HW 1: Index Replication

Due: Sunday, October 2 at 11:59 PM

Objective: Replicate the **Dow Jones Industrial Average**.

Instructions

- In groups (formed in class, see syllabus for constraints), replicate the **Dow Jones Industrial Average Index** for the last **10 years** (12/31/2011 to 12/31/2021). You will **reconstitute annually** and **rebalance quarterly**.
    - Output expected in the code:
        - Security weights on each date.
        - Security returns on each date.
        - Value and return of your replicating portfolio on each date.
- Additionally, choose 5 metrics, **with justification,** to evaluate the success of your replication against:
    - The actual, index
    - A total return index
    - A passive ETF tracking the index

Submission Requirements

1. Fully ***documented/commented*** Python/R code.
2. Data that is used as input in the code.
3. **1-page** PDF document with your results and comparison (e.g. graphs and tables). Document main steps and make assumptions when appropriate. Do not submit more than 1 page. Anything after the first page will not be graded.

Resources & Notes

- I will upload the index and etf data to Canvas, or send it in an email to everyone.
- Definitions
    - **Reconstitution** is the process of changing the constituent securities in an index.
    - **Rebalancing** is adjusting the portfolio weights back to the target weights.
- Potential Sources
    - Index Constituent History
    - CRSP - Daily Stock Data
    - Compustat - Daily Stock Data
    - Dow index methodology