FEDERAL RESERVE BANK of ST. LOUIS
CENTRAL TO AMERICA'S ECONOMY®

INSIDE THE VAULT | SPRING 2004
https://www.stlouisfed.org/publications/inside-the-vault/spring-2004/big-mac-economics

Big Mac Economics

A familiar sight to international travelers is the golden arches of McDonald's. With restaurants in 120 countries, McDonald's offers the world a fairly standard menu of items at prices listed in many local currencies. Because McDonald's is present in so many countries and has such highly standard menus, in 1986 *The Economist* began an annual feature comparing prices of the Big Mac sandwich in different countries as a tongue-in-cheek exercise explaining relative currency valuations. In fact, this hamburger price analysis provides an example of the economic principle of Purchasing Power Parity (PPP)—as well as an illustration of why the principle often does not appear to hold as a practical matter.

The accompanying table shows the price of a Big Mac in various countries in April 2003. The first column lists prices in local currencies. Dividing this price by the exchange rate in the second column yields the price in U.S. dollars, which is shown in the third column. These directly comparable U.S. dollar prices show a wide disparity, ranging from $1.40 or less in China, Malaysia, Philippines, Russia and Thailand, to $3.60 or more in Denmark, Sweden and Switzerland. This range seems to violate the principle of PPP, which suggests that the Big Mac should have the same price everywhere.

Big Mac Prices Around the World

Country	Big Mac Price (Local Currency)	Exchange Rate (Local Currency/Dollar)	Big Mac Price (Dollars)	Net Hourly Wage (Dollars)	Minutes of Work to Buy a Big Mac
Argentina	4.10	2.88	1.42	1.70	50
Britain	1.99	0.63	3.14	12.30	15
Canada	3.20	1.45	2.21	9.35	14
China	9.90	8.28	1.20	2.40	30
Denmark	27.75	6.78	4.09	14.40	17
Hong Kong	11.50	7.80	1.47	7.00	13
Japan	262.00	120.00	2.18	13.60	10
Malaysia	5.04	3.80	1.33	3.10	26
Mexico	23.00	10.53	2.18	2.00	65
Philippines	65.00	52.50	1.24	1.20	112
Poland	6.30	3.89	1.62	2.20	44
Russia	41.00	31.10	1.32	2.60	30
South Africa	13.95	7.56	1.85	3.90	28
South Korea	3,300.00	1,220.00	2.70	5.90	27
Sweden	30.00	8.34	3.60	10.90	20
Switzerland	6.30	1.37	4.60	17.80	16
Taiwan	70.00	34.80	2.01	6.90	17
Thailand	59.00	42.70	1.38	1.70	49
United States	2.71	—	2.71	14.30	11
Venezuela	3,700.00	1,598.00	2.32	2.10	66
Euro area	2.71	0.91	2.98	9.59	19

SOURCES: *The Economist*, April 26, 2003; UBS, 2003; and authors' calculations
Partial list

The Law of One Price

The underlying foundation of PPP is known as the "law of one price," which states that the price of a particular commodity—say, sesame seeds—should be equal in different countries after accounting for exchange rates between currencies. If sesame seeds were less expensive in one country than in another, a trader could buy sesame seeds in the low-price country and sell them in the higher-price country at a profit. This type of activity, known as arbitrage, would tend to drive the price of sesame seeds higher in the low-price country and lower in the high-price country, until no further profit opportunities existed. This would drive the prices in different countries toward equality. Since the law of one price extends to cover groups of tradable commodities, one would expect the price of "two all-beef patties, special sauce, lettuce, cheese, pickles, onions on a sesame seed bun" to be consistent. On the contrary, as the chart illustrates, the price varies considerably around the world.

More than Just Sesame Seeds

Much of the discrepancy between Big Mac prices in different countries is explained by differences in wages and incomes rather than the cost of sesame seeds. A Big Mac—like many other goods—is more than just the sum of its components. The sandwiches are prepared and served by local workers, in restaurants that are also built and maintained by the domestic labor force. Thus the local wage rate is a factor in the total cost of serving a Big Mac. In addition, the local level of earnings affects the demand for McDonald's products. The fourth column of the table in the chart shows average net wages. It is clear from these figures that locations with lower wages tend to have lower Big Mac prices, while those with higher wages tend to have higher Big

Mac prices. It is interesting to note, however, that in countries with relatively high prices, the working time required to purchase a Big Mac turns out to be relatively low.

A Taste of Economic Principles

PPP is generally recognized as a long-run property of international price determination, and there is evidence to suggest that price discrepancies between similar countries tend to dissipate over time. Research has found that adjustments to prices that move toward PPP occur through both exchange rate changes and local currency prices. Originally intended as a bite-sized way to learn about the basics of Purchasing Power Parity, the Big Mac index has become a standard in and of itself. It has been cited often in textbooks and has been the subject of serious research on PPP. Who knew a burger survey could provide such a tasteful lesson in international economics?

Questions for Classroom Discussion

1. Why did *The Economis*t publication feature the Big Mac in order to explain relative currency valuations?
2. What are the ingredients of a Big Mac?
3. What is arbitrage, and how does it apply to the law of one price?
4. Why is it that the working time required to purchase a Big Mac is relatively low in countries with relatively high prices?

