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MARKET'S POLITICAL PREFERENCES: AN ANALYSIS OF MARKET RETURNS AND REALIZED VOLATILITY DURING PRESIDENTIAL ELECTIONS

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Abstract

Markets and politics are intimately linked. Moreover, the extensive lobbying practices in the US evidence the interest of firms in political outcomes. Some companies go as far as to donate to political campaigns. On the short-term,these donations can signal political leanings and a company's preference for a particular party to be in power. Hence, it is worth asking whether a firm's political leaning is a determining factor in their stocks performance, and whether the market prefers a particular leaning over another, especially around the most important electoral event in the US: presidential elections.

In this paper, we set out to examine market preferences over companies' political leanings in the immediate dates after a presidential election takes place. Our hypothesis is that, under normal economic circumstances, markets favor companies who lean toward republican candidates, but under economic stress periods such as recessions, the market is less favorable toward such companies.

I look at daily stock prices for a sample of public companies associated with PACs to determine if their stock returns are affected by the companies' political leaning. I find that election outcomes affect stock returns, but there effects are usually the same regardless of political leaning. The signs of the effects over the post-event window, leading us to conduct a second study to evaluate the volatility of the stocks' returns. We find democrat-leaning and neutral stocks have higher frequency of significant changes in volatility, while republican stocks are relatively stable, suggesting markets prefer companies that lead republican. The only exception is the 2008 election, where changes in volatility are significant for all stocks regardless of political leaning, indicating shifting preferences probably caused by the recession environment.

1 Introduction

Markets prefer companies that have certain qualities over others, and we can derive such preference when looking at which stocks are doing better. Preferred stocks would have higher returns, because they are more in demand. We know from thorough research in the Fama-French 5 factor model, that there are certain qualities that companies have that may predict their stock's performance (Fama and French (2015), Petkova (2006)). We also know that markets prefer value stocks over growth stocks in the majority of scenarios (Fama and French (1998), Fama and French (2007), Petkova and Zhang (2005)). These factors, although great predictors, are intended for long-term analysis of the stock market, and do not account for punctual events that, in the very short term, may impact the stock market. Specifically, we discuss how a company's political leaning affects its performance right after a presidential election has taken place. Here we seek to expand it by looking at a company's political preference.

Markets and politics are intimately linked. Moreover, the extensive lobbying practices in the US evidence the interest of firms (both privately held and publicly traded firms) in political and policy outcomes. Some companies are so invested in the outcome of an election that they even donate millions of dollars to political parties during the campaign process. These donations are done through political action committees (PACs). Some speculate that these donations are a form of investment because it is a sort of bribe towards candidates to encourage them to pass laws and policies favorable to lobbyists. On the other hand, some speculate these donations are necessary costs, almost like an entry fee, to stay relevant as a lobbyist. Both of these views focus on the long-term aspect of political donations and specifically campaign contributions. On the short-term, however, these donations can signal political leanings and a company's preference for a particular party to be in power. Hence, it is worth asking whether a firm's political leaning is a determining factor in their stocks performance, and whether the market prefers a particular leaning over another, especially

around the most important electoral event in the US: presidential elections.

There is some research that suggests markets perform better under Democrats than under Republicans (Santa-Clara and Valkanov (2003)), while another study shows how the reaction to election outcomes can be predictive of overall macroeconomic variables (Chien et al. (2016)). Both of these studies focus on what happens to markets around two years after the presidential election took place, and only look at the market as a whole conditional on who the ruling party is, rather than looking at individual companies conditional on which party they align with. This leaves a hole in the literature regarding what happens around capital markets immediately after a presidential election; there is also a lack of research about market preferences over company's political leanings in the short-term.

In this paper, we set out to examine market preferences in the immediate dates after a presidential election takes place. Moreover, we look at whether the market distinguishes between companies that favor democrats versus republicans. Our hypothesis is that, under normal economic circumstances, markets favor republican candidates, but under economic stress periods such as recessions, the market is less favorable toward republicans.

If the market does have preferences, we expect to see higher returns and more stability for preferred companies with respect to not-preferred companies. Hence, knowing market preferences can help in taking advantage of arbitrage conditions and can be useful in creating a profitable trading strategy around election days. Furthermore, if we pinpoint market preferences for the recent past, we can see if they evolve with cultural pressures and changing political tendencies. This is extremely important as we expect markets to behave differently after the aftermath of the 2020 election[1].

We speculate that capital markets like republican leadership because republicans usually

1. On January 6th, 2020, a group of alleged Trump supporters stormed the capitol accusing the government of electoral fraud. This created a media outrage, which included a journalistic movement arguing against the involvement of companies on election procedures on the basis that campaign donations incentivize anti-democratic behavior. The 2022 midterm election saw a decrease in donated cash to both parties, but it is too soon to tell whether this is a new normal or just a reaction to appease the masses in the short-term.

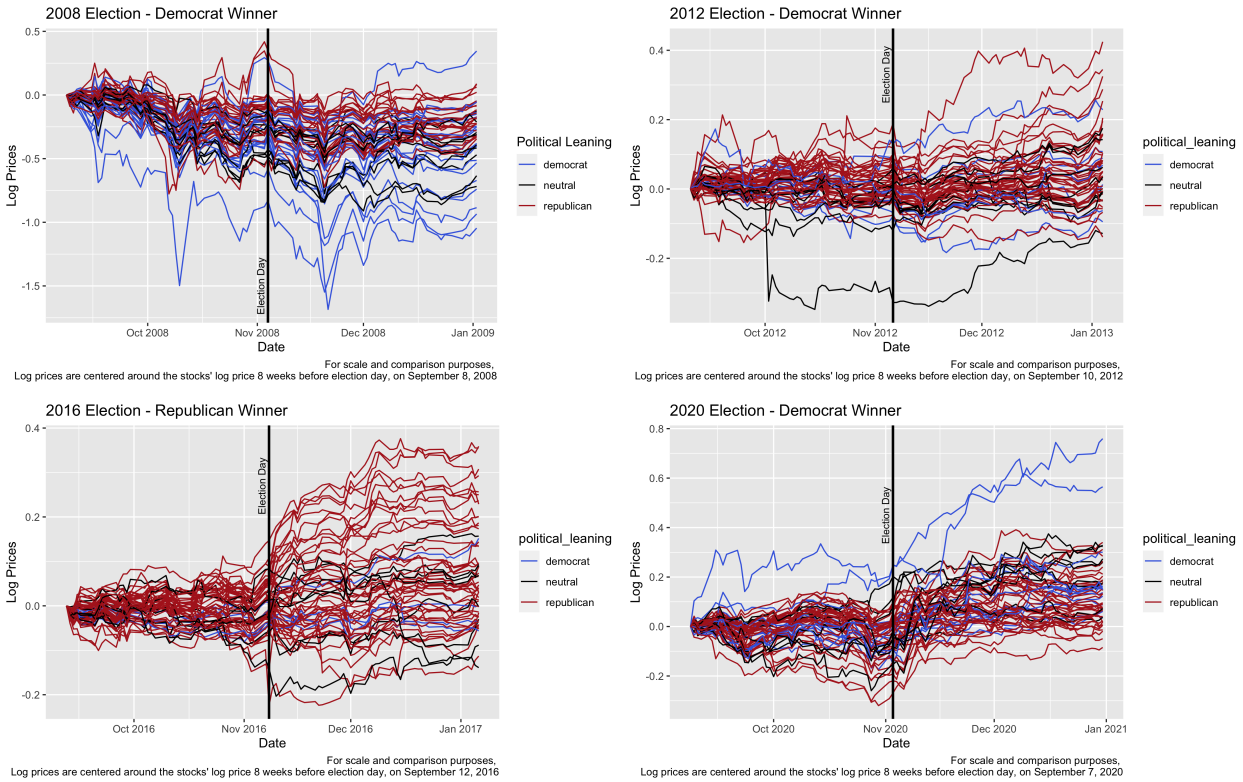

Figure 1: Stock Prices for Companies in the Sample

champion decreased regulation and low tax rates. Policies following this agenda lead to a boost in profits which subsequently leads to increased stock returns for affected companies listed in NYSE. Our hypothesis is that, under normal economic circumstances, markets favor republican candidates and thus favor companies who lean republican; but under economic stress periods such as recessions, the market is less favorable toward republicans. Figure 1 and Figure 2 show preliminary evidence of this hypothesis.

