruba	2.29	1.41	-21
Belarus	1.37	1021	-53
Bulgaria	1.85	1.03	-36
Colombia	2.35	2241	-19
Costa Rica	2.61	390	-10
Croatia	2.42	5.14	-17
Dom. Rep.	1.32	20.7	-54
Estonia	2.27	10.2	-22
Fiji	2.35	1.47	-19
Georgia	1.90	1.26	-34
Guatemala	2.01	5.52	-31
Honduras	1.98	12.4	-32
Iceland	6.01	151	107
Jamaica	1.88	39.0	-35
Jordan	3.65	0.89	26
Kuwait	7.33	0.74	153
Latvia	2.00	0.38	-31
Lebanon	2.84	1483	-2
Lithuania	2.26	2.24	-22
Macau	1.40	3.86	-52
Macedonia	1.84	32.8	-36
Moldova	1.93	7.93	-33
Morocco	0.26	0.82	-91
Nicaragua	2.19	11.9	-25
Norway	5.18	12.2	79
Pakistan	1.90	37.9	-34
Qatar	0.68	0.85	-77
Saudi Arabia	0.64	0.83	-78
Slovakia	1.98	22.8	-32
Slovenia	2.42	166	-17
Sri Lanka	1.41	48.3	-51
Ukraine	1.36	2.50	-53
UAE	0.67	0.84	-77
Uruguay	1.00	10.3	-65

\*At current exchange rates †Purchasing-power parity ‡Average of New York, Chicago, San Francisco and Atlanta  
§Dollars per pound \*\*Weighted average of member countries ††Dollars per euro

Sources: McDonald's; *The Economist*

## Weight watchers

The global economic picture thus looks hugely different when examined through a PPP lens. Take the pace of global growth. Anyone wanting to calculate this needs to bundle together countries' growth rates, with each one weighted according to its share of world GDP. Using weights based on market exchange rates, the world has grown by an annual average of only 1.9% over the past three years. Using PPP, as the IMF does, global growth jumps to a far more robust 3.1% a year.

The main reason for this difference is that using PPP conversion factors almost doubles the weight of the emerging economies, which have been growing much faster. Measured at market exchange rates, emerging economies account for less than a quarter of global output. But measured using

PPP they account for almost half.

Small wonder, then, that global economic rankings are dramatically transformed when they are done on a PPP basis rather than market exchange rates. America remains number one, but China leaps from seventh place to second, accounting for 13% of world output. India jumps into fourth place ahead of Germany, and both Brazil and Russia are bigger than Canada. Similarly, market exchange rates also exaggerate inequality. Using market rates, the average American is 33 times richer than the average Chinese; on a PPP basis, he is "only" seven times richer.

The way in which economies are measured also has a huge impact on which country has contributed most to global growth in recent years. Using GDP converted at market rates China has accounted for only 7% of the total increase in the dollar value of global GDP over the past three years, compared with America's 25%. But on PPP figures, China has accounted for almost one-third of global real GDP growth and America only 13%.

This helps to explain why commodity prices in general and oil prices in particular have been surging, even though growth has been relatively subdued in the rich world since 2000. Emerging economies are not only growing much faster than rich economies and are more intensive in their use of raw materials and energy, but they also account for a bigger chunk of global output if measured correctly. As Charles Dumas, an economist at Lombard Street Research, neatly puts it, even if a Chinese loaf is a quarter of the cost of a loaf in America, it uses the same amount of flour.

All measures of PPP are admittedly imperfect. But most economists agree that they give a more accurate measure of the relative size of economies than market exchange rates—and a better understanding of some of the dramatic movements in world markets. The humble burger should be part of every economist's diet.

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