

MGT 6203 GROUP PROJECT PROGRESS REPORT

Effects of Politician Investment in The Stock Market

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GitHub Link: <https://github.gatech.edu/MGT-6203-Spring-2024-Canvas/Team-61>

Overview

Politicians vote on policies that can affect industries or individual companies, even companies that they themselves are invested in. There are no rules at the federal level preventing this. Since 2012, Senators, House Members, and Executive Branch employees have been required to make financial disclosures, including stock transactions. What we want to do is explore relationships between politicians' investment activity and the returns of the stocks they invest in. This investigation should answer our main question: Is there a correlation between a politician's investment (or divestment) in a stock and that stock's price? We also hope to find relationships between a politician's willingness to invest based on their political party or state affiliation. We find this to be a fascinating subject as politicians can invest in companies they may directly influence via their political actions regarding bills/regulations they partake in.

Introduction

Decisions made by the federal government often have serious implications for corporate profitability and are therefore of great interest to the financial market. U.S. Senators are the most important participants in those decisions as lawmakers, overseeing most of the federal policies. It is not just the laws but also the social circle that provides them with valuable information that can directly or indirectly influence their decisions. While politicians are required to report their financial holdings according to Title I of the Ethics in Government Act of 1978, as amended. 5 U.S.C. app. § 101 et seq; they are NOT prohibited from voting on rules and regulations that affect companies they may invest in; therefore, they may be able to gain personal profit by voting for outcomes that favorably impact these companies.

At the heart of this complex web is the potential for significant conflicts of interest, where politicians engage in investment activities that might benefit from their legislative actions. Despite the critical ethical implications, there are no federal laws explicitly forbidding such practices. Since 2012, however, there has been a move towards transparency, requiring Senators, House Members, and Executive Branch employees to disclose their financial activities, including stock transactions under the "Stop Trading on Congressional Knowledge Act," also known as STOCK Act. This development opens a new avenue for empirical investigation into the potential correlation between politicians' investment decisions and the subsequent performance of the stocks they invest in.

Our research aims to dissect these relationships further, exploring how the senator investment portfolio performs in correlation with the overall market performance. This study is particularly compelling given the dual role politicians often play as both regulators and participants in the market. By examining the

financial disclosures made by these political figures, we hope to shed light on the intricate dynamics at play, offering insights into whether and how political actions and market outcomes are intertwined.

Background/Literature Review

In 2005, then-Senate majority leader Bill Frist sold all his Hospital Corporation of America ("HCA") stock, and it plummeted over the next week (at least 9% in one day). HCA was founded by Frist's family, and his brother was a director at HCA at the time. Although he was investigated for this potential conflict of interest and insider trading, he was later exonerated by the SEC (Securities and Exchange Commission). This event was seen through the public eye, and momentum grew for a greater clarification of proper ethics within the political state of the United States. Thus, the STOCK Act was first introduced. It first came into the eyes of congress in 2006, reintroduced in 2007 and 2009, and finally became law in 2012 (Barbabella et al.). The STOCK act not only prohibits members of Congress and their staff from leveraging non-public information to make investment decisions. The Act also requires the President, Vice President, and all members of their staff to report any trades that exceed \$1,000 within 45 days (about 1 and a half months) of the transaction (Belmont et al. 104602).

In 2020, stock trades made by House and Senate members made headlines when some of the members sold and avoided large short-term losses by selling ahead of the COVID-19 stock market crash. The transaction took place on January 24, after having access to classified reports which had information about the severity of the COVID-19 crisis. As reported by news outlets, there was no evidence found by the Department of Justice of this well-timed transaction and the senators were cleared of all allegations (Mangan).

Earlier research, before the STOCK Act, suggested that senators' portfolios tended to outperform the market by 12% (Ziobrowski et al. 661). However, one of the first research after the STOCK Act, no evidence of stock picking prowess or that of abnormal performance looking at most frequent traders was not found (Belmont et al. 104602).

This study, overall contributes to understanding of the trading behavior of those in position to vote for specific policies and also takes a dive into the understanding what would you expect if one were to mimic their behavior to invest, would it lead to better returns relative to average market performance, or would it be similar to the market performance.

