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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 flipped, falling by 12% in trade-weighted terms.

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

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.

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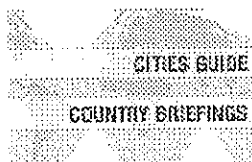
Click to buy from Amazon.com: "[The Index: Applications of Purchasing Power Parity](#)" by Li Lian Ong ([Amazon.co.uk](#)). See [Palgrave Macmillan's information](#) about [sample chapter](#) of) Li Lian Ong's book [McDonald's](#) company site.

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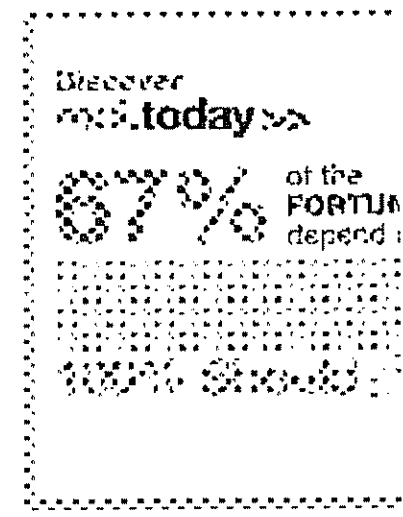
Among rich economies, the most undervalued currency is the Australian dollar. The Aussie dollar is still 31% below PPP against its American counterpart: its rise over the past year has been largely offset by a fall in the relative price of burgers in Australia. Many emerging-market currencies are undervalued 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 burgeronomics 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 movement tool to make exchange-rate theory more digestible. Yet in the early 1990s, just as 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 burgeronomics 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 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 tradable goods and services than in non-tradables. Because wages are the same in both sectors, non-tradables are cheaper in poorer countries. Therefore, if currency values 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 always look undervalued. Ms Ong finds that currency deviations from PPP are related to productivity differences relative to America. After adjusting for this, 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 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 the strain. What are this year's other hot tips? The Australian dollar is likely to be the biggest gain. The pound will fall further against the euro. And China will be 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 | 1.53 | 2.88 | -47 |
| Australia | A\$3.00 | 1.86 | 1.15 | 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 | CS\$ 2.20 | 2.21 | 1.16 | 1.65 | -18 |
| Chile | Peso 1.400 | 1.95 | 5.17 | 7.16 | -28 |
| China | Yuan 9.90 | 1.20 | 3.65 | 8.28 | -56 |
| Czech Rep. | Koruna 58.57 | 1.98 | 29.3 | 28.9 | -28 |
| Denmark | DKr 27.75 | 4.10 | 10.2 | 6.78 | +51 |
| Egypt | Pound 8.00 | 1.35 | 2.95 | 6.92 | -50 |
| Euro area | €2.71 | 2.97 | 1.00 | 1.10 | +10 |
| Hong Kong | HK\$11.50 | 1.47 | 4.74 | 7.80 | -45 |
| Hungary | Forint 490 | 2.18 | 101 | 224 | -19 |
| Indonesia | Rupiah 16,100 | 1.84 | 5,941 | 8,740 | -32 |
| Japan | ¥262 | 2.19 | 95.7 | 120 | -19 |
| Malaysia | M\$5.04 | 1.33 | 1.86 | 3.80 | -51 |
| Mexico | Peso 23.80 | 2.18 | 8.49 | 10.53 | -19 |
| New Zealand | NZ\$5.95 | 2.21 | 1.40 | 1.78 | -16 |
| 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 | -49 |
| 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 | 1.04 | 5.15 | 7.56 | -32 |
| South Korea | Won 1,390 | 2.71 | 1,218 | 1,220 | nil |
| Sweden | SKr 30.00 | 3.60 | 11.1 | 8.34 | +33 |
| Switzerland | Sfr 6.30 | 4.59 | 2.32 | 1.37 | +69 |
| Taiwan | NT\$70.00 | 2.01 | 25.8 | 34.8 | -26 |
| Thailand | Baht 59.00 | 1.38 | 23.8 | 42.7 | -49 |
| Turkey | Lira 3,750.000 | 2.34 | 1,383,764 | 1,600,500 | -14 |
| Venezuela | Bolivar 3,780 | 2.32 | 1,365 | 1,508 | -15 |

The additional hamburger standard

| | | | | | |
|----------------|---------------|------|-------|-------|------|
| Aruba | Florin 4.10 | 2.20 | 1.51 | 1.73 | -15 |
| Bahrain | Dinar 0.65 | 2.25 | 0.31 | 0.38 | -17 |
| Belarus | Belble 2,450 | 1.21 | 904 | 2,016 | -55 |
| Bulgaria | Lev 2.98 | 1.68 | 1.30 | 1.78 | -39 |
| Colombia | Peso 6,200 | 2.13 | 2,288 | 2,934 | +1 |
| Costa Rica | Colon 1,130 | 2.89 | 417 | 350 | +7 |
| Croatia | Kuna 14.9 | 2.17 | 5.50 | 5.67 | -20 |
| Dominican Rep. | Peso 60.0 | 2.61 | 22.1 | 23.0 | -4 |
| Estonia | Krooni 29.5 | 2.37 | 10.9 | 14.3 | -24 |
| Georgia | Lari 3.64 | 1.65 | 1.35 | 2.21 | -39 |
| Guatemala | Quetzal 16.0 | 2.03 | 6.90 | 7.37 | -23 |
| Honduras | Lempira 25.95 | 1.51 | 9.53 | 17.7 | -44 |
| Ireland | Kroner 6.19 | 5.79 | 162 | 75.8 | +414 |
| Jamaica | Jam. \$113.04 | 1.99 | 41.7 | 56.7 | -28 |
| Kuwait | Dinar 0.65 | 2.17 | 0.34 | 0.30 | -23 |
| Lebanon | Pound 4,901 | 2.85 | 1,587 | 1,512 | +5 |
| Lithuania | Lira 6.50 | 2.06 | 2.40 | 3.35 | -38 |
| Morocco | Dirham 11.2 | 1.39 | 4.13 | 8.93 | -49 |
| Macedonia | Denar 95.0 | 1.70 | 35.1 | 55.2 | -37 |