

# Case Studies

## 19

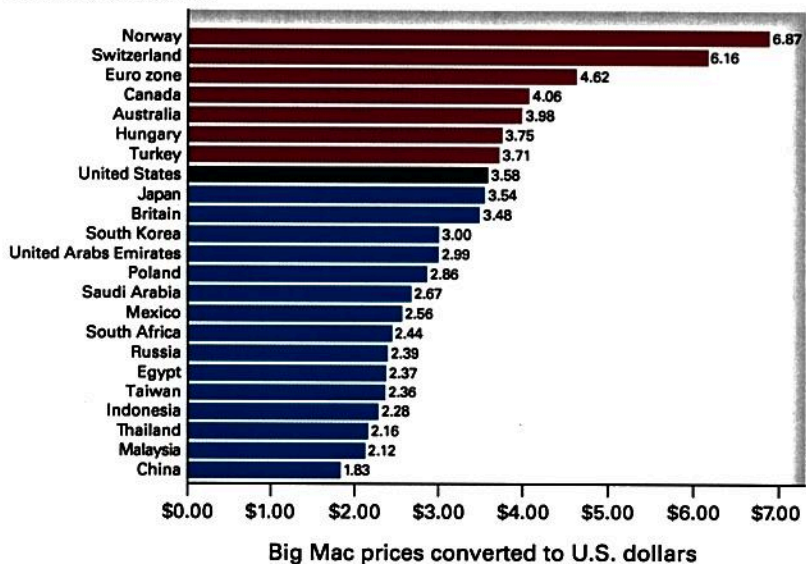
### Case Study 19.1: The Big Mac Index

As you have already learned, the PPP theory predicts that in the long run the exchange rate between two currencies should move toward equalizing the cost in each country of an identical basket of internationally traded goods. A light-hearted test of the theory has been developed by *The Economist* magazine, which compares prices around the world for a "market basket" consisting simply of one McDonald's Big Mac—a product that, though not internationally traded, is essentially the same in more than 100 countries. *The Economist* begins with the price of a Big Mac in the local currency and then converts that price into dollars based on the exchange rate prevailing at the

time. A comparison of the dollar price of Big Macs across countries offers a crude test of the PPP theory, which predicts that prices should be roughly equal in the long run.

This chart lists the dollar price of a Big Mac in March 2010, in 22 surveyed countries plus the euro zone average. By comparing the price of a Big Mac in the United States (shown as the green bar) with prices in other countries, we can derive a crude measure of whether particular currencies, relative to the dollar, are overvalued (red bars) or undervalued (blue bars). For example, because the price of a Big Mac in Norway, at \$6.87, was 92 percent higher than the U.S. price of \$3.58 the Norwegian krone was the most overvalued relative to the dollar of the countries listed. But Big Macs were cheaper in most of the countries surveyed.

Cost of a Big Mac by Country



The cheapest was in China, where \$1.83 was 49 percent below the U.S. price. Hence, the Chinese yuan was the most undervalued relative to the dollar.

Thus, Big Mac prices in March 2010 ranged from 92 percent above to 49 percent below the U.S. price. The euro was 29 percent overvalued. The price range lends little support to the PPP theory, but that theory relates only to traded goods. The Big Mac is not traded internationally. Part of the price of a Big Mac must cover rent, which can vary substantially across countries. Taxes and trade barriers, such as tariffs and quotas on beef, may also distort local prices. And wages differ across countries, with a McDonald's worker averaging about \$8 an hour in the United States versus more like \$1 an hour in China. So there are understandable reasons why Big Mac prices differ across countries.

**SOURCES:** "The Big Mac Index: Exchanging Blows," *The Economist*, 17 March 2010; David Parsley and Shang-Jin Wei, "In Search of a Euro Effect: Big Lessons from a Big Mac Meal?" *Journal of International Money and Finance*, 27 (March 2008): 260–276; Ali Kutan et al., "Toward Solving the PPP Puzzle: Evidence from 113 Countries," *Applied Economics*, 41 (Issue 24, 2009): 3057–3066; and the McDonald's Corporation International Web site at <http://www.mcdonalds.com>.

### QUESTION

1. The Big Mac Index computed by *The Economist* magazine has consistently found the U.S. dollar to be undervalued against some currencies and overvalued against others. This finding seems to call for a rejection of the purchasing power parity theory. Explain why this index may not be a valid test of the theory.

### Case Study 19.2: What About China?

The U.S. trade deficit with China of \$227 billion in 2009 exceeded America's combined deficits with the European Union, OPEC countries, and Latin America. The deficit with China grew about 15 percent annually between 2007 and 2010. Americans spend four times more on Chinese products than the Chinese spend on American products. Between 2007 and 2010, China's holdings of U.S. Treasury securities more than doubled from \$400 billion to \$900 billion.

Many economists, politicians, and union officials argue that China manipulates its currency, the yuan, to keep Chinese products cheaper abroad and foreign products more expensive at home. This stimulates Chinese exports and discourages imports, thereby boosting Chinese production and jobs. At the same time, the average Chinese consumer is poorer because the yuan buys fewer foreign products.

As we have seen, any country that establishes a fixed exchange rate that undervalues or overvalues the currency must intervene continuously to maintain that rate. Thus, if the official exchange rate chronically undervalues the Chinese yuan relative to the dollar, as appears to be the case, then Chinese authorities must continuously exchange yuan for dollars in foreign exchange markets. The increased supply of yuan keeps the yuan down, and the increased demand for dollars keeps the dollar up.

But the charge that China manipulates its currency goes beyond simply depressing the yuan and boosting the dollar. China's trading partners increasingly feel they are being squeezed out by Chinese producers without gaining access to Chinese markets. China seeks every trade advantage, especially for the 125 state-owned enterprises run directly by the central government. For example, China offers some domestic producers tax rebates and subsidies to promote exports, while imposing quotas and tariffs to discourage imports, such as a 25 percent tariff on auto-parts imports.

China has tried to soothe concerns about the trade deficit. Most importantly, Chinese authorities in 2005 began allowing the yuan to rise modestly against the dollar. As a result, the yuan rose a total of 20 percent against the dollar between July 2005 and July 2010. China also announced plans to cut tax rebates paid to its exporters and to lower some import duties. But these measures seemed to have had little effect on America's monster deficit with China.

Prior to an international finance meeting in June 2010, a key European Central Bank official said "the rigidity of the Chinese monetary regime had slowed down the recovery in the developed world." Facing political pressure to do something, China announced that it would allow the exchange rate to become more flexible. We'll see.

SOURCES: Lee Branstetter and Nicholas Lardy, "China's Embrace of Globalization," NBER Working Paper 12373 (July 2006); Jason Dean and Shen Hong, "China Central Bank Tames Yuan Appreciation Hopes," *Wall Street Journal*, 22 June 2010; Yujan Zhang, "China Steel Group Accuses U.S. Lawmakers of Protectionism," *Wall Street Journal*, 5 July 2010; and Michael Casey, "Showdown Looms Over China's Currency at G-20," *Wall Street Journal*, 11 June 2010.

### QUESTION

1. Why would China want its own currency to be undervalued relative to the U.S. dollar? How does China maintain an undervalued currency?