Data

For the analysis, two main datasets were used, based on previous studies and accessibility:

1. U.S. Senator's Financial Disclosure Report (FDRs) dataset
2. Stock finance data

The primary dataset for this study comprises financial disclosure reports of U.S. senators. These reports are publicly published through the official website of the Senate Ethics Committee. Each report contains detailed information about the financial activities of senators, including stock trades, asset holdings, and other investment movements over the reporting period. Since the original source of some of these reports are scans of the paper filings, for the project's purpose we decided to use already digitized data. The data was then gathered using a custom scraper that interacts with the API which supports <https://capitoltrades.com> looping through the pages.

The secondary dataset for the study comprises of the financial data sourced from Yahoo Finance using `tq_get()` function in tidyquant package in R, which provides extensive historical market data, including stock prices, trading volumes, and financial metrics for publicly traded companies globally.

Data Pre-processing

Upon extracting the financial disclosure data and obtaining stock market data from Yahoo Finance, our next step was to prepare the data for analysis. The first challenge was to convert JSON objects into a structured DataFrame for analysis in R. The JSON format, while flexible and hierarchical, needed to be flattened to fit the tabular structure of a DataFrame, which is more conducive to the analytics techniques planned for this study. This was followed by choosing the subset of data that we wanted to focus on as far as the senator's investment data. For the study we decided to focus only on the stocks that are issued by U.S. with transaction dates between 2021-01-01 and 2022-12-31.

To process and analyze the two datasets, the tickers for the stocks needed to be changed to be consistent. There were multiple inconsistencies between the two datasets:

1. The tickers in the senator investment dataset had ':US' as suffix as opposed to Yahoo Finance data.
2. The hyphens ('-') in the Yahoo Finance data are noted as '/' in the senator investment data.
3. Changes in tickers over the years
4. Tickers of the companies that are no longer publicly traded

The process to make data consistent, we used simple data transformation techniques to substitute '/' with '-' and remove the last three characters of the tickers in the senator dataset; removing ':US.' Next to updates the tickers to the most recent one, we made a ticker_mapping list, which included the old and new ticker associations. If the ticker is in the mapping, we would return the new value; otherwise, return the original without modification as mentioned above.

Verifying the datasets is just as important as processing to get to be consistent. To verify that we have all the financial data that is needed to accurately analyze the senator investment datasets, we compared the unique tickers and found the difference between the two. That list was manually scanned to determine the reason the data was not pulled through Yahoo Finance. The tickers of the companies that are no longer publicly traded or belonged to the foreign market were removed from our analysis.

Data Exploration

The senator FDR or investment dataset comprises the complete transaction records of U.S. senators, amounting to approximately \$540.26 million over the years 2021 and 2022. This initial exploration is aimed at uncovering the investment patterns of senators, with a particular focus on the types of stocks that garnered attention within this period.

Figure 1 depicts the monthly transaction values and highlights a marked spike in trading activity in August 2021. This sudden increase might be attributable to factors such as market dynamics, political developments, or economic announcements. Subsequently, the total trade value sees a consistent decline. The graph offers preliminary insight into the rhythm of trading activity and may serve as a basis for understanding the influences on senatorial trading decisions.

