**JARQUE BERA TEST FOR NORMAL DISTRIBUTION**

The Jarque Bera test is a statistical process used to assess whether the analyzed dataset follows a normal distribution. It is commonly applied in finance to test the normality of asset returns. Basically, it is tested whether the returns are Gaussian. This is important because many financial and statistical models nowadays assume that data, in this case asset returns, are normally distributed. To understand the risk of the normality assumption, a gaussian distribution assumes that extreme outcomes, like huge gains or losses, are rare. But markets have often “fat tails”, meaning that extreme events happen more often than the normal model predicts.

To test the data for normality, Jarque-Bera uses two key factors: Skewness and Kurtosis.

**Skewness:** It represents the symmetry of a distribution. In a normal distribution the value of the skewness is equal to zero, meaning that it is perfectly symmetric. A positive skewness represents a distribution whose tail is longer on the right side, with more extreme positive returns. Lastly, a negative skewness distribution has a longer tail on the left side and therefore more extreme negative returns.

**Kurtosis:** Measures the extremes heaviness of the distribution. For a normal distribution is the value of the kurtosis equal to 3. A higher than 3 kurtosis has more extreme values, outliers, because of the fat tails. A low value of the kurtosis means there are fewer extreme values.

A black background with white text

AI-generated content may be incorrect.**Interpretation of the Test Statistic:**

The formula of the Test Statistic is:

n: Sample size

S: Skewness of the data

K: Kurtosis of the data

Based on a critical value, we compare the result of the JB statistic with it and take the decision of whether reject or accept the null hypothesis, which is that our data follows a normal distribution.

**Implementation of the Jarque-Bera test with our chosen assets:**