

# Adjusting Data in Global Financial Data

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Global Financial Data provides its users choices that are unavailable from other data vendors. Our goal is to offer subscribers as many choices as possible in accessing Data in order that the specific needs of each customer are met.

Whereas most other data providers adjust historical data for the customer to provide a consistent series, GFD keeps all data in the original currency and values. This is true of both our economic and financial data, as well as our security data.

Global Financial Data offers 10 different ways customers can adjust data, where appropriate from the original data.

1. Split Adjusted Data
2. Total Returns
3. Annualized Flows
4. Period Percentage Change
5. Average
6. Inflation Adjustment
7. Currency Conversion
8. Legacy Currency Conversion

## **1. Split Adjusted Data**

Both security data and economic and financial data can be adjusted for splits.

Most people think of a split adjustment as applying to individual securities only. The price of a security can decline whenever the company issues additional shares through a stock split or a stock dividend. In addition to this, the value of the shares can be affected by a stock distribution or a rights distribution which has no impact on the number of shares outstanding. GFD keeps track of these four types of changes, stores historical security prices at their market prices, and then allows the user to adjust for these four changes.

GFD also includes split adjustments for economic and financial data where appropriate. This can occur for two reasons. An index may increase in value dramatically over time because of inflation, the calculation of total returns, or both. To avoid the rounding problems which storing small or large numbers can create, we keep periodically adjust the numbers by a factor of 1000 or 1,000,000. Examples would be the Consumer Price Indices for Argentina and Brazil. Similarly, the long-term Total Return Stock Indices for the United States and United Kingdom are adjusted to avoid rounding problems.

More importantly, any historical data that is measured in a national currency is kept in the original currency. The data can then be adjusted for any currency changes that have occurred over time.

GDP Data for Brazil are adjusted in 1967, 1986, 1989, 1993 and 1994 because currency changes occurred in each of these years. French GDP data are adjusted in 1960 when the Franc Nouveaux was introduced and in 1999 when the Euro replaced the French Franc.

If the user wishes to see when these currency changes occurred in the files, they can look at the Corporate Actions table that is downloaded with the file. This table will detail when the changes occurred, what the change was, and why the change occurred (1 Real exchanged for 2750 Cruzeiros).

The default choice for any download is split-adjusted in order that the user can download a continuous series without any significant breaks in the data. However, if the user wants to download the data in the original currency, or a security at its original market prices, they can uncheck the Split-Adjusted box and obtain the data in its original numbers.

## **2. Total Returns**

The Total Return choice applies only to individual securities, not to economic and financial data. Where both price and total return indices are available for an index such as the S&P 500 or Dow Jones Industrial Average, these are placed in separate files.

Most stocks pay dividends and most bonds pay interest. In order to calculate the total return on a stock or bond, any cash provided to the shareholders must be included. The Total Return button calculates the total return to the shareholder, not only by adjusting for any stock splits, stock dividends, rights distributions or stock distributions, but also for any cash dividends, interest payments or assessments that are placed on the shareholder. For many stocks and bonds, the majority of the return to the shareholders may come from the cash payments that are made by the company, so including these payments are essential in determining the return to the owner.

## **3. Annualized Flows**

Data come in two forms, stocks and flows. Stocks occur at one point in time while flows occur over time. Examples of stocks are the Money Supply, Unemployment, Security Prices, etc. Examples of flows are GDP, Imports and Exports, Government Revenues and Expenditures, etc. If you are uncertain as to whether a particular series is a stock or a flow, look at the description for the file under Stock/Flow, and it will tell you whether the file is a Stock, or whether the most recent data have a daily, weekly, monthly, quarterly or annual flow.

Measuring stocks and flows over time requires different techniques. If you have monthly data for an index, the money supply or the price of a stock, then the annual data should give you the highest observation for the year, the lowest observation and the closing observation. For GDP, imports and exports or government revenue, the annual data should tell you the total amount of GDP, imports and exports or government revenue over the course of the year, not the highest, lowest and last monthly or quarterly observations.

The default choice for economic and financial data that are flows is Annualized Flow (and split adjusted, see above). If you want to see the original flow values for a quarter or month, simply uncheck the Annualized Flow box.

#### **4. Period Percentage Change**

For some economic and financial data, the change in the index or its values is of more concern than the actual values. For example, most people want to know the level of consumer price inflation or real GDP growth, not the index number for that series. Choosing the Period Percentage Change would allow you to determine the monthly change in Consumer Prices or the quarterly change in GDP.

#### **5. Average**

In order to avoid the impact of outliers in the data, some analysts prefer to use an average of the values over a period of time, rather than the final observation for stock data or the final observation of the year if the economic variable is a flow. Choosing average allows you to get an average of the observations for the granularity you have chosen. This can be combined with the Stock Split and Annualized Flow choices where appropriate.

#### **6. Inflation Adjustment**

Over the past 100 years, the United States has averaged 3% inflation per annum, and other countries have seen much higher rates of inflation. Changes in inflation can often be greater than the changes in the economic variables making it difficult to determine what the real change was. Consequently, it is important to be able to eliminate the impact of inflation on the prices of goods and economic variables.

For Gross Domestic Product, the GDP Deflator is calculated in order to adjust for changes in the prices of goods. GFD provides both nominal and real measures of GDP where they are available. Inflation adjustments for the GDP Deflator will differ from inflation adjustments for Consumer Prices. The GDP Deflator reflects changes in the prices of all goods produced within a country, whereas the Consumer Price Index reflects changes in the prices of goods that people consume. If a country does not produce oil, then changes in the price of oil would be reflected in the Consumer Price Index, but not in the GDP Deflator.

Files are adjusted for inflation using the Consumer Price Index for the country or currency whence the data was collected. In most cases, the country and the currency are the same, but in the case of the Euro countries, the inflation in that country is used (France or Italy), and in some cases, the accounts of a country may be kept in another currency, such as the US Dollar or Euro. If that is the case, then the series is adjusted for the inflation rate that represents that currency.

Files that are measured in the national currency are adjusted by dividing the values for that index or economic variable by the currency Consumer Price Index. Interest Rates are adjusted by subtracting the inflation rate from the nominal interest rate to generate the Real Interest Rate.

#### **7. Currency Conversion**

This tool allows you to choose to convert the data for economic and financial data, whether it is measured in National Currency, such as GDP, or an index such as a stock index, such as the S&P 500 to be converted into another currency. GFD has daily exchange rates going back to the 1920s for all major currencies and back into the 1800s for some. This enables us to convert the value of any relevant file on that day to another currency.

## **8. Legacy Currency Conversion**

This tool is part of the Currency Conversion and is provided for the countries that have adopted the Euro. If you choose Split-Adjusted for any Euro country, the data prior to the adoption of the Euro will be adjusted using the fixed currency conversion rate for that currency. If on the other hand, you want to measure the values for that file in the legacy currency (Lira, Francs, Marks), then you can choose the Legacy Currency in the drop down. This will show all historical and current values in Marks, Lira, Francs or any other currency. This gives you three choices for downloading data from a Euro country: 1) Historical data adjusted to the Euro, 2) Historical data adjusted to the legacy currency, 3) Historical data unadjusted to download in the legacy currency until the Euro was adopted and in Euros thereafter.

## **9. Combinations**

Where relevant, these download tools can be combined to obtain additional files. For example, inflation adjusted can be combined with per capita to determine inflation adjusted values per capita. Per capita can be combined with conversion into another currency so that GDP could be measured in US Dollars across several countries. These and many other combinations can be calculated on the fly to deliver the exact data you need.