This article was adapted from "Burger Survey Provides Taste of International Economics," which was written by Michael R. Pakko and Patricia S. Pollard and appeared in the January 2004 issue of The Regional Economist, *a St. Louis Fed publication.*

FEDERAL RESERVE BANK of ST. LOUIS
CENTRAL TO AMERICA'S ECONOMY®

INSIDE THE VAULT | SPRING 2004
https://www.stlouisfed.org/publications/inside-the-vault/spring-2004/q--a

Q & A

What is Check 21?

The Check Clearing for the 21st Century Act, also known as the Check 21 Act, affects the way checks are processed in the United States. This act promotes check truncation and electronic check presentment. In other words, under Check 21 a bank can substitute a machine-readable copy of a check (a "substitute check") for the original check for collection or return. Substitute checks that meet the requirements of the act would be the legal and practical equivalent of the original check.

When will Check 21 go into effect?

The president signed the bill into law on Oct. 28, 2003, and the act's effective date is Oct. 28, 2004.

What's the purpose of Check 21?

It allows financial institutions to stop shipping customers' checks back and forth to clear them. Instead, the institutions can send electronic images of the checks. This will lead to cheaper, faster and safer check processing. At least $250 million a year is being spent now on moving checks across town and across the country; so, estimates of eventual savings are large. In addition, the number of lost, damaged or stolen checks should be greatly reduced.

Where will substitute checks be used?

Bank employees may see a substitute check any place that they would see an original check, a photocopy, or an image. Bank customers may see a substitute check when they receive their periodic statement, when viewing check images via online banking, if they request a copy of the paid check from the bank or as a deposited check that is returned unpaid. For more information on Check 21, refer to http://www.frbservices.org/serviceofferings/check/check_21.html.

FEDERAL RESERVE BANK of ST. LOUIS
CENTRAL TO AMERICA'S ECONOMY®

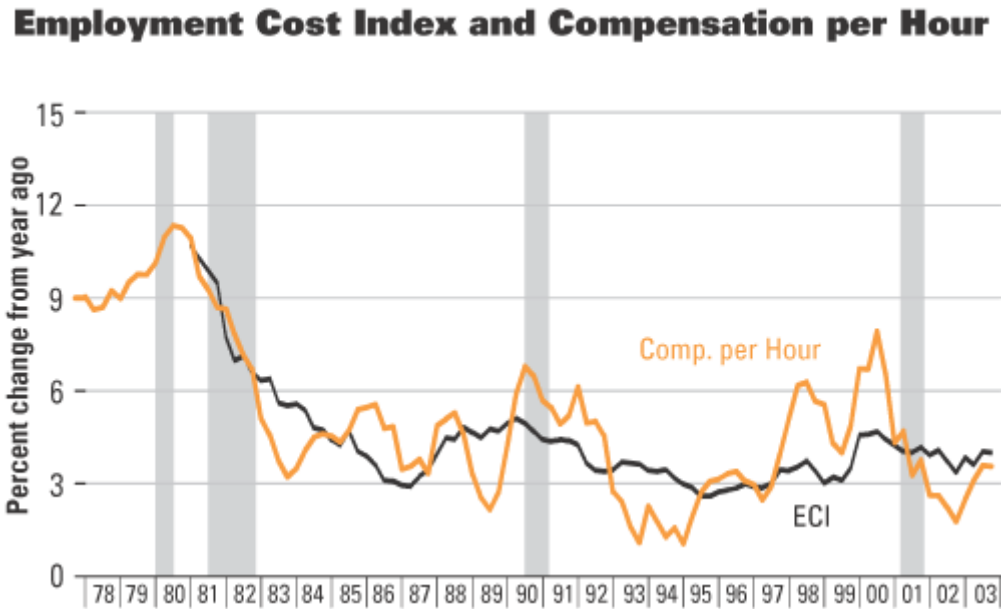
INSIDE THE VAULT | SPRING 2004
https://www.stlouisfed.org/publications/inside-the-vault/spring-2004/economic-snapshot

Economic Snapshot

1st Quarter 2004

	Q2-03	Q3-03	Q4-03	Q1-04
Growth Rate—Real Gross Domestic Product	3.1%	8.2%	4.1%	4.2*
Inflation Rate—Consumer Price Index	0.6%	2.3%	0.7%	3.6%
Civilian Unemployment Rate	6.1%	6.1%	5.9%	5.6%

**Advance estimate*



Graph from April 2004 issue of National Economic Trends*.*

What is the difference in the ECI and Compensation per Hour?

The ECI measures quarterly changes in compensation costs for nonfarm private and state and local government workers. ECI compensation refers to a fixed sample of jobs, while Compensation per Hour covers all workers in the nonfarm business sector in a given quarter. In both cases, compensation includes wages and salaries plus benefits.

What agency collects employment data?

The U.S. Department of Labor's Bureau of Labor Statistics conducts the National Compensation Survey (NCS). The NCS makes it easy to find information on occupational wages paid in or near your area. The NCS includes information on:

- average hourly wages for up to 480 occupations;

- weekly and annual earnings and hours for full-time workers; and
- wage data shown by industry, occupational group and job level.

For more information, see the Bureau of Labor Statistics web site at www.bls.gov.