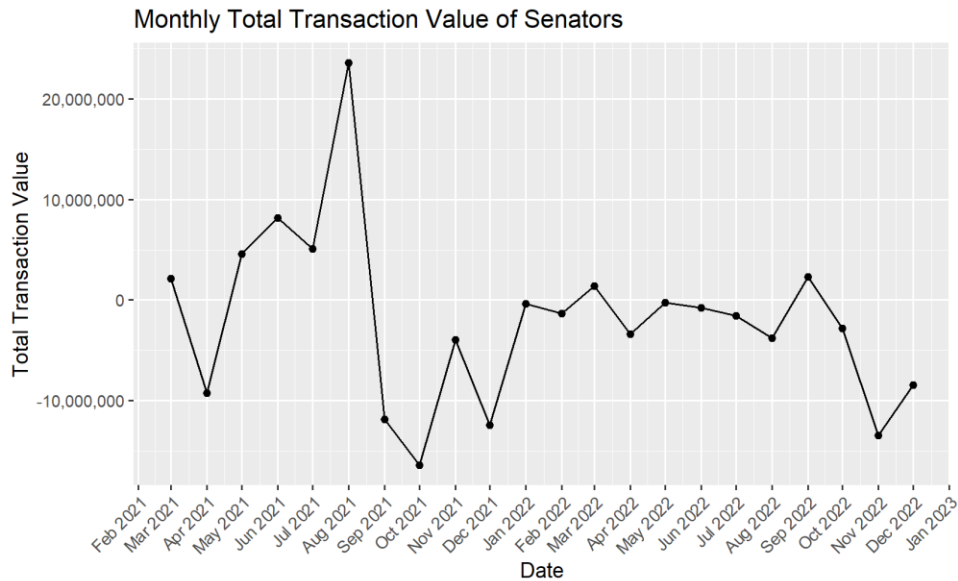


Figure 1: Value of Trades per Month between 2021 and 2022

Figure 2 presents the distribution of trade values across different sectors. The information-technology sector emerges as the most significant component of the senators' collective portfolio, followed by investments in the financial and communication-services sectors. This distribution aligns with broader market trends that favor technology investments, reflecting a possible inclination towards sectors that are perceived as drivers of economic growth.

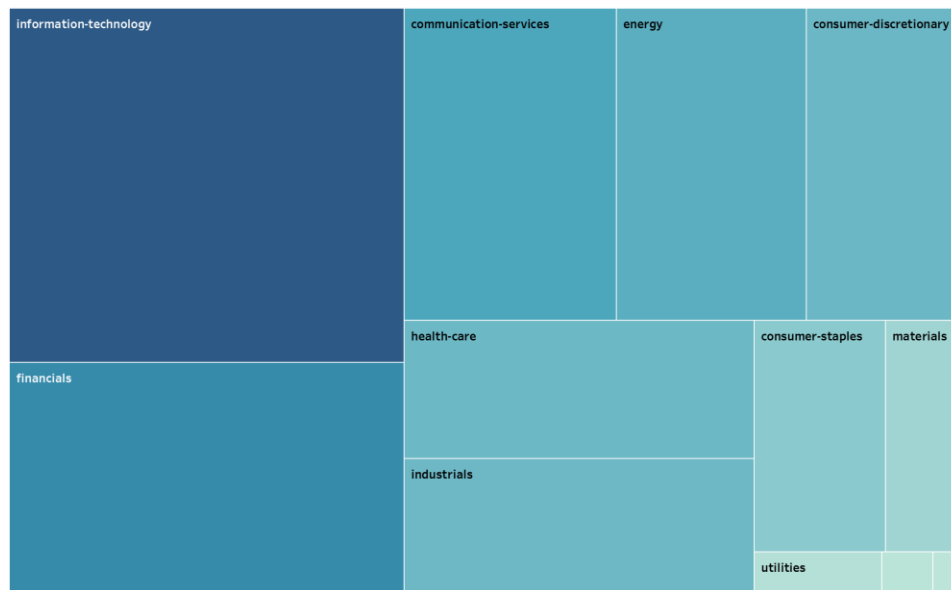


Figure 2: Value of Trades made by Senators in 2021-22 by Sector (generated in Tableau)

Figure 3 shows the total value of trades made by senators from each state. When this topic gets controversial and accusatory, people often point fingers at one side or another as being corrupt. In some ways, graphing the amount traded by state is a proxy for how much each party is trading. Something noteworthy at first glance of this graph is its lack of correlation to the electoral college map. California

shows the most trade activity (though it is also simply the biggest population), but Texas is right behind them. It also seems intriguing that Washington and Tennessee (states smaller than New York, Illinois, or Florida) would be having as much activity as they are.

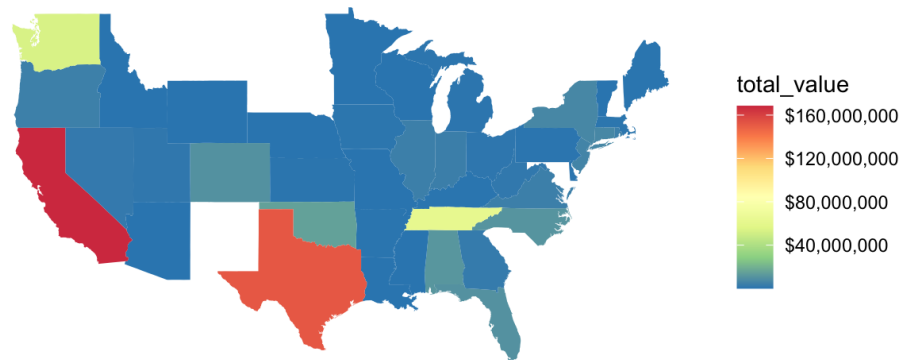


Figure 3: Value of Trades made by Senators in 2021-22 by State

These visualizations pave the way for an in-depth investigation into the senator trading behavior and how the stocks perform using their net positions. The consequent analysis may reveal the interplay between senators' trading activities and their legislative environment, potentially offering insights into the correlation between political events and market behavior.