To test our hypothesis, we run two studies. For both studies, we collect a sample of public companies listed in the NYSE that are clearly associated with one PAC. For the first study, our empirical strategy consists of running a simple linear regression of returns after an election event on a treatment and control variables. Our treatment is the political leaning of each company. We control for each company's previous returns. To incorporate the time-dependent controls into the model without abusing regression techniques like VAR, we

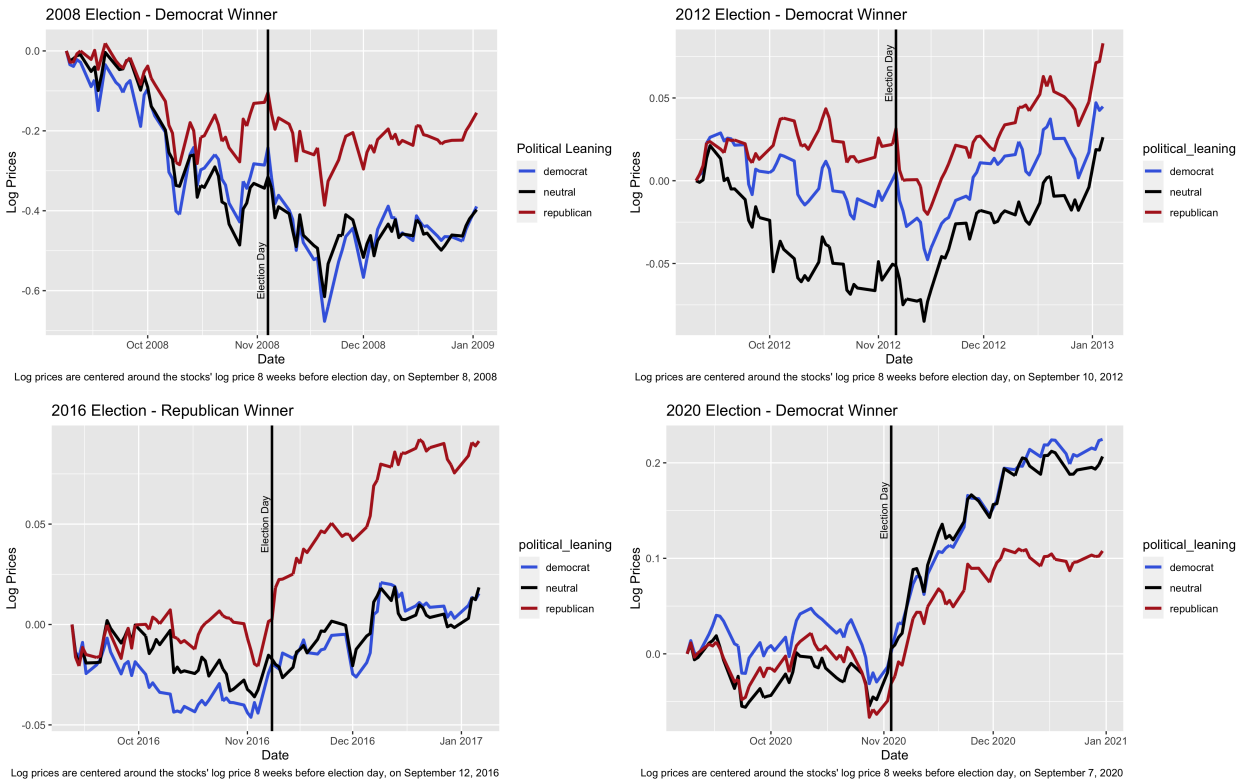

Figure 2: Stock Average Prices for Companies in the Sample

reduce the dimension of the control variable through Principal Component Analysis (PCA), and regress on the first three to five principal components. Additionally, we focus on the presidential elections of 2008, 2012, 2016 and 2020.

In the second study, we consider how realized intraday volatility of these returns changes around the week the election takes place. Through this study, we can see the real-time reactions the market has to the availability of new information. Following our hypothesis that markets prefer republican-leaning companies, we expect more volatility in stock returns of democrats and neutral companies with respect to those seen for republican companies. We also expect to see high volatility in the market irrespective of political-preferences in the 2008 election. To test this, we calculate market betas for each company using the Smooth Two-Scales Realized Volatility estimator developed by Chen et al. (2023), and see which betas are significantly different from zero.

In the first study, we find mixed and inconclusive results; there is no clear pattern of preferences, and both signs and relevance of coefficients flip from day to day. This indicates that volatility is high and has a strong effect on market returns. In the second study, we find abundant instances of increase in volatility for democrat-leaning and neutral stocks, as opposed to republican-leaning stocks that only see changes to volatility immediately after defining information about the election is revealed. These results suggest abnormal returns are not related to a company's political leaning, but the volatility of those returns is.

The paper is structured as follows. Section 2 presents a literature review, surveying papers on previous work related to elections, lobbying, and the stock market, as well as papers related to our empirical strategies. Section 3 provides a brief summary of the sociopolitical and economic context surrounding each election cycle my studies. In section 4, we further describe the data and empirical strategies. Section 5 provides our results, followed by a discussion in section 6. Concluding remarks are in section 7.

2 Literature Review

Previous research has touched on the long term effects of election cycles on the stock market, and has shown that the market performs differently under democrats and republicans (Santa-Clara and Valkanov (2003), Chien et al. (2016)).

Moreover, some studies have also inferred a company's political leaning and showed how a company's political leaning affects its stock's performance during critical situations: Gaikwad et al. (2013) classifies companies as right or left leaning based on political donation (a mechanism similar to what I use in my study) and finds that, after Obama's announcement of the apprehension of Osama Bin Laden, companies that were identified as democrat-leaning before the announcement had a greater increase in stock returns than companies that were identified as republican-leaning; this market behavior was attributed to the increased chances of reelection for Barack Obama after Bin Laden's execution. Oehler et al. (2013) tackle a question similar to mine but instead of political donations, they use effective tax rate as a proxi for the public's beliefs of companies' political leanings.

A thorough survey of lobbying practices in the United States can be found in Ansolabehere et al. (2003). In Hersch et al. (2008), there is evidence that lobbying and political donations have little effect on capital markets in the long term, and suggests they are a form of short-term investment, rather than long-term investment. By focusing our study in the short term, we can help confirm this hypothesis.

This paper has two main studies, each with a different empirical strategy. The first study relies on the use of PCA rather than regression; PCA is an uncommon approach in this field (compared to regression). Hu and Tsay (2014) and Yang and Shahabi (2004) validate our approach by how to use PCA to minimize the dimension of time-dependent data without compromising asymptotic properties of the estimators. I intend to follow a similar process to reduce the dimension of the matrix of lagged values in Study I. A very similar technique is used by Chang et al. (2018). For a formal introduction to PCA applied to financial

time-dependent data, see Wei (2018).

In the second study we will look at intraday volatilities. Some of the earliest theoretical work on this area goes back to Barndorff-Nielsen and Shephard (2002) and Barndorff-Nielsen and Shephard (2004), with the suggestion of estimators. Zhang et al. (2005) use a two-time scale estimator (TSRV) to calculate integrated volatilities. We use the Smooth TSRV (S-TSRV) estimator developed in Mykland et al. (2019) and Chen et al. (2020), which innovates on the TSRV estimator from Zhang et al. (2005) by pre-averaging transaction prices before applying the TSRV algorithm. This makes the estimator robust to asynchronous transaction times and microstructure noise. S-TSRV can be used to calculate realized betas (see Chen et al. (2023)) which are a measure of realized volatility that goes back to the CAPM model, telling us how volatile a stock is with respect to the market's volatility.

