

# Money in politics and politicians in money

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# Lobbying data

- Lobbying Disclosure Act (1995, amended 2007): lobbyists required to register with the government, and disclose expenditures on lobbying members of Congress
- Disclosures are all available online through the Office of the Senate.
- Spending categorized as
  - **Income:** payments to a lobbyist by a client
  - **Expenses:** payments by a client lobbying on their own behalf
- Lobbying broken down into **79 issue codes**. Examples:
  - BAN, “Banking”
  - AUT, “Automotive industry”
  - IND, “Indian/Native American Affairs”
- Disclosures don’t record meetings with individuals – just “Senate” or “House”.



# Example of a lobbying disclosure

2021-10-01

Registrant: WILLIAMS AND JENSEN, PLLC

Client: TOM JAMES COMPANY

Issue codes lobbied: APP, TRD, MAN

Income: 80000.0

Issues related to personal protective equipment; funding for PPE and buy American provisions (H.R. 3684; S. 1260; H.R. 1466; S. 869; American Recovery Act (H.R, 1319); Endless Frontier Act).

Duties on cotton and wool fabrics; 2018 Farm Bill implementation; federal initiatives to support domestic manufacturing. Duties on Fabrics for PPEs.

Assistance for apparel and textile manufacturers.

# Stock trading data



The Nancy Pelosi ETF (BATS:NANC)

Image courtesy of google finance.

- STOCK Act (2012): forbids insider trading by members of Congress, requires disclosure of purchases/sales of financial instruments
- Most of these are stocks; also shares in mutual funds, bonds, cryptocurrency, ...
- Disclosures are available in thousands of individual PDFs; quantitative finance platform QuiverQuant had helpfully scraped and assembled the data in a usable form.
- These public disclosures do not show evidence of insider trading – or even of members of Congress beating the market! (Belmont et al., “Do senators and house members beat the stock market? Evidence from the STOCK Act,” *Journal of Public Economics* 207 (2022)).
  - However, many traders believe that members of Congress have access to privileged information, and use these disclosures to drive their own strategies.

