

McCurrencies

Apr 24th 2003

From The Economist print edition

Hamburgers should be an essential part of every economist's diet

THE past year has been one to relish for fans of [burgernomics](#). Last April *The Economist's* Big Mac index flashed a strong sell sign for the dollar: it was more overvalued than at any time in the index's history (see [article](#)). The dollar has since flipped, falling by 12% in trade-weighted terms.

Invented in 1986 as a light-hearted guide to whether currencies are at their "correct" level, burgernomics is based on the theory of purchasing-power parity (PPP). This says that, in the long run, exchange rates should move toward rates that would equalise the prices of an identical basket of goods and services in any two countries. To put it simply: a dollar should buy the same everywhere. Our basket is a McDonald's Big Mac, produced locally to roughly the same recipe in 118 countries. The Big Mac PPP is the exchange rate that would leave burgers costing the same as in America. Comparing the PPP with the actual rate is one test of whether a currency is undervalued or overvalued.

The first column of the table shows local-currency prices of a Big Mac. The second converts them into dollars. The average price of a Big Mac in four American cities is \$2.71. The cheapest burgers are in China (\$1.20); the dearest are in Switzerland (\$4.52). In other words, the yuan is the most undervalued currency, the Swiss franc the most overvalued. The third column calculates Big Mac PPPs. Dividing the local Chinese price by the American price gives a dollar PPP of 3.65 yuan. The actual exchange rate is 8.28 yuan, implying that the Chinese currency is undervalued by 56% against the dollar. The average price of a Big Mac in the euro area is now exactly the same as in America. This implies that the euro's PPP is exactly \$1, so at its current rate of \$1.10 the euro is 10% overvalued. The British, Swedish and Danish currencies are still significantly overvalued against the euro.

Among rich economies, the most undervalued currency is the Australian dollar. The Aussie dollar is still 31% below PPP against its American counterpart: its rise over the past year has been largely offset by a fall in the relative price of burgers in Australia. Many emerging-market currencies are undervalued against the dollar by 30-50%. One exception is the South Korean won, which is exactly at its PPP, implying that it is overvalued against other emerging-market currencies.

Many readers complain that burgernomics is hard to swallow. We admit it is flawed: Big Macs are not traded across borders as the PPP theory demands, and prices are distorted by taxes, tariffs, different profit margins and differences in the cost of non-tradables, such as rents. It was never intended as a precise predictor of currency movements, but as a tool to make exchange-rate theory more digestible. Yet in the early 1990s, just before the crisis in Europe's exchange-rate mechanism, it signalled that several currencies, including sterling, were markedly overvalued against the D-mark. It also predicted the fall in the euro after its launch in 1999.

Academic economists are taking burgernomics more seriously, chewing over the Big Mac index in almost a dozen studies. Now a whole book has been written about the index* by Li Lian Ong, of the International Monetary Fund. She says it has been surprisingly accurate in tracking exchange rates in the long term. But there are some persistent deviations from PPP. In particular, emerging-market currencies are consistently undervalued.

Differences in productivity are one explanation of this. Rich countries have higher productivity than poor countries, but their advantage tends to be smaller in non-tradable goods and services than in tradables. Because wages are the same in both sectors, non-tradables are cheaper in poorer countries. Therefore, if currencies are determined by the relative prices of tradables, but PPP is calculated from a basket that includes non-tradables, such as the Big Mac, the currencies of poor countries will always look undervalued. Ms Ong finds that currency deviations from PPP are indeed

related to productivity differences relative to America. After adjusting for this, she finds that the Big Mac index performs better in tracking exchange rates.

The Big Mac index suggests that the dollar is no longer overvalued against the euro. But having overshot PPP, the dollar may well now undershoot, because America's huge current-account deficit is becoming harder to finance. Without stronger domestic demand in Japan and Europe to help trim the deficit, the dollar will have to take more of the strain. What are this year's other hot tips? The Australian dollar is likely to see the biggest gain. The pound will fall further against the euro. And China will come under increasing pressure to revalue the yuan.