3 Background Information

3.1 2008 Election

The incumbent was Republican George W. Bush. Barack Obama ran for the democrats and Bob Barr ran for the republicans. Democrats had a majority in the House and Senate after the 2006 midterm elections. A recession starting in December of 2007, commonly known as the 2008 recession, was in full swing at the time of the election. As Senator, in September while the primaries and related debates were still taking place, Obama seemed to spearhead an effort to relieve the recession's financial burden – a feat that had been attempted before by other candidates but none was able to pass. This may have increased Obama's popularity. Furthermore, democrats are known for pushing for stimulus checks, increased political spending and financial regulation, which is very appealing in the face of the financial stress caused by a recession. From the political composition of our sample, we can surmise that companies prefer republican candidates, but this election is the only one

where a lot of usual republicans decided to support democrats. Obama won the election.

3.2 2012 Election

Obama ran for reelection against republican Mitt Romney and won again. After the 2010 midterm elections, the senate switched to republican control while the house stayed under a democrat majority. During his first presidency, Obama passed the Affordable Care Act of 2010 creating Obamacare (socialized healthcare program). In 2011, he supervised the assassination of terrorist Osama Bin Laden, responsible for the 9/11 terrorist attacks. Lastly, he had carried the US through the last of the recession, which contributed to Obama being the predicted winner. Hot topics during this election were immigration, healthcare, and foreign policy.

3.3 2016 Election

Republican Donald Trump ran against democrat Hillary Clinton and won. Both the senate and the house had a Republican majority after the 2014 election. The polls predicted Hillary would win, but Trump surprised the media and news-outlets as results came out. Although Hillary won the popular vote, Trump had more seats in the electoral college, guaranteeing him the victory. Voters' more present issues were the economy and terrorism. pew (2016).

3.4 2020 Election

Trump ran for re-election against Democrat Joe Biden, who had been Vice president under the Obama administration. Polls showed very tied results, flip-flopping on projected winners; the public had also lost confidence in poll accuracy after the blatant discrepancy between predicted and actual results in the 2016 election. The Senate had a Republican majority and the House had a Democrat majority after the 2018 midterm elections. The COVID-19 pandemic was in full swing and a key issue during this election.

4 Methods

4.1 Data

We look at data from the four presidential elections between 2008 and 2020. The idea behind picking these four election cycles relies on two principles: first, to see if our results are robust to external conditions like ongoing recession and political party in power. Second, data availability: the source for our financial data only goes back to 2007.

The companies in our sample fit the following criteria: they are all public companies, all of which are either associated to a PAC (and thus forming part of one of our treatment conditions) or have publicly declared themselves neutral during election cycles (thus forming part of our control condition).

To calculate overall market returns, I look at daily prices for the S&P 500 (for the first study) and intraday prices for SPY (for the second study). Ideally, we would use the S&P 500 data for the second study, but unfortunately TAQ does not currently provide that data. The closest substitute we found was SPY, the SPDR S&P 500 ETF Trust.

Our ideal sample would contain all companies that donate through PACs; however, some of the biggest donors are unions or private companies like hedge funds, exchanges, private equity firms and other financial institutions. Since neither of these have shares that are traded in capital markets, we have to exclude them from our sample. Then out of the publicly traded companies, few are big enough to donate or have PACs that can be directly linked to the company. One of the main assumptions we need for our hypothesis to be valid is that the public can consume and understand all the available information; that is, even though have access to the names of all the PACs that donate to political campaigns, they can only associate these PACs with companies if they have a clear link. So we only include companies with clear links to PACs in our sample.

4.1.1 Campaign Contributions

Campaign contributions data is publicly available through the Federal Elections Commission website. I specifically use data from OpenSecrets.com, a website that gather all donation data at the individual and at the PAC level and provides clean and summarized data.

A few notes on contributions data: I specifically use PAC donations because these are the donations officially endorsed by each company. However, there are other contributions we could have looked at in this study.

The first alternative contributions to measure are the aggregate of individual donations for each company. These are popular in the media, but in academic journals. When making a donation, individual donors must disclose the company they are employed by when making a donation. By summing all donations made by each company's employees, we can get the companies contribution to a political campaign. Note however that this only tells us which candidates the employees support, but not which candidates the company itself stand for.

The second alternative would be to look at donations made by c-suite executives, stakeholders, founders, and lobbyists of companies that are typical players in the lobbying landscape (like big pharma, big oil, big banks, tech, crypto, etc.). This is an acceptable measure for the purposes of our study, however, I do not have the research capacity to find this information at this time.

Summary statistics for these data are in Appendix A. Specifically, you may find information on the distribution of stock prices by political leaning in Figure 7, observation counts by group in Table 8 and donation distribution in Figure 9. You will also find stock returns for the companies in our sample in Figure 8. A detailed look at the companies in our sample is provided in Table 9.

4.1.2 Political Leanings

The process to calculate political leanings for each company is the following. For each cycle, I classify companies into three groups: republican, democrat, and neutral. Neutral companies do not have PACs, and thus never officially "endorse" a candidate. Companies labeled as democrat or republican are assigned into a group through the following process:

1. First I look at the total donations the company's PAC made for each election cycle
2. Then I calculate the ratio between the amount given to republicans to the amount donated to democrats
3. If this ratio is greater than one, I interpret that as the company favoring republicans and putting a bigger bet on republicans winning the election, thus I label the company as republican
4. Otherwise, (when the ratio is less than 1) the company is labeled democrat
5. Note that leanings change each election cycle. For example, in the 2008 election, probably due to the high stress placed on the economy because of the recession, there were more democrat companies than usual. But in the 2016 election, most of the companies that had leaned democrat in 2008 were leaning republican and supporting President Trump's candidacy.

4.1.3 Daily Financial Data

I use daily closing prices to calculate returns. Data is imported from Yahoo finance through Quantmod in R. Price data from 8 weeks prior to each election is used for the control conditions. Finally, we examine returns from the first nine trading days after each election takes place.

Table 1: Events Timeline - Study I

Year	Beginning of Pre-Event Window	End of Pre-Event Window	Event Day: Presidential Election	Beginning of Post-Event Window	End of Post Event Window
2008	09/08/2008	11/03/2008	11/04/2008	11/05/2008	11/17/2008
2012	09/10/2012	11/05/2012	11/07/2012	11/06/2012	11/19/2012
2016	09/12/2016	11/07/2016	11/08/2016	11/09/2016	11/21/2016
2020	09/08/2020	11/02/2020	11/03/202-	11/04/2020	11/16/2020

4.2 Intraday Financial Data

Ultra high frequency data for the second study is accessed trough the NYSE Trade and Quote (TAQ) database in WRDS. It contains data per transaction for all transactions made regarding each stock in our sample. The data used contains the price paid for the stock in each transaction and the exact time at which the transaction took place. Time is exact up to the millisecond. We restrict trades to those happening during standard market operating hours, that is, from 9:30 AM - 4:00 PM Eastern Time Zone. Below is a summary of the timeframe we look at in Study II.