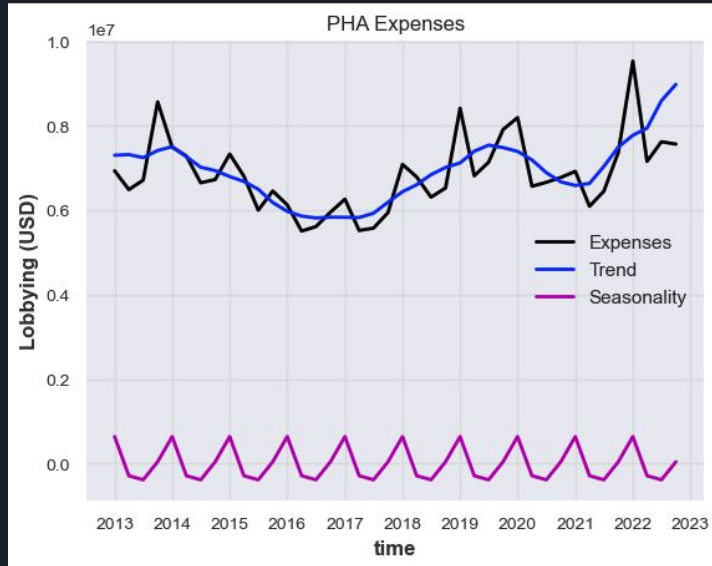


# Our questions

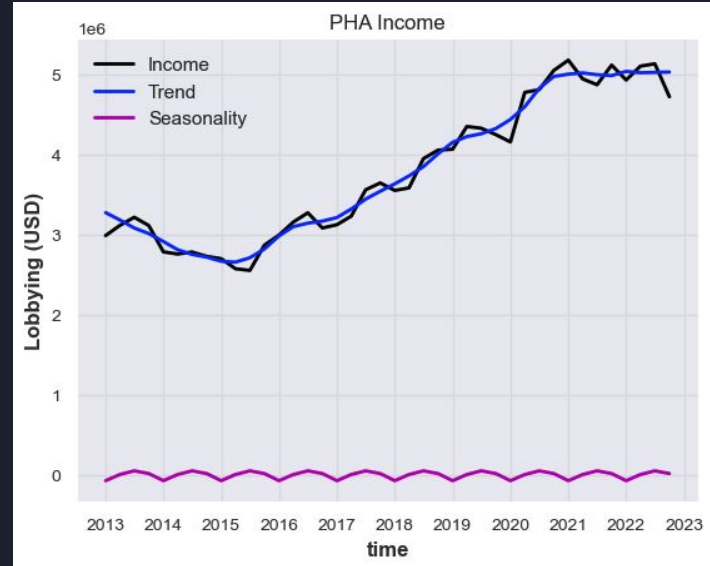
- Is there a relation between lobbying and stock trading?
  - The answer is of *public interest* because it would demonstrate an uncomfortable overlap between politicians' public and private lives... and because politicians can move the market.
  - It's also of interest to *lobbyists* as it's a demonstration that lobbying in certain areas is having an effect!
  - We chose 18 issue codes which were clearly aligned with industry sectors. For example, we hoped to see a relation between tobacco lobbying and trading of tobacco stocks. Call these **well-matched codes**.
- Can we forecast lobbying and/or trading by politicians?
  - Again, this question is of interest to the *public*, *lobbyists* who want to understand trends in their industry, and *politicians* who want to get out ahead of hot-button issues.
  - We similarly chose to treat this question aggregated by industries.

# Exploring the data: lobbying

Lobbying: Expenses (companies lobbying on own behalf) are roughly seasonal.



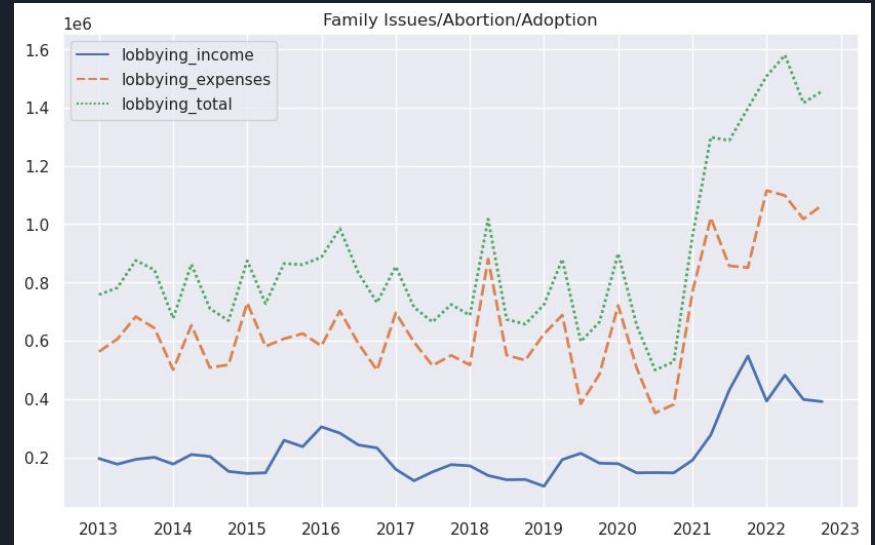
Lobbying: Income (lobbying firms working for a client) has rough trend with no seasonality.



# Neat things in the lobbying data

Can you see when...

- The *Dobbs* case appears on the Supreme Court docket?



# Neat things in the lobbying data

Can you see when...

- The US withdraws from the Trans-Pacific Partnership (which would have dramatically reduced prices of US textile exports)?

