

CPI AND INFLATION INDICES,

Many time series available for student projects are in nominal dollars. Retail sales, GDP, personal income, average claim severities, insurance premiums, stock prices, use nominal dollars.

The ARIMA process conflates the time series itself with the price level. The simplest way to form a stationary time series is to take logarithms and first differences. This method has two drawbacks:

- If inflation varies over time, the resulting time series conflates the time series you are examining with the change in the inflation rate.
- If the original time series has an autoregressive or moving average component (in addition to inflation), taking first differences makes it harder to model the time series.

Your student project produces a better ARIMA fit if you first convert your time series to real dollars.

The proper inflation index is disputed for most time series. The most common index is the seasonally adjusted CPI. We show the U.S. city average for all items. Many other indices are available, and you may examine various government web sites for other indices.

Insurance time series may use the medical CPI, since many insurance loss trends follow medical costs. Recent college graduates are often interested in the college costs CPI.

The Excel work-sheet shows seasonally adjusted and non-seasonally adjusted indices. Your student project may use a simple seasonal adjustment and compare it with the seasonally adjusted index. See which index is better modeled with an ARIMA process.