Table 2: Events Timeline - Study II

Year	Beginning of Pre-Event Window	End of Pre-Event Window	Event Day: Presidential Election	Beginning of Post-Event Window	End of Post Event Window
2008	11/03/2008	11/03/2008	11/04/2008	11/05/2008	11/17/2008
2012	11/05/2012	11/05/2012	11/06/2012	11/07/2012	11/09/2012
2016	11/07/2016	11/07/2016	11/08/2016	11/09/2016	11/11/2016
2020	11/02/2020	11/02/2020	11/03/2020	11/04/2020	11/06/2020

4.3 Models

4.3.1 Study I

For the empirical strategy, I use the financial event study procedure described in MacKinlay (1997). The idea is to look at extraordinary or abnormal returns, which we define as deviations from the expected returns.

$$AR_{it} = R_{it} - \mathbb{E}[R_{it}|X_t] \tag{1}$$

where AR_{it} are the abnormal returns for firm i at time t, R_{it} are the realized returns for firm i at time t, and $\mathbb{E}[R_i t|X_t]$ are the expected returns for firm i at time t.

The literature has multiple implementations of this definition, and in our study we focus on two of these implementations: the market model and the constant mean return model. Depending on which model we use, the interpretation of the results vary slightly, but both interpretations help us answer the research question.

The market model stipulates that the returns at time t, R_t, for any stock i, follow the process:

$$R_{i,t} = \alpha_i + \theta_i R_{m,t} + \varepsilon_{i,t} \tag{2}$$

$$\mathbb{E}[\varepsilon_{i,t}] = 0$$

$$var(\varepsilon_{i,t}) = \sigma^2_{\varepsilon_i}$$

Where $R_{m,t}$ are the market returns, α_i and θ_i are model parameters. If we assume that all stocks in the sample follow the market trend, then it makes sense to use the market abnormal returns since they will tell us how extreme our returns are with respect to the rest of the market.

However, if we instead assume that rather to sticking to the market trend, the stocks in our sample each have a unique trend that hovers around an average value, it is more

appropriate to use the constant mean returns, since they tell us how extreme our returns are with respect to each stock's previous behavior.

$$R_{i,t} = \mu_i + \nu_{i,t} \tag{3}$$

$$\mathbb{E}[\nu_{i,t}] = 0$$

$$var(\nu_{i,t}) = \sigma^2_{\nu_i}$$

Where μ_i are the mean returns of firm i. Since we assume they are constant over time, we can estimate them by averaging over the pre-event returns.

For empirical purposes, we test our hypothesis with both Equation 2 and Equation 3 to show robustness against the relationship between normal and abnormal returns. However, note that the definitions in Equation 2 and Equation 3 are only for the purposes of calculating $\mathbb{E}[R_{it}|X_t]$ in Equation 1. None of these equations are time dependent, however we believe that the data is time-dependent. So the returns would follow an autoregressive process. That is,

$$r_{i,t} = \eta_0 + \sum_{j=1}^{\infty} \eta_j r_{i,t-j} \tag{4}$$

Given the breath of the data, the ideal way to produce a statistical analysis would be a time series model. However, as explained in Chang et al. (2018), the time series methods that could help us analyze over 50 stocks simultaneously, that is, the vector autoregressive models like VAR and VARMA, are only useful for $j \leqslant 3$. In other words, these models can help us identify betas only if the autocorrelations between the returns are significant only for the previous three time periods, but not more than that. Given the breath of our model and the conditions of the event in question (that is, presidential elections), having only three lagged significant values is very unlikely. The suggested solution in Chang et al. (2018) is

to use PCA to reduce the dimension of the pre-event window and use the relevant principal components as controls in the regression.

Then, the actual model we use looks as follows:

$$AR_{i,t_0+j} = \theta_0 + \theta_1 D_i + \gamma' PCA_{t_0-l} \tag{5}$$

Where $j, l > 0$ and t_0 is the day the election takes place. PCA_{t_0-l} is a matrix containing the relevant principal components of W, where

$$W = [r_{t_0-1}, \cdots, r_{t_0-l}]$$

that is, W contains the vectors of abnormal returns at each time before the event in out pre-event/trainign window. AR_{i,t_0+j} refers to the abnormal returns j days post-election. D_i is a factor indicating whether firm i leaned democrat, republican, or neutral. We set neutral firms as the reference group.

4.3.2 Study II

For this study, I use the methodology outlined in Chen et al. (2023). Below I will give a brief summary of the latent process, observed process, and the nature of the estimator used, as explained in the original paper. Note that I will assume Conditions 1, 2, and 3 outlined in Chen et al. (2023) hold in order to achieve robust and asymptotically consistent estimates for spot beta.

We assume there is a latent process defined as follows: for two positive integers $q, d >= 1$, data is discretely sampled from a continuous process

$$\{\Xi_t\}_{0 \leqslant t \leqslant T} = \left(\Xi_t^{(1)}, \cdots, \Xi_t^{(q)}, \Xi_t^{(q+1)}, \cdots, \Xi_t^{(q+d)}\right) \tag{6}$$

Where the first q elements of $\{\Xi_t\}_{0 \leqslant t \leqslant T}$ are part of the covariate process X, while the

last d elements are part of the dependent variable process Y. We further assume $\{\Xi_t\}_{0\leqslant t\leqslant T}$ is an Itô process:

$$\Xi_t = \Xi_0 + \int_0^t \mu_u du + \int_0^t \sigma_u dW_u \tag{7}$$

where W is a standard Brownian motion with a filtration $(F_t)_{0\leqslant t\leqslant T}$ in a $(q+d)$-dimensional space. μ_u and σ_u are predictable. Define

$$c_t = (\sigma\sigma')_t \tag{8}$$

and assume mu_t and c_t are locally bounded. Then the integrated variance-covariance matrix of Ξ_t is

$$\langle \Xi, \Xi \rangle_t = \int_0^t c_u du \tag{9}$$

We construct the smoothed TSRV estimator for $\langle \Xi, \Xi \rangle_t$. denoted $\widehat{\langle \Xi, \Xi \rangle}_t$ by first defining a a synchronous grid with

$$\{0 = \tau_{n,0}, < \tau_{n,1} < \cdots < \tau_{n,N} = T\}$$

Then for $0 \leqslant t \leqslant T$, $1 \leqslant r$, $s \leqslant q+d$ and a pair $(J, K) = (3, 20)$ in our empirical exercise, define

$$N*(t) = \max\{1 \leqslant i \leqslant N : \tau_{n,i} \leqslant t\}$$

$$b = K + J$$

$$K[\widetilde{\widetilde{\Xi}^{(r)}, \widetilde{Xi}}^{(s)}]_t^{(K)} = \left(\frac{1}{2} \sum_{i=1}^{b-K} + \sum_{b-K+1}^{N*(t)-b} + \sum_{N*(t)-b+1}^{N*(t)-K} \right) \left(\widetilde{\Xi}_{i+K}^{(r)} - \widetilde{\Xi}_i^{(r)} \right) \left(\widetilde{\Xi}_{i+K}^{(s)} - \widetilde{\Xi}_i^{(s)} \right) \quad (10)$$

where $\widetilde{\Xi}_i^{(r)}$ are the pre-averaged prices for stock r at time interval i. To calculate this, we create 5-second intervals since 9:30:00-16:00:00, and take the average of the price of all the transactions that occurred within each interval, for a total of N intervals.

