

Inflation-Adjusted Return

What is the 'Inflation-Adjusted Return'

The inflation-adjusted return is the measure of return that takes into account the time period's [inflation](#) rate. Inflation-adjusted return reveals the return on an investment after removing the effects of inflation. Removing the effects of inflation from the return of an investment allows the investor to see the true [earning potential](#) of the security without external economic forces.

BREAKING DOWN 'Inflation-Adjusted Return'

This [real rate of return](#) may be used to compare investments, especially those across international borders, as each country's inflation rate is accounted for in the return. Without adjusting for inflation, an investor may get an entirely different picture from reality when analyzing an investment's performance. For example, assume a bond investment is reported to have earned 2% in the previous year. This looks like a gain, but perhaps inflation last year was 2.5%. Essentially, this means the investment did not keep up with inflation and effectively lost 0.5%.

As another example, assume a stock returned 12% last year and inflation was 3%. An approximate estimate of the real rate of return is 9%, or the 12% reported return less the inflation amount.

Calculating the Inflation-Adjusted Return

$$\text{Inflation - Adjusted Return} = \frac{(1 + \text{Return})}{(1 + \text{Inflation Rate})} - 1$$

Calculating the inflation-adjusted return requires three basic steps. First, the return on the investment must be calculated. Second, the inflation for the period must be calculated. And third, the inflation amount must be geometrically backed out of the investment's return. As an example:

Assume an investor purchases a stock on Jan. 1 of a given year for \$75,000. At the end of the year, on Dec. 31, the investor sells the stock for \$90,000. During the course of the year, the investor received \$2,500 in dividends. At the beginning of the year, the Consumer Price Index (CPI) was at 700. On Dec. 31, the CPI was at a level of 721.

Step 1 is to calculate the investment's return using the following formula:

$$\text{Return} = (\text{Ending price} - \text{Beginning price} + \text{Dividends}) / (\text{Beginning price}) = (\$90,000 - \$75,000 + \$2,500) / \$75,000 = 23.3\%$$

Step 2 is to calculate the level of inflation over the period using the following formula:

Inflation = (Ending CPI level - Beginning CPI level) / Beginning CPI level = (721 - 700) / 700 = 3%

Step 3 is to geometrically back out the inflation amount using the following formula:

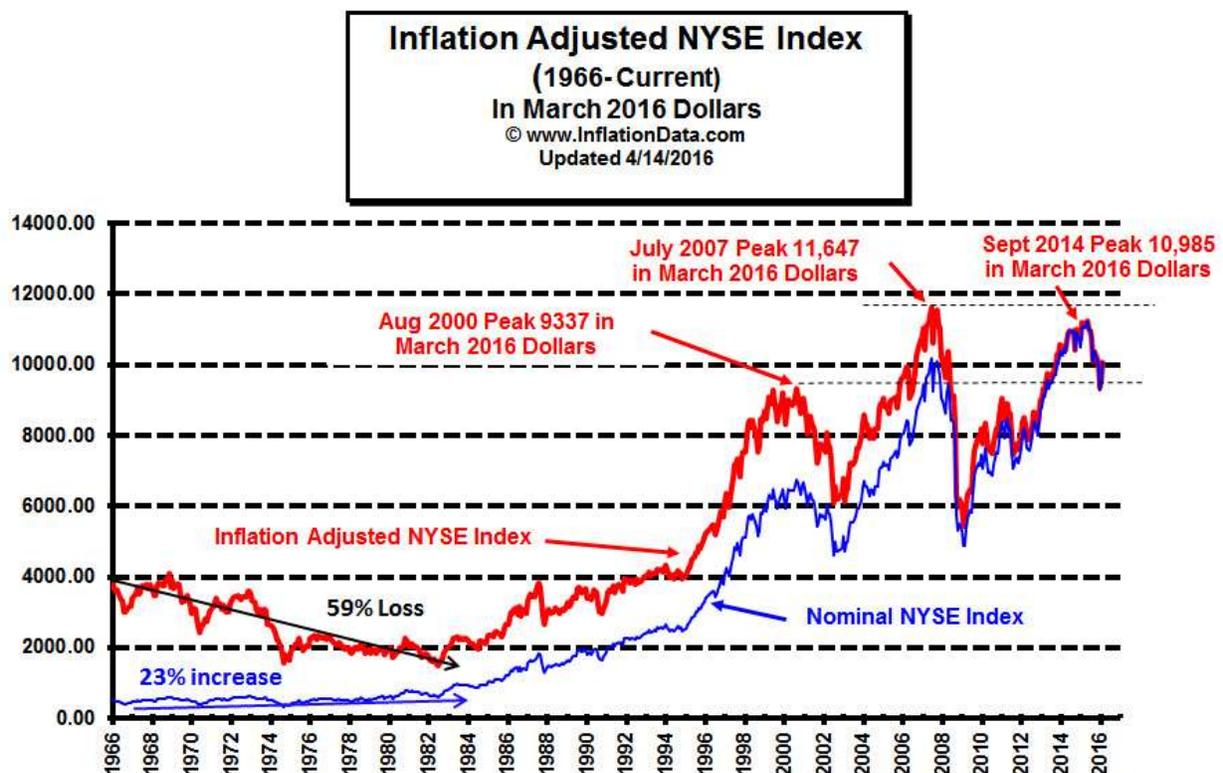
Inflation-adjusted return = (1 + Stock Return) / (1 + Inflation) - 1 = (1.233 / 1.03) - 1 = 19.7%

