

# Project Summary

- **Questions:**
  - Is there a relation between lobbying and stock trading by politicians?
  - Can we forecast lobbying and/or trading by politicians?
- **Data:**
  - Lobbying data sourced from disclosures courtesy of LDA (Lobbying Disclosure Act of 1995). Each act of lobbying is recorded in one or more “issue code”, which are things like “Automotive Industry” or “Family/Abortion/Adoption Issues”. We focused on issue codes that could be clearly aligned with stock industry sectors.
  - Trading data sourced from financial disclosures courtesy of the STOCK act of 2012 (via QuiverQuant). Some bonds, cryptocurrency, etc. are recorded, but we only looked at stocks. We got industry information from Yahoo Finance.
  - Lobbying splits into “income” (lobbyists hired by other organizations) and “expenses” (organizations lobbying on their own behalf).
    - Expenses generally seasonal, peaking in the first quarter, and much larger than income
    - Income had no seasonality, but a gradual upwards trend
    - Data was only recorded by quarter
  - Stock data was very noisy, reflecting its origin in trades by a small number of individuals.
- **Models:**
  - *Modeling lobbying on its own:*
    - Baseline: expenses are predicted using naive seasonal, income is predicted using naive trend.
    - 2D VARIMA, with components expenses and income.
    - 2D VARIMA after separately modeling the seasonal component of expenses (ultimately the best model).
  - *Modeling stock trading on its own:*
    - Baseline:  $\log(\text{gross trading})$  is linear plus white noise.
    - ARIMA
    - VARIMA, with components sales and purchases
  - *Modeling lobbying and stock trading jointly:*
    - 2D VARIMA, with components spending (expenses+income) and gross trading.
- **Results:**
  - Joint modeling outperformed best individual models on test data.
  - Both outperformed the baseline model (sometimes barely).
- **Conclusion:**
  - There is definitely more to study here on the relation, but it will be difficult. The nature of the lobbying data forces us to have very few ticks in the time dimension (lobbying filings are quarterly). In addition, within each sector, only a handful of politicians trade stocks every quarter. This makes the trading data very noisy.