We define $K[\widetilde{\widetilde{\Xi}^{(r)}, \widetilde{Xi}}^{(s)}]_t^{(K)}$ by switching J and K. Then the S-TSRV is defined as:

$$\widehat{\langle \Xi, \Xi \rangle}_{n,t} = \frac{1}{(1-b/N)(K-J)} \left(K[\widetilde{\widetilde{\Xi}^{(r)}, \widetilde{Xi}}^{(s)}]_t^{(K)} - J[\widetilde{\widetilde{\Xi}^{(r)}, \widetilde{Xi}}^{(s)}]_t^{(J)} \right) \quad (11)$$

In our data, we have $X = (X^{(1)}, \cdots, X^{(q)}) = (\Xi^{(1)}, \cdots, \Xi^{(q)})$ and $Y = \Xi^{(q+1)}$, so we define $\langle X, X \rangle_t = \left\{ \langle \Xi^{(r)}, \Xi^{(s)} \rangle_t \right\}_{1 \leqslant r,s \leqslant q}$ and $\langle X, Y \rangle_t = \left\{ \langle \Xi^{(r)}, \Xi^{(q+1)} \rangle_t \right\}_{1 \leqslant r \leqslant q}$

Now suppose these process have the following relationship:

$$dY_t = \sum_{k=1}^{q} \beta_t^{(k)} dX_t^{(k)} + dZ_t \quad (12)$$

where $\langle X^{(k)}, Z \rangle_t = 0 \forall t, k$

Then minimizing the volatility of the error term, we set up the following problem:

$$\begin{aligned} min_\beta \langle Z, Z \rangle_t &= \langle Y, Y \rangle_t - 2 \int_0^t d\langle X, Y \rangle_s \beta_s + \int_0^t \beta_s' d\langle X, X \rangle_s \beta_s \\ &= \langle Y, Y \rangle_t - 2 \int_0^t c_s^{X,Y} \beta_s + \int_0^t \beta_s' c_s^{X,X} \beta_s \end{aligned}$$

Solving for the beta that minimizes $\langle Z, Z \rangle_t$:

$$\beta_s = \left(c_s^{X,X}\right)^{-1} c_s^{X,Y} \tag{13}$$

The spot beta estimator is constructed as

$$\hat{\beta}_{\Delta T_n, T_{i-1}} = \left(\hat{c}^{X,X}_{\Delta T_n, T_{i-1}}\right)^{-1} \hat{c}^{X,Y}_{\Delta T_n, T_{i-1}} \tag{14}$$

where $\hat{c}^{X,X}_{\Delta T_n, T_{i-1}}$ and $\hat{c}^{X,Y}_{\Delta T_n, T_{i-1}}$ are S-TSRV and S-TSCV estimates.

We define the spot beta estimate for firm i at time t as

$$\beta_{i,t}^{SPY} = \frac{\hat{c}^{SPY,stocki}_{\Delta T_n, t}}{\hat{c}^{SPY,SPY}_{\Delta T_n, t}}$$

and run the following regression for each election year:

$$\beta_{i,t}^{SPY} = \sum_{j=t_0-1}^{t_0+3} \sum_{k \in K} \sum_{p \in P} \delta_{j,k} I_{i,j,k,t,p} \tag{15}$$

Where $I_{i,day,hour,t,politicalleaning}$ is an indicator variable defined around the election day t_0, P = {Neutral, Democrat, Republican} the set of possible political leanings for each company, and K is the intervals in which beta is computed. If ΔT_n = 1 hour, K = {[9:30-10:00], (10:00, 11:00], (11:00, 12:00], (12:00, 13:00], (13:00, 14:00], (14:00, 15:00], (15:00, 16:00]}. If ΔT_n = 2 hours, K = {(9:30, 12:00], (12:00, 14:00], (14:00, 16:00]}.

The change in betas for betas calculated over one-hour intervals are more sensitive to changes and show more variation. We hypothesized this is due to a number of outliers in our sample whose betas have mean-reverting tendencies. To balance this out, we repeat the study with longer time intervals (two hours) that allow for the means to revert, and cancel out some of the outlier effect.

5 Results

Below I show a series of tables and plots that summarize the relevant findings in both studies.

For the explicit regression tables, see Appendix B.

5.1 Study I

Table 3: Study I Summarized Regression Results; Consistent Signs and Significance Levels

		Dependent variable: market and constant mean abnormal returns								
		Reference Group: Neutral Companies (N)								
Year	Political Leaning	t_0+1	t_0+2	t_0+3	t_0+4	t_0+5	t_0+6	t_0+7	t_0+8	t_0+9
2008	N	$-^{***}$	$-$	$-^{***}$	$-$	$-^{***}$	$+$	$-$	$-^{***}$	$\perp$
	D	$+$	$-$	$-$	$+^{**}$	$-$	$-$	$+$	$-^{*}$	$+$
	R	$+^{*}$	$+$	$\perp$	$+$	$-$	$-$	$+$	$+$	$+$
2012	N	$\perp$	$+$	$+$	$+^{***}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+$
	D	$-$	$+^{*}$	$-$	$+$	$-$	$+^{***}$	$+$	$+^{*}$	$-$
	R	$-$	$+$	$-$	$+$	$\perp$	$+$	$-$	$+$	$+$
2016	N	$+^{*}$	$+$	$+$	$-^{*}$	$-$	$-^{**}$	$-$	$-$	$-$
	D	$+$	$+$	$-$	$-$	$\perp$	$+$	$-$	$-$	$-$
	R	$+$	$+$	$-$	$-$	$-$	$+$	$+$	$+$	$-$
2020	N	$+$	$-^{***}$	$+^{***}$	$-^{*}$	$-^{***}$	$-^{***}$	$+^{***}$	$+^{***}$	$+$
	D	$+$	$-$	$-$	$+$	$+^{*}$	$-$	$-$	$-$	$-$
	R	$+$	$-$	$-$	$+$	$+^{*}$	$-$	$-^{**}$	$-$	$-$

Notes: *p<0.1; **p<0.05; ***p<0.01

N = Neutral companies, R = Republican Companies, D = Democrat companies

Here we show signs consistent across both models, with lowest significance level achieved

The symbol $\perp$ denotes entries were models produced contradictory signs

5.2 Study II

Generated betas are found in Figure 3 and Figure 4. We have excluded outliers from these two plots for easier visibility. Plots including outliers can be found in Figure 10 and Figure 11. Additionally, you can find the main outliers responsible for the larger-than-expected standard errors in Figure 12 and Figure 13. Note that these outlier stocks also show mean-reverting tendencies. We plot the regression coefficients, δ_i in Figure 5 and Figure 6

