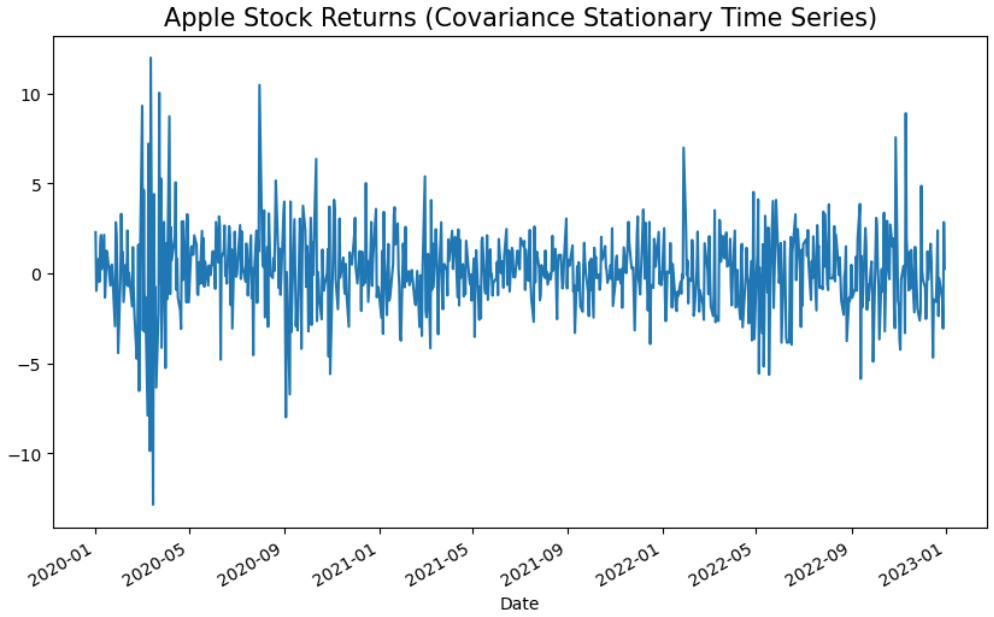
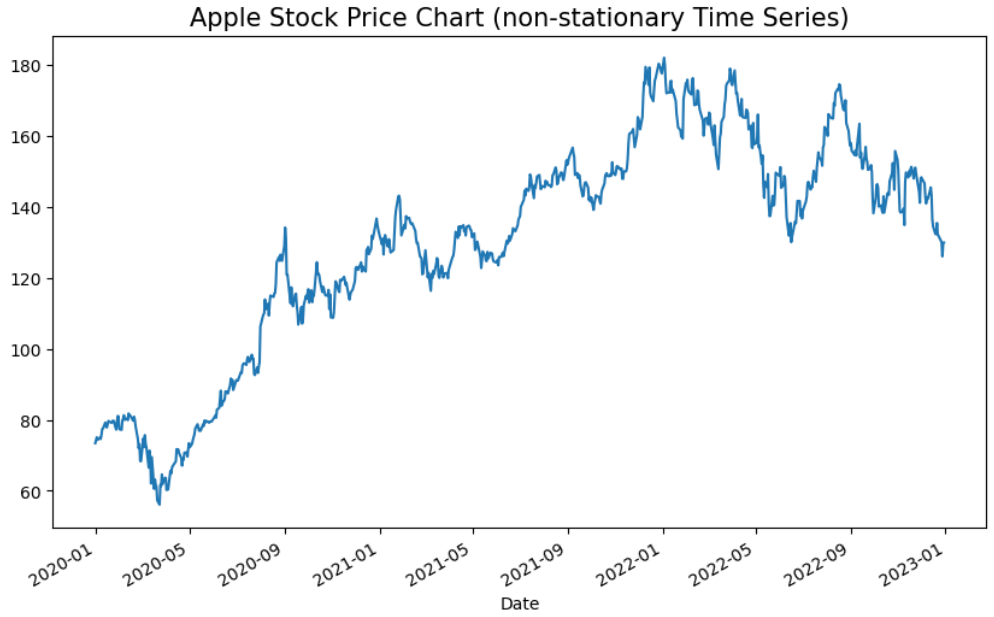
Covariance Stationarity

A **Covariance Stationary Time Series** must have a **finite mean-reverting** level (it oscillates around a mean value with close to constant variance). Example for Covariance Stationary Time Series: Financial Returns (Stock Returns)

A **non-Stationary Time Series** has no constant mean and variance and typically follows a trend. Example for non-stationary Time Series: Financial Prices (Stock Prices)





Why is Covariance Stationarity important?

In **Linear Regression Models with Time Series Data** (dependent and independent variables), all Time Series **must be Covariance Stationary** (see right table for exceptions). When a Series isn't covariance stationary, any estimations and regression coefficients from the Model will have **no economic meaning**.

!!!Using non-stationary Time Series in Regression Analysis is one of the most made mistakes!!!

Overview: Can Linear Regression be used to model the Relationship between multiple Time Series?