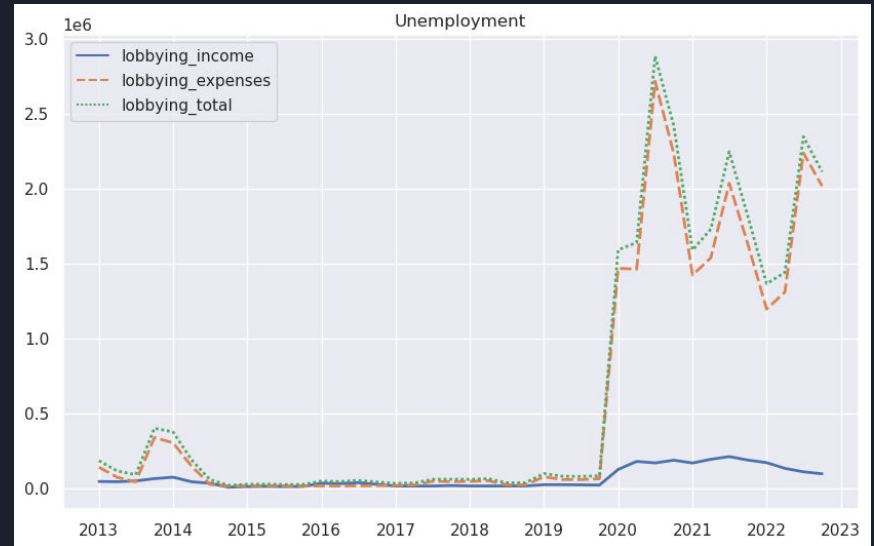




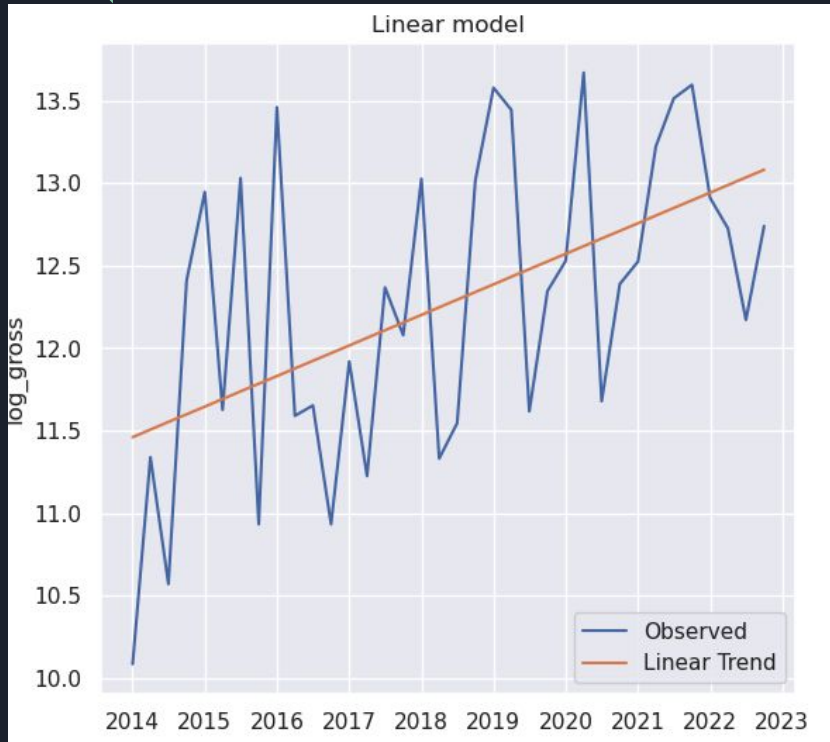
# Neat things in the lobbying data

Can you see when...

- COVID reaches the US?



# Exploring the data: trading



Trading data is all over the place! At a glance, a reasonable model is that  $\log(\text{trading})$  is linear plus Gaussian white noise.