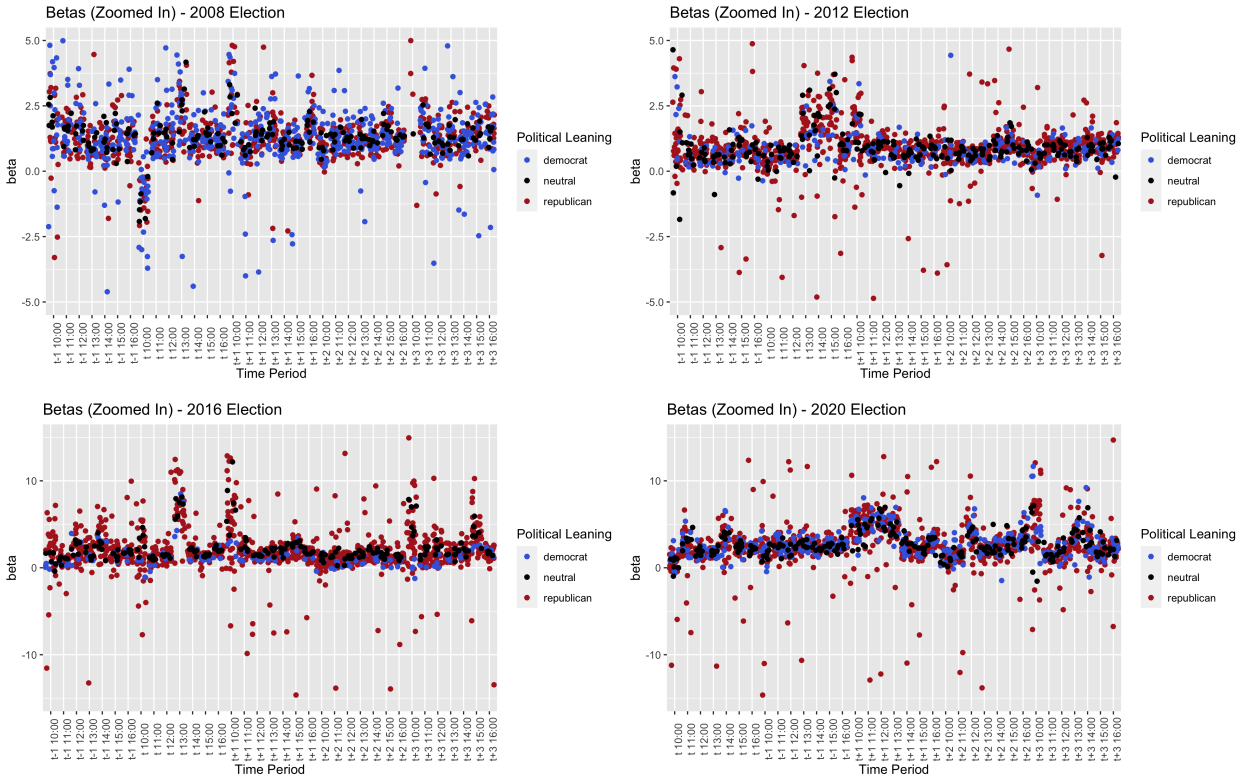

Figure 3: Betas generated in one-hour intervals, excluding outliers

Table 4: Study II Summarized Regression Coefficients for the 2008 Election

	Dependent variable: betas calculated every hour					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
10:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+$
11:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
12:00	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
13:00	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
14:00	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$
15:00	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$
16:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
10:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
11:00	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
12:00	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
13:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$
14:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
15:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$+^{*}$	$+^{***}$
16:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$

	Dependent variable: betas calculated every two hours					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
12:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
14:00	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$
16:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
12:00	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
14:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$
16:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$

Note: 21 *p<0.1; **p<0.05; ***p<0.01

Table 5: Study II Summarized Regression Coefficients for the 2012 Election

	Dependent variable: betas calculated every hour					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
10:00	$+^{***}$	$+^{**}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
11:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{**}$
12:00	$-$	$+^{***}$	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$
13:00	$+$	$+$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
14:00	$+$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$
15:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
10:00	$+$	$+^{***}$	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
11:00	$-$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
12:00	$+^{*}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
13:00	$-$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$+$	$-$	$+^{***}$
14:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
15:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$-$	$+^{*}$	$+^{***}$
16:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

	Dependent variable: betas calculated every two hours					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
12:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
14:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
16:00	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
12:00	$+$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
14:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$+^{*}$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

Note: 22 *p<0.1; **p<0.05; ***p<0.01

Table 6: Study II Summarized Regression Coefficients for the 2016 Election

	Dependent variable: betas calculated every hour					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
10:00	$-$	$+$	$+^{***}$	$+$	$-$	$+^{***}$
11:00	$+$	$+^{***}$	$+^{***}$	$+$	$+$	$+^{***}$
12:00	$+$	$+^{**}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$
13:00	$-^{*}$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
14:00	$-^{*}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
15:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
10:00	$+^{***}$	$+^{***}$	$+^{***}$	$+$	$+$	$+^{***}$	$+$	$-$	$+^{***}$
11:00	$+^{**}$	$+^{***}$	$+^{***}$	$+$	$+$	$+^{***}$	$+^{**}$	$+^{**}$	$+^{***}$
12:00	$+$	$+^{***}$	$+^{***}$	$+^{*}$	$+^{**}$	$+^{***}$	$-$	$+^{*}$	$+^{***}$
13:00	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
14:00	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
15:00	$-$	$+^{***}$	$+^{***}$	$+$	$+^{*}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$

	Dependent variable: betas calculated every two hours					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
12:00	$+$	$+^{***}$	$+^{***}$	$+$	$+^{***}$	$+^{***}$
14:00	$-^{*}$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$+$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
12:00	$+^{***}$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{*}$	$+^{***}$	$+$	$+^{*}$	$+^{***}$
14:00	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$	$-$	$+^{***}$	$+^{***}$
16:00	$+^{*}$	$+^{***}$	$+^{***}$	$+^{**}$	$+^{**}$	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$

Note: 23 *p<0.1; **p<0.05; ***p<0.01

Table 7: Study II Summarized Regression Coefficients for the 2020 Election

	Dependent variable: betas calculated every hour					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
10:00	−	$+^{***}$	+	$+^{*}$	$+^{***}$	$+^{***}$
11:00	+	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$
12:00	+	$+^{**}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$
13:00	+	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$
14:00	−	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
15:00	−	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$
16:00	$+^{**}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
10:00	−	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
11:00	$+^{***}$	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$
12:00	−	$+^{***}$	$+^{***}$	$+^{*}$	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
13:00	+	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
14:00	−	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
15:00	−	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
16:00	+	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$

	Dependent variable: betas calculated every two hours					
	$t_0 - 1$			t_0		
Hour	R	D	N	R	D	N
12:00	$+^{***}$	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$
14:00	−	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
16:00	$+^{**}$	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$

	$t_0 + 1$			$t_0 + 2$			$t_0 + 3$		
Hour	R	D	N	R	D	N	R	D	N
12:00	+	$+^{***}$	$+^{***}$	$+^{**}$	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$
14:00	+	$+^{***}$	$+^{***}$	+	$+^{***}$	$+^{***}$	−	$+^{***}$	$+^{***}$
16:00	+	$+^{***}$	$+^{***}$	+	$+^{**}$	$+^{***}$	−	$+^{***}$	$+^{***}$