Since inflation and returns compound, it is necessary to use the formula in step three. If an investor simply takes a linear estimate by subtracting 3% from 23.3%, he arrives at an inflation-adjusted return of 20.3%, which in this example is 0.6% too high.

Above is from: http://www.investopedia.com/terms/i/inflation_adjusted_return.asp

Jeff's Notes:

Inflation-adjusted value is historical data that has been adjusted to match the **current** value, and is also called **real** value (vs. normal value [https://en.wikipedia.org/wiki/Real_vs_nominal_value_\(economics\)](https://en.wikipedia.org/wiki/Real_vs_nominal_value_(economics))). So, inflation-adjusted value is higher than its original normal value. For example:

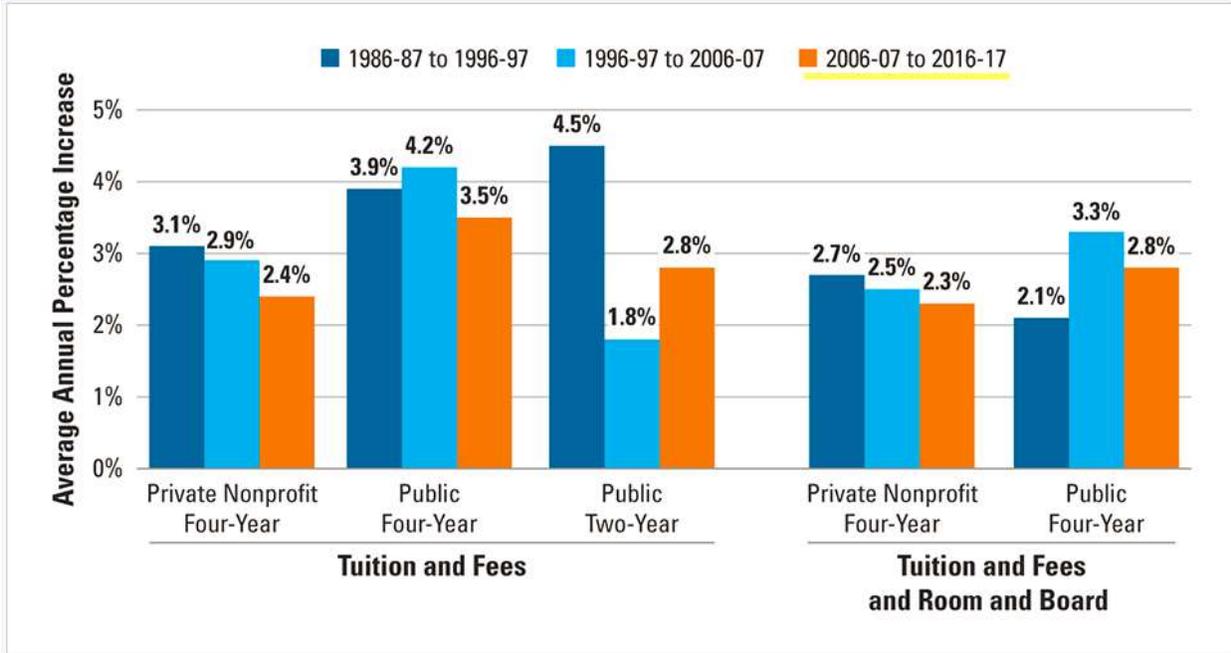


To compare current rate with historical rate, it will be more accurate after historical data is adjusted for inflation. For instance:

Figure 4: Average Annual Percentage Increase in Inflation-Adjusted Published Prices by Decade, 1986-87 to 2016-17

[Download Data in Excel](#)

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Source: <https://trends.collegeboard.org/college-pricing/figures-tables/average-rates-growth-published-charges-decade>

Impact of Taxes and Inflation: “a safe way to lose money?”

Assumption: 4% return on investments, 28% federal income tax bracket, 3% inflation rate

Initial investment	\$10,000
Return after one year (4%)	\$ 400
Less federal income taxes (28%)	-\$ 112
Net after-tax return	\$ 288
Net after-tax investment	\$10,288
Divide by 1.03 (3% inflation)	/ 1.03
Net after 3% inflation	\$ 9,988
Total return after inflation and taxes	-0.12%

(Value-with-inflation = Value-without-inflation + Value-without-inflation * Inflation-rate)