**OBJECTIVE**

The objective of the "Forecasting with Time-Series Data (Univariate)" project is to employ regression and time series models to accurately predict future values based on historical trends. Leveraging statistical methods and mathematical algorithms, this project aims to analyze and model univariate time-series data, enabling robust predictions. By implementing advanced forecasting techniques, the goal is to enhance decision-making processes and optimize resource planning in various domains.

Why did I choose Goldman Sachs?

I chose Goldman Sachs for the "Forecasting with Time-Series Data (Univariate)" project due to its prominent role in the financial markets. As a leading global investment bank, Goldman Sachs operates in a dynamic environment influenced by various economic factors. Analyzing its historical stock prices through univariate time-series data provides valuable insights into market trends, aiding in future predictions. The project not only offers an opportunity to explore the intricate relationship between financial indicators but also contributes to refining forecasting models, facilitating informed decision-making for investors and financial analysts. The relevance and complexity of Goldman Sachs' market dynamics make it an ideal subject for this analysis.
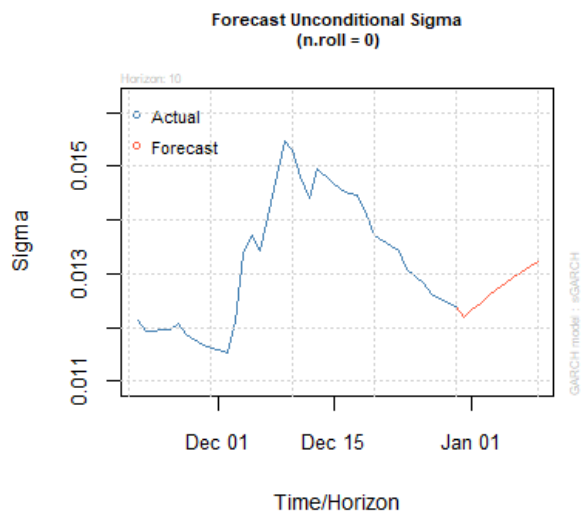
INTERPRETING THE GRAPHS:
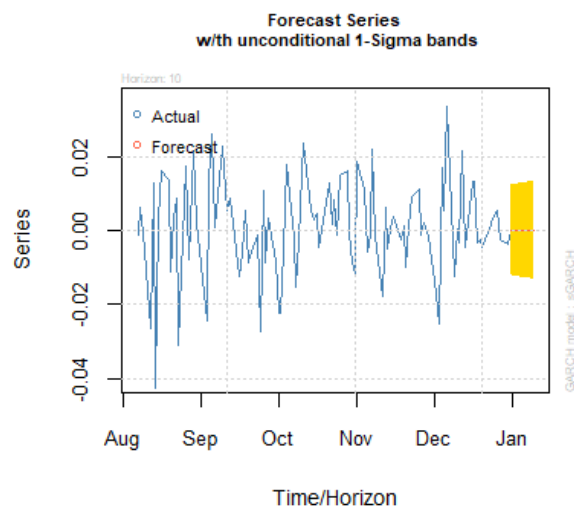
This graph depicts a forecast for Goldman Sachs' stock price over a certain timeframe, along with the range within which the actual price is likely to fall.

The graph depicts a forecast series with unconditional 1-sigma bands. This type of forecast is used to predict the future value of a time series, along with a range of values that the actual value is likely to fall within.

The forecast series is for a time series called "Series." The x-axis is labeled "Time/Horizon" and the y-axis is labeled "Series." The graph shows a forecast for the series over a period of time, with the actual values plotted as well. The unconditional 1-sigma bands are shown as two dotted lines above and below the forecast line.

Forecast Unconditional Sigma
(n.roll = 0)

Horizon: 10

Sigma

0.015
0.013
0.011

○ Actual
○ Forecast

Dec 01   Dec 15   Jan 01

Time/Horizon

GARCH model : sGARCH

This graph depicts a **comparison between a forecast for the volatility (sigma) of a time series and the actual volatility**. The blue line represents the **actual sigma**, while the green line and shaded area represent the **predicted range based solely on the current value** (unconditional forecast).

This is a graph of a forecast unconditional sigma. The forecast unconditional sigma is a graph that shows the number of days that the forecast unconditional sigma is higher than the actual forecast unconditional sigma.
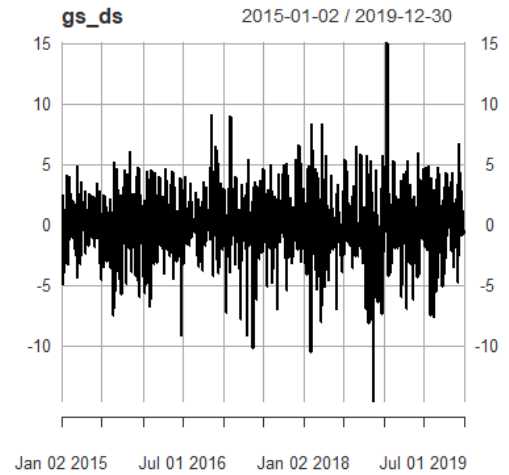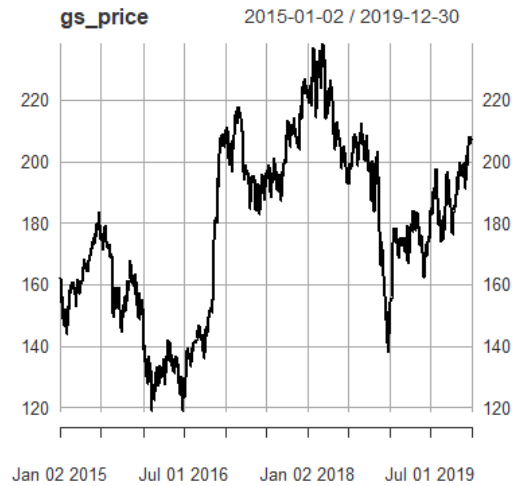
In the graph, the y-axis represents the sigma value and the x-axis represents time. The blue line represents the actual sigma value, and the green line represents the forecast sigma value. The shaded area between the two lines represents the range of possible values for the actual sigma, based on the forecast.

The text at the top of the graph indicates that the forecast is unconditional, meaning that it does not consider any past data. The text also indicates that the rolling window size is 0, which means that the forecast is based on the current value only.

Overall, the graph shows that the forecast sigma is higher than the actual sigma for most of the period. This suggests that the forecast is predicting that the volatility of the time series will be higher than it is. However, it is important to note that the forecast is only an estimate, and the actual volatility may be higher or lower than the forecast.

Values	
arima_order	num [1:3] 1 0 2
custom_colors	chr [1:15] "#0B0405FF" "#1E111FFF" "#2E1E3CFF" "#3B2D5AFF" "#413D7BFF" "#3E5095FF" "#37659EFF" "#357BA2FF" "#3…
frequency	12
garch_residuals	num [1:1256] NA 0.565 0.364 0.486 0.5 ...
gs_residuals	num [1:1257] 0 -5.1 -3.15 2.32 2.45 ...
gs_ts	Time-Series [1:1257, 1] from 1 to 106: NA -5.07 -3.18 2.3 2.5 ...
n_ahead	50
p_garch	1
q_garch	1

Some other graphs:

gs_price — 2015-01-02 / 2019-12-30

gs_ds — 2015-01-02 / 2019-12-30

PACF of GS Difference (Stationary) Serie

gs_ret_sq — 2015-01-05 / 2019-12-30

gs_ret — 2015-01-05 / 2019-12-30