Note: 24 *p<0.1; **p<0.05; ***p<0.01

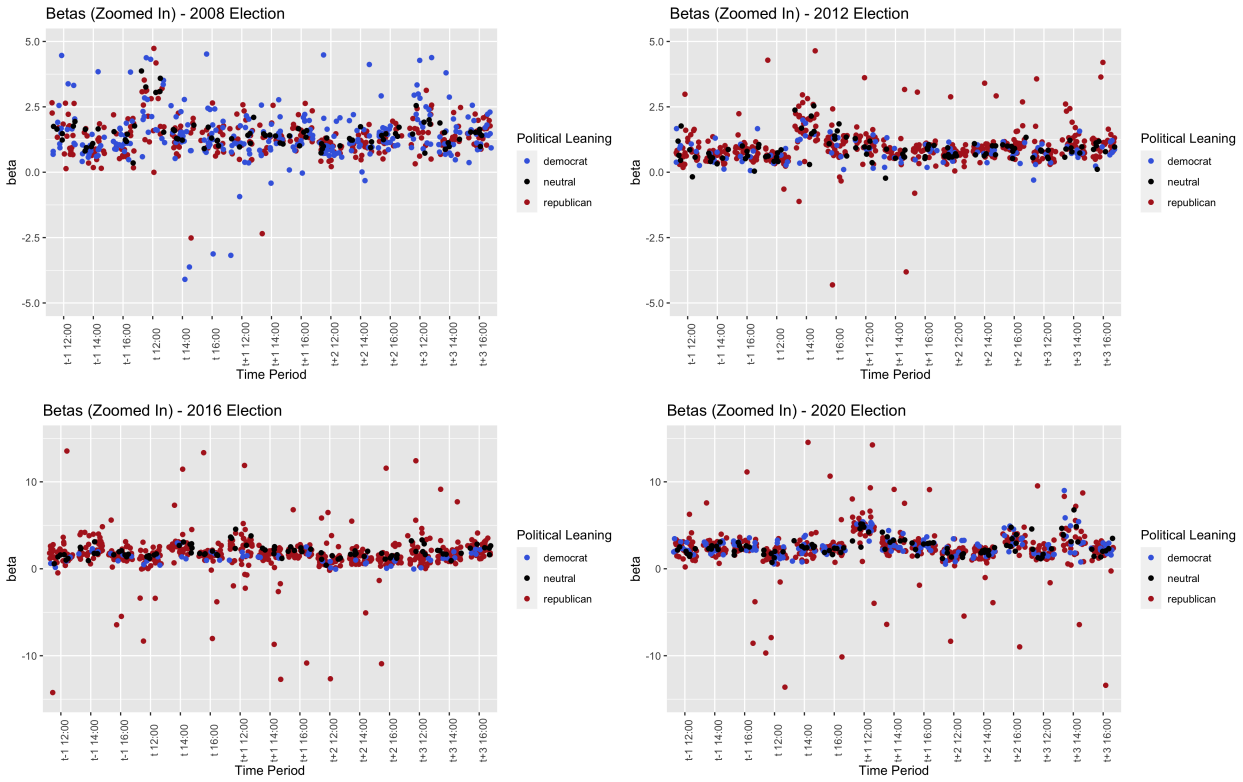

Figure 4: Betas generated in two-hour intervals, excluding outliers

6 Discussion

The results of Study I show that there are abnormal returns in the first 9 trading days immediately after the election takes place. The direction of the returns is not constant, across or within years; this may be due to volatility caused by new information about election results coming out. In the United States, the count of electoral votes takes about three days before we can get accurate predictions of election results (the actual count can take up to weeks to be finalized). So although certain states may have results the morning of the day after the election, some states may take a few extra days to deliver vote counts. This creates a constant flow of information. Assuming markets are efficient, we expect the market to incorporate the flow of information as it becomes available, hence generating some level of volatility.

Study II examines this notion by looking at the evolution of volatility throughout the

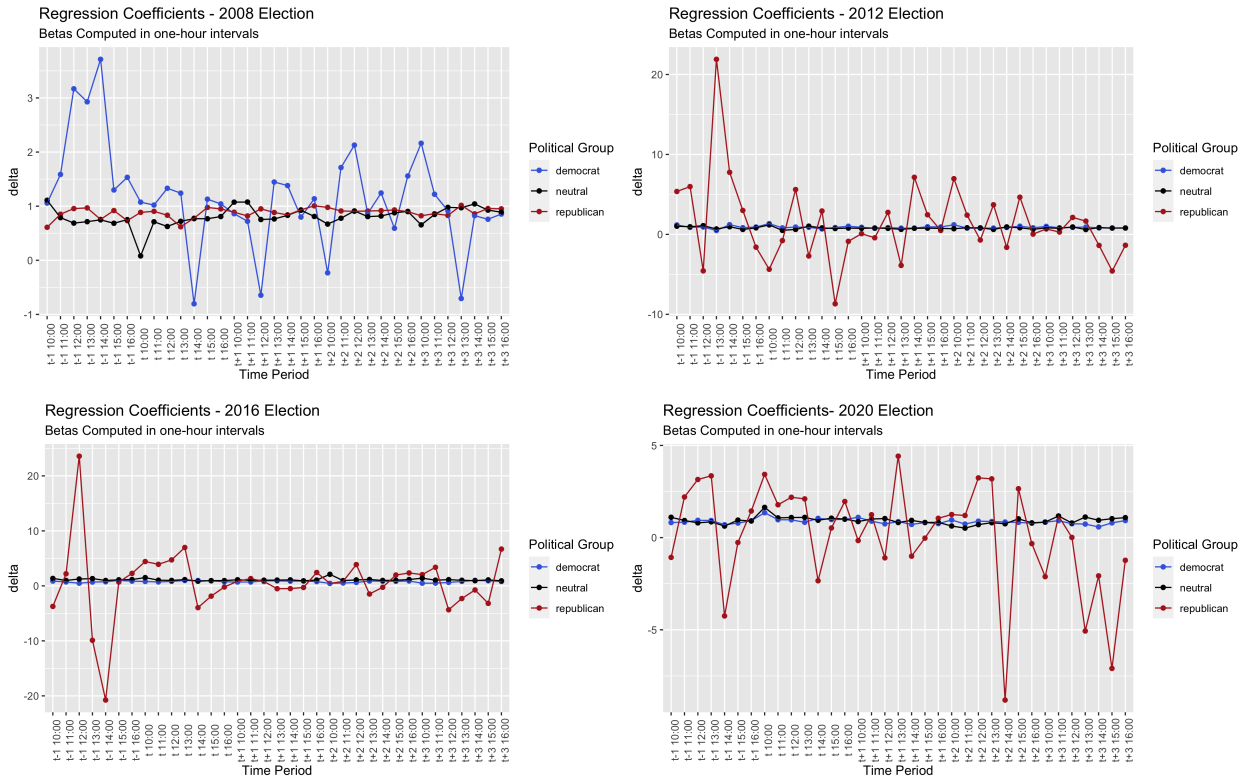

Figure 5: Regression coefficients for Betas generated in one-hour intervals

day around the time of the election. We find that the change in volatility was positive for all three groups (democrat-leaning, republican-leaning, and neutral companies) in the 2008 presidential election cycle. This would mean that the market became more volatile as the election developed and as results were coming out. This could be due to the importance of the election outcome, given that the US was in the midst of a recession at the time. Another interesting pattern is the constant positive and significant coefficients at all times and days in democrat-leaning and neutral companies, regardless of election cycle and winning party. If we take volatility as a symptom of uncertainty, then these results indicate uncertainty surrounding democrat and neutral companies, in contrast with a certainty surrounding republican-leaning companies. Since the pattern repeats regardless of which party wins the election in non-recession years, this points to the market having a preference for republican-leaning companies.

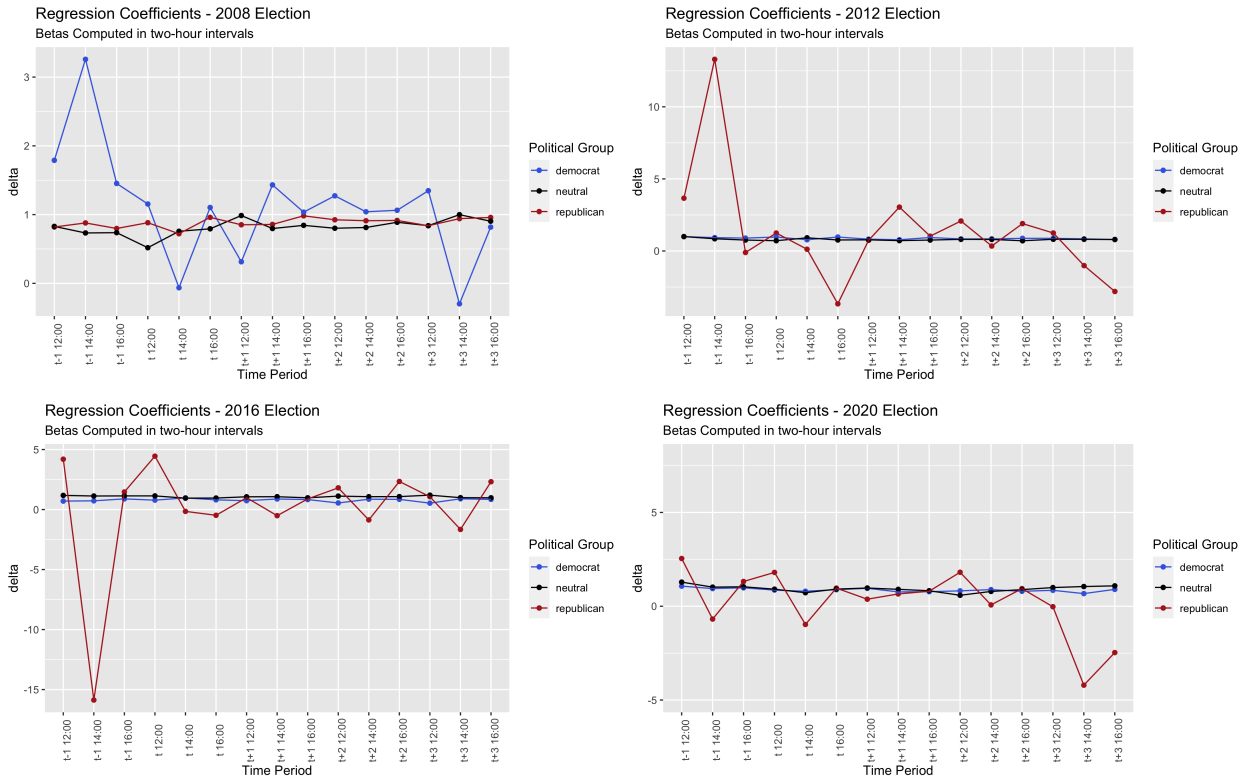

Figure 6: Regression coefficients for Betas generated in two-hour intervals

Moreover, changes in volatility around the 2008 election are positive and significant for republican companies as well as democrat and neutral companies. This would indicate that during the recession, market preferences shifted. Rather than republicans dominating, we have uncertainty surrounding the entire market, and hence affecting even republican companies.

