**WORKSHEET 8: ADJUSTING PRICES FOR INFLATION[[1]](#footnote-1)**

**What it is**: Inflation is an expression of the increase in prices in the overall economy. In particular, inflation is measured based on those goods and services that represent typical items in the average households’ consumer food basket such as grain and flour, other food items, drinks, fuel and power, clothing, household goods, school fees, etc.

*Nominal prices*: prices that have not been adjusted for inflation. The nominal price is equal to the money that is paid for a unit of a good or service in the market. These are the prices that are observed in the market.

*Real prices*: prices that have been adjusted for inflation. Real prices hold the value of currency constant, and allow you to compare the exchange value of a good or service in different time periods. Unlike nominal prices, real prices are not observed in the market, and are calculated.

*Consumer Price Index (CPI)*: The CPI is a measure of change in the purchasing power of a currency. It expresses current prices of a typical consumer basket of goods and services in terms of the prices during the same period in a previous year, to show the effect of inflation on purchasing power.

**Data requirements**: Nominal monthly price data (ideally multiple years); corresponding monthly CPI or inflation rates.[[2]](#footnote-2)

**How to calculate and analyze real prices (i.e. prices adjusted for inflation)**:

1. Calculate real prices using the CPI or the inflation rate (depending on what is available).

REAL PRICECY= (CPIBY/CPICY)\*NPCY

OR

REAL PRICE = Nominal price / (1 + inflation rate)

Where:

CY = Current year

BY = Base year

NP = Nominal Price

1. Graph real prices against nominal prices.

**Example:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **A** | **B** | **C** | **D** | **E** | **F** |
| **Year** | **Month** | **Nominal Price** | **CPI** | **Inflation Rate** | **Real Price** |
| 2007 | 10 | 1423 | 100.90 | 1% | 1410 |
| 2007 | 11 | 1422 | 102.22 | 2% | 1391 |
| 2007 | 12 | 1423 | 103.60 | 4% | 1373 |
| 2008 | 1 | 1438 | 105.45 | 5% | 1364 |
| 2008 | 2 | 1505 | 108.10 | 8% | 1392 |
| 2008 | 3 | 1632 | 109.23 | 9% | 1494 |
| 2008 | 4 | 1684 | 109.54 | 10% | 1538 |
| 2008 | 5 | 1726 | 110.02 | 10% | 1569 |
| 2008 | 6 | 1834 | 111.48 | 11% | 1645 |
| 2008 | 7 | 1869 | 112.40 | 12% | 1663 |
| 2008 | 8 | 1934 | 113.32 | 13% | 1707 |
| 2008 | 9 | 1987 | 114.85 | 15% | 1730 |
| 2008 | 10 | 2089 | 116.23 | 16% | 1797 |
| 2008 | 11 | 2211 | 117.90 | 18% | 1876 |
| 2008 | 12 | 2270 | 120.76 | 21% | 1879 |
| 2009 | 1 | 2217 | 122.36 | 22% | 1812 |
| 2009 | 2 | 2035 | 123.19 | 23% | 1652 |
| 2009 | 3 | 2165 | 123.53 | 24% | 1753 |
| 2009 | 4 | 2591 | 125.17 | 25% | 2070 |
| 2009 | 5 | 2667 | 126.16 | 26% | 2114 |
| 2009 | 6 | 2530 | 127.53 | 28% | 1984 |
| 2009 | 7 | 2446 | 128.13 | 28% | 1909 |
| 2009 | 8 | 2442 | 129.57 | 30% | 1885 |
| 2009 | 9 | 2404 | 129.74 | 30% | 1853 |
| 2009 | 10 | 2382 | 130.49 | 30% | 1825 |
| 2009 | 11 | 2348 | 131.48 | 31% | 1786 |
| 2009 | 12 | 2384 | 132.75 | 33% | 1796 |
| 2010 | 1 | 2433 | 134.05 | 34% | 1815 |
| 2010 | 2 | 2475 | 135.22 | 35% | 1831 |
| 2010 | 3 | 2479 | 136.11 | 36% | 1821 |
| 2010 | 4 | 2480 | 136.72 | 37% | 1814 |

**Interpretation:** In the presence of inflation, the analysis of nominal prices can lead to different conclusions than the analysis of real prices. The above example illustrates this point.

The nominal price of maize in the Lusaka market was 1423 ZMK/kg in October 2007, 2089 ZMK/kg in October 2008 and 2480 ZMK/kg in April 2010. Using only nominal prices, the analyst could conclude that the price of maize has been increasing over time, which could suggest that maize became increasingly scarce in the market relative to demand. However, using real prices, the price of maize has gone up only minimally over time in real terms.

By analyzing prices in nominal prices alone, analysts will conclude that consumers have become significantly worse off as a result of the price increase in maize. The conclusion will be false because consumers have instead seen only minimal increased in the prices of maize in real terms. The high nominal price of maize in 2010 did not reflect a shortage of maize, but rather was a result of price inflation.

**Limitations of using real prices:** In most countries, staple food prices account for between 20 to 25 percent of the CPI. This means that in countries where food prices are rising faster than the remaining basket of goods and services in the CPI, deflating prices using the CPI will underestimate the extent of the real food price increases (and vice versa). In these cases, adjusting food prices by the Food Price Index may be a better indication of the real price of food.

Real prices also carry very little information to consumers and other market actors because they observe nominal prices. It is therefore important to report nominal prices but analyze both nominal and real prices.

1. *Excerpts taken from FEWS NET Markets Guidance, No. 3.* For full document see: [*http://www.fews.net/sites/default/files/MT%20Guidance\_Price%20Adjustment%20for%20Inflation\_No%203\_En.pdf*](http://www.fews.net/sites/default/files/MT%20Guidance_Price%20Adjustment%20for%20Inflation_No%203_En.pdf)(a different example is used in this worksheet than in the FEWS paper) [↑](#footnote-ref-1)
2. Monthly CPI and inflation rates are typically published by a country’s bureau of statistics and can be found online. [↑](#footnote-ref-2)