Approach

Senators, House, and Executive Branch employees (furthermore referred to as “politicians”) are required to make financial disclosures about their stock trades. These FDRs include the politician’s name, the stock ticker involved in the transaction, whether the transaction is a buy or sell, the general value of the transaction (i.e., “\$25K-\$50K”, “100K-250K”), and additional data about the politician. The transactions in these disclosures are aggregated and made available for public view via services such as CapitolTrades.org; as mentioned above in the [Data](#) section.

While these transactions do not allow a full view into politicians’ investments, over time it is possible to build a partial picture of what these politicians hold in their portfolios via a concept known as net positions. It is possible to create a net position for each stock ticker over time by adding to the position when a stock is purchased, and subtracting from the position when a stock is sold. Using these net positions, we can create portfolio weightings for each stock and analyze its risk and return against the market.

What Models have we used so far?

To investigate potential behavioral aspects of politician investing, we have built models investigating the effects of gender, party affiliation and age on how many trades politicians perform. Gathering this data

was performed by grouping by politician name, gender, party, and age then counting the number of trades by grouping. To get an initial basis on the effect these variables may have we plotted simple graphs (histograms, bar charts) such as in Figure 4.

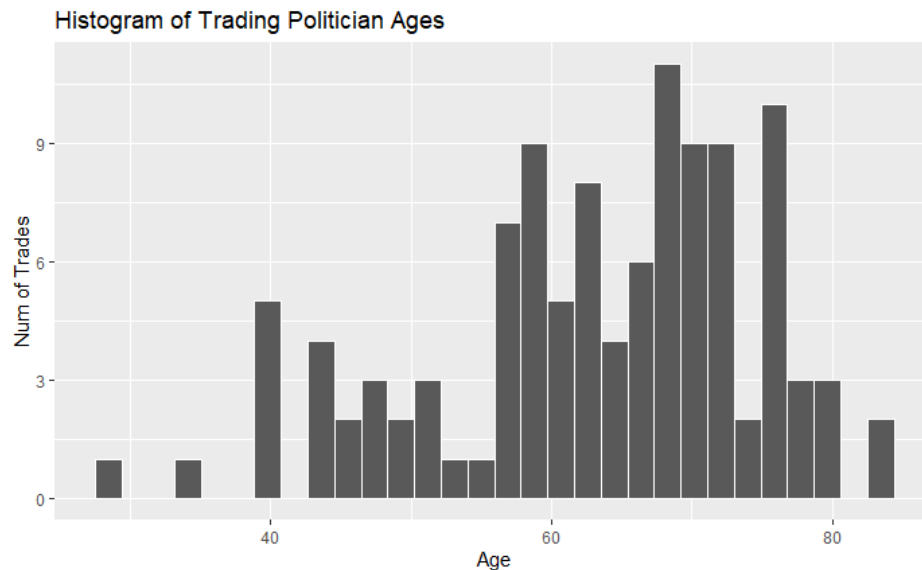


Figure 4: Politician Age spread

Figure 4 depicts a histogram of Age spread across our dataset. This figure is not too surprising that it skews left, as the average age of United States politicians is around 60-65. Because of that we cannot assume that this means that older members are more likely to trade compared to younger politicians.

As we ran our models, we recognized that taking the natural log of the number of trades seemed to increase the accuracy of our model 60x fold, as the R^2 increased from 0.019 in our linear model to 0.6 when taking the natural log. We used `cooks.distance` to identify and remove outliers, such as Rohit Khanna who traded 4x more than the next highest politician. A further investigation could be done on these high leverage points, as identified by Cook's Distance to see if these politicians, in particular, are trading differently than their counterparts or just simply more often.

After rerunning the model, we saw a significance of both democrats and republicans, while the variables gender and age were reported as less significant. Since this significance was slightly redundant as almost all politicians are affiliated with the two party's, we tested another model regressing politician trade count with just party affiliation. This almost exact estimates for coefficients and significance. Whereas regressing with gender and age we saw females to have higher positive coefficients and increased significance by almost a factor of 2x, while age again showed to be a negative factor on number of counts and a confidence level of 0.7, indicating little to no effect.

These are just exploratory models so far, as we are still accurately building up a portfolio of stocks involved in politicians' investments. We plan to juxtapose that model's returns with the standard S&P 500 return to measure Beta and R^2 .

Works Cited

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