The hamburger standard

	Big Mac prices		Implied PPP* of the dollar	Actual dollar exchange rate April 22nd	Under (-)/over (+) valuation against the dollar, %
	in local currency	in dollars			
United States†	\$2.71	2.71			
Argentina	Peso 4.10	1.43	1.51	2.88	-47
Australia	A\$3.00	1.86	1.11	1.61	-31
Brazil	Real 4.55	1.48	1.68	3.07	-45
Britain	£1.99	3.14	1.36‡	1.58‡	+16
Canada	C\$3.20	2.21	1.18	1.45	-18
Chile	Peso 1,400	1.95	517	716	-28
China	Yuan 9.90	1.20	3.65	8.28	-56
Czech Rep	Koruna 56.57	1.96	20.9	28.9	-28
Denmark	DKr27.75	4.10	10.2	6.78	+51
Egypt	Pound 8.00	1.35	2.95	5.92	-50
Euro area	€2.71	2.97	1.00§	1.10§	+10
Hong Kong	HK\$11.50	1.47	4.24	7.80	-46
Hungary	Forint 490	2.18	181	224	-19
Indonesia	Rupiah 16,100	1.84	5,941	8,740	-32
Japan	¥262	2.19	96.7	120	-19
Malaysia	M\$5.04	1.33	1.86	3.80	-51
Mexico	Peso 23.00	2.18	8.49	10.53	-19
New Zealand	NZ\$3.95	2.21	1.46	1.78	-18
Peru	New Sol 7.90	2.29	2.92	3.46	-16
Philippines	Peso 65.00	1.24	24.0	52.5	-54
Poland	Zloty 6.30	1.62	2.32	3.89	-40
Russia	Rouble 41.00	1.32	15.1	31.1	-51
Singapore	S\$3.30	1.86	1.22	1.78	-31
South Africa	Rand 13.95	1.84	5.15	7.56	-32
South Korea	Won 3,300	2.71	1,218	1,220	nil
Sweden	SKr30.00	3.60	11.1	8.34	+33
Switzerland	SFr6.30	4.59	2.32	1.37	+69
Taiwan	NT\$70.00	2.01	25.8	34.8	-26
Thailand	Baht 59.00	1.38	21.8	42.7	-49
Turkey	Lira 3,750,000	2.34	1,383,764	1,600,500	-14
Venezuela	Bolivar 3,700	2.32	1,365	1,598	-15

The additional hamburger standard

Aruba	Florin 4.10	2.29	1.51	1.79	-15
Bahrain	Dinar 0.85	2.25	0.31	0.38	-17
Belarus	Ruble 2,450	1.21	904	2,018	-55
Bulgaria	Lev 2.98	1.68	1.10	1.78	-38
Colombia	Peso 6,200	2.13	2,288	2,914	+1
Costa Rica	Colon 1,130	2.89	417	390	+7
Croatia	Kuna 14.9	2.17	5.50	6.87	-20
Dominican Rep.	Peso 60.0	2.61	22.1	23.0	-4
Estonia	Krooni 29.5	2.07	10.9	14.3	-24
Georgia	Lari 3.65	1.65	1.35	2.21	-39
Guatemala	Quetzal 16.0	2.03	5.90	7.87	-25
Honduras	Lempira 25.95	1.51	9.58	17.2	-44
Iceland	Kronur 439	5.79	162	75.8	+114
Jamaica	Jam. \$113.04	1.99	41.7	56.7	-26
Kuwait	Dinar 0.65	2.17	0.24	0.30	-20
Lebanon	Pound 4,301	2.85	1,587	1,512	+5
Lithuania	Lita 6.50	2.06	2.40	3.15	-24
Macau	Pataca 11.2	1.39	4.13	8.03	-49
Macedonia	Denar 95.0	1.70	35.1	55.8	-37
Morocco	Dirhams 23.0	2.34	8.49	9.82	-14
Norway	Kroner 39.5	5.51	14.6	7.16	+64
Oman	Rial 0.90	2.34	0.33	0.39	-14
Pakistan	Rupee 99.0	1.71	36.5	57.8	-37
Qatar	Riyal 9.00	2.47	3.32	3.64	-9
Saudi Arabia	Riyal 9.00	2.40	3.32	3.75	-4
Slovakia	Koruna 66.0	1.76	24.4	37.4	-35
Slovenia	Tolar 480	2.26	177	212	-17
Sri Lanka	Rupee 130	1.34	48.0	97.0	-51
Suriname	S. guilder 8,000	3.18	2,952	2,515	+17
Ukraine	Hryvnia 7.00	1.31	2.58	5.34	-52
UAE	Dirham 9.00	2.45	3.32	3.67	-10
Uruguay	Peso 29.8	1.05	11.0	28.5	-61
Yugoslavia	Dinar 105	1.77	38.7	59.2	-35

*Purchasing-power parity: local price divided by price in United States

†Average of New York, Chicago, San Francisco and Atlanta

‡Dollars per pound §Dollars per euro

Sources: McDonald's; *The Economist*

(Note: the data appearing under “The additional hamburger standard” in our table does not appear in printed editions of *The Economist*.)

* “[The Big Mac Index: Applications of Purchasing Power Parity](#)”. Published by Palgrave Macmillan, 2003.

The Big Mac index

Jan 15th 2004

From The Economist print edition

The Economist's Big Mac index is based on the theory of “purchasing-power parity”. Under PPP, exchange rates should adjust to equalise the prices of a basket of goods and services across countries. Our basket is the Big Mac. For example, the cheapest burger is in China, at \$1.23, compared with an average American price of \$2.80. This implies the yuan is 56% undervalued. Relative to its Big Mac PPP the euro is 24% overvalued against the dollar. In contrast, the yen is 12% undervalued.