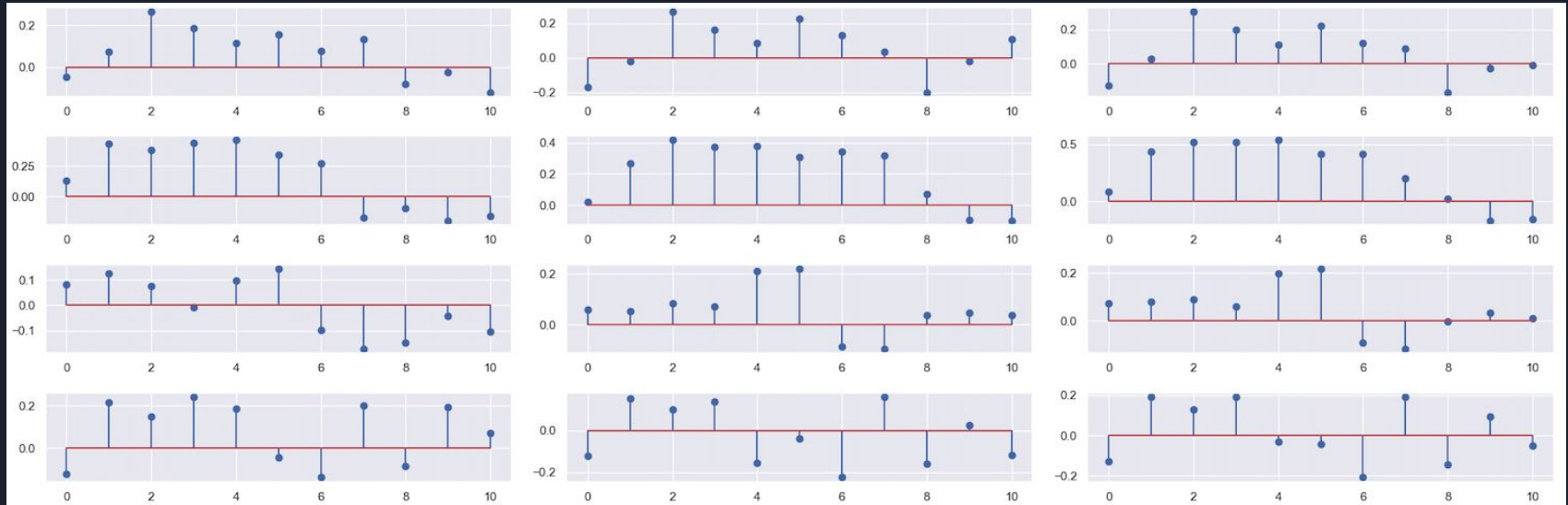
In this example: gross trading in manufacturing looks linear after log; ACF suggests residuals are white noise.

# Correlations?

Baseline model treated lobbying and stock trading independently...

But our whole question has to do with how these affect one another!

**Issue: at a glance, no visible correlations.**



(An assortment of Pearson cross-correlations. No smoking guns!)



# Modeling stocks and lobbying individually

- To model lobbying, we found it best to first extract the seasonal pattern from expenses, and then model income and expenses jointly using a 2D VARIMA (Vector Auto-Regressive Integrated Moving Average).
  - We used cross-validation and grid search to choose good hyperparameters for VARIMA. As there was not a ton of data, we kept the hyperparameters small: VARIMA(1, 1, 1) was pretty good.
- Most models for the stocks performed poorly.
  - The stock data is very noisy, and many issue codes had no trading for many quarters.
  - We went with a 2D VARIMA(0, 1, 1) on the sales and purchases.
- We held out 2023 as a test set, and trained/tuned our models on 2014-2022.



# Modeling stocks and lobbying jointly

VARIMA(p,d,q) - vector auto-regressive integrated moving average

- Vector valued means stocks and lobbying can influence each other.
- Big assumption in our modeling approach: p,d stay fixed over all codes, only q can change code-to-code.
  - Reason: want roughly same sort of model for each code. Auto-regressiveness looks constant and around 1 over sectors (from pacf plots).

Metric for model selection - msse (mean squared scaled error).

- Interpretable, scale invariant
- Different codes/sectors have very different amounts of activity in lobbying and trading, so want a metric that treats them all on an equal footing.

Also tried a bunch of other techniques: XGBoost, N-BEATS, higher dim VARIMA. All too prone to overfitting!



# Final results:

- Both the individual models and the joint model beat our baseline model.
- The joint model does better than the individual models at predicting trading!
  - Knowing about lobbying activity does help us predict how politicians trade stocks - but we have certainly not established anything close to causality.
- Inherent problems with our approach, though.
  - Since lobbying filings are bucketed by quarter, not enough data in the “time dimension”
    - This means sophisticated models almost immediately overfit, unless can share data between lobbying codes to train.
    - Although lobbying dataset is huge, we lose a lot of information by aggregating filings by quarter and code.
  - Stock trading is inherently done by small number of people. This means both that we have a relatively small dataset, especially after breaking up by sector, and one with high random variance.
    - We also discovered late into our project that there may be more trading data available than we thought - QuiverQuant missed some hand-filed financial disclosures.
- So plenty to revisit!