Economic Analysis Case Study Rubric

DS 4002 – Fall 2024 – Chetu Barot
Due: TBD
Submission format: Upload link to GitHub repo to Canvas

Individual Assignment

Why am I doing this?
This case study allows you to leverage your data science knowledge by using regression model analysis techniques to determine the financial metrics that have a strong correlation to the overall CPI levels in the United States. As you work through this assignment, you will be exposes to the ways that data analysis can be used in a real-world context with potential implications for economic planning and financial decisions for investment firms.

What am I going to do?
The GitHub repository for this case study can be found at https://github.com/chetubarot/DS4002-CS3/tree/main. You will have a cleaned data set containing the respective economic indicators from years 2010-2024. You will use Python to create time series models based on either Vector Autoregression Models (VAR) or Box-Jenkins Models. You can then forecast for x amount of years that you want to observe for the economic data. Furthermore, utilizing statistical analysis with p-values and ADF statistics will help you determine the correlation between the economic metric and the CPI percent change.

Your final deliverables should include:
- A data dictionary
- Well documented, commented source code
- A GitHub repository containing all materials used

Tips for success:
- Don't overthink it. Use data from the respective time series economic metrics and combine the various metrics into one graph.
- Focus primarily on one time series model and follow a time-based split into training, validation, and testing sets.
- Observe the statistical values, such as p-values and ADF statistic, to determine the correlation between the economic metric and overall change in CPI.
- It is recommended that you work in Python. Create a roadmap of the objectives that need to be completed for the case study.

How will I know I have Succeeded? You will meet expectations on CS3 Create Case Study when you follow the criteria in the rubric below.

Spec Category	Spec Details
Formatting	- One GitHub repository (submitted via link on Canvas) - Create a new GitHub repository for this assignment titled 'CS3_Economic_Forecast' that contains - README.md - LICENSE.md - Source Code File - Your data (i.e., graphs, modeling) - REFERENCES.md
README.md	Brief summary of what you've produced for the case study, this markdown file should provide enough information for people to become familiar with the contents of the repository.
Source Code File	- A well-documented Jupyter Notebook file that contains the code used to execute your model and statistical analyses. In the source code, you must include: - The financial metrics you chose - Potential moving averages implemented for the respective financial metrics - ADF statistic, p-value, and future values of economic metrics from the model
REFERENCES.md	Markdown file titled "REFERENCES.md" that includes any resources that helped you create your model in IEEE Documentation style citation. Also include brief statements under each citation on how each reference helped you during the case study.

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