EXODUSPOINT

Coding Assignment

ABOUT EXODUSPOINT

ExodusPoint Capital, founded in 2017 by Michael Gelband and Hyung Lee, began managing investor capital in 2018. The firm employs a global multi-strategy investment approach, seeking to deliver compelling asymmetric returns by combining complementary liquid strategies managed by experienced investment professionals within a robust risk framework. ExodusPoint brings together an accomplished team with hands-on experience running multi-manager businesses to create an institutional investment management firm.

CODING PROJECT: US EIA ENERGY PRICE FORECAST ANALYSIS

OBJECTIVE

Evaluate the historical performance of EIA energy price forecasts

SOURCE

The EIA STEO archive: *https://www.eia.gov/outlooks/steo/outlook.php#issues2021*

The EIA publishes its Short-Term Energy Outlook (STEO) every month, which includes monthly forecasts for prices of energy commodities such as crude oil, liquid fuels, natural gas and electricity. The forecast horizon includes monthly forecast for the year of publication as well as the subsequent year.

The relevant data is stored in *Table 2. Energy Prices*, although table nomenclature may vary slightly between different vintages of the forecast publication.

DATA DOWNLOAD

The historical forecasts are available in Excel format starting from 2005 onwards. The data structures are largely uniform across different publication vintages, although some variation can be found due to the EIA introducing/removing series or changing table nomenclature.

The historical forecast spreadsheets need downloading and parsing the relevant series to be able to calculate the forecast errors. The data should be stored in .csv files where each relevant series (eg, WTI crude, gasoline, natural gas, etc – a full list of series of interest is available overleaf) is represented by a matrix: the rows should denote the reference period while the columns should denote the relevant forecast publication period (vintage).

Technology:

- python + pandas should be enough
- The script should be intuitive and easy to run for new forecast updates when they are published

ANALYSIS

Please produce a forecast evaluation based on some of the following parameters: bias, mean absolute error, root mean square error, confidence intervals, and similar.

For each series, the forecasts should be evaluated at different time horizons: 1-month ahead, 2-months ahead, and so on, up to 12-months. Therefore, each statistic essentially describes a curve.

Please evaluate the forecasts expressed in USD (dollar) values as well as in percentage changes.
Please offer a qualitative interpretation of your findings and their implications. You may also include simple visualization where and if you find these useful.

Technology:

- python + pandas + preferred statistical library for analysis

LIST OF SERIES OF INTEREST

Crude oil

- West Texas Intermediate Spot Average
- Brent Spot Average

Liquid fuels – Refiner prices for resale

- Gasoline
- Diesel Fuel
- Fuel Oil

Liquid fuels – Retail prices including Taxes

- Gasoline Regular Grade
- Gasoline All Grades
- On-highway Diesel Fuel
- Heating Oil

Natural gas

- Henry Hub Spot
- Retail prices – residential sector

Electricity

- Retail prices – residential sector

CONTACTS

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