Lastly, we see evidence of the market efficiently incorporating new information. Results for presidential elections in the US can take a long time to be published because votes take a long time to count; the evening of election day, and early morning the the next day after the election, many states publish projected winners. Within the first 3 days after the election, most states have counted enough votes to have an almost certain prediction of the election outcome, which in turn gives the market a fuller picture of overall election results. Hence, we expect (and find) that the markets see significant changes in volatility during the market's

opening/earlier hours of operations. Republican companies see significant changes in volatility the second day after as markets open. Additionally, the magnitude of change in beta for republican stocks, when significant, is larger than neutral and democrat companies. This speaks to the high stability of republican stocks and the markets' efficiency in incorporating new information.

Study I also sheds light ton one of our initial questions, regarding market's punishing or rewarding companies for betting on the winning candidate. In Study I, we do not see positive abnormal returns for companies that supported the winning candidate in 2008 and 2012. In both of these years, the winner was Barack Obama, from the Democratic party. The control group (and reference group) exhibits negative abnormal returns after both elections. Furthermore, the left-leaning stocks have even more negative significant coefficients. This indicates a sort of "punishment" from the market for betting on the winning candidate, rather than a "reward". This is contradictory to our hypothesis, and further indicates that markets prefer republicans instead of democrats.

Another important note is that we do not see additional abnormal returns in 2016 for companies that bet on the winning candidate. In this case, the winner was Republican Donald Trump. This seems at odds with the preliminary analysis in Figure 2, but I think can be explained by the composition of the market in this election cycle. During this presidential race, the companies in our sample leaned overwhelmingly to the political right. This could indicate that, overall, the whole market was leaning republican, so the announcement effect related to revealing the winner of the election may be concentrated in the intercept. This points to a potential identification issue. We could resolve this issue by expanding our sample, including more democrat-leaning and neutral companies. However, that is an overambitious fix given the lack of available data.

7 Conclusion

We have seen evidence that as election results come out, the market sees volatility in its abnormal results. The market does not seem to award positive abnormal returns to those companies who support republicans, or even those who support the candidates that win the election. We do find, however, that the market is more confident on republican companies. We arrive to this conclusion by looking at the behavior of volatility of stocks based on their political leanings. We find that companies who support democrats and companies that are neutral experience more significant changes to volatility while republican companies only do so in punctual hours, usually at the beginning of the day as markets are incorporating overnight news.

Moreover, the only election cycle in our sample that shows a different pattern is the 2008 election This election occurred in the midst of the 2008 recession. In recession times, we see an increase in government spending coupled with a decrease in profits, leading to market uncertainty. This uncertainty is evident when looking at how beta behaved right before and after the election results were revealed – the market seemed as uncertain about republican stocks as it did with neutral and democrat stocks.

Some improvements for future research include extending the post-event window to see if election news take longer to affect abnormal returns than we expected. Moreover, it would be interesting to see the behavior of volatility more than a week before the election and compare it with the results we have here. This would give us a better picture of the before-and-after conditions, and we would be able to make causal claims.

A second improvement for future research is to broaden the sample size an include more left-leaning companies. It would be interesting to extend the study to the 2022 midterm election and replicate it in future presidential elections to see if the cultural changes brought about by the questions of fraud surrounding the 2020 election influence company's political spending and the market's favorable view of republicans.

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Appendix A

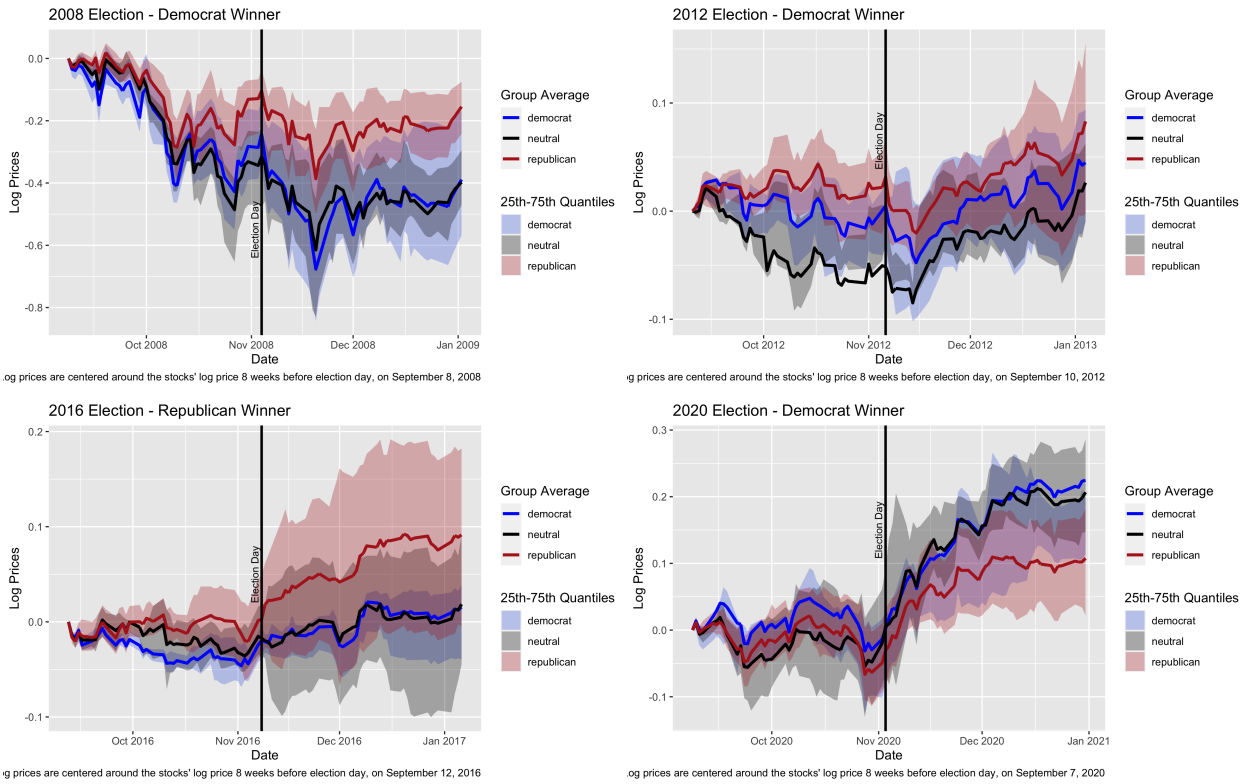

Figure 7: Middle Quantiles and Mean Stock Price for Companies in the Sample

Table 8: Sample Overview; Observation Counts

Year	Companies Leaning Democrat	Companies Leaning Republican	Neutral Companies	Total
2020	12	36	8	56
2016	4	44	8	56
2012	8	39	9	56
2008	20	25	9	54

Table 9: Companies in Sample and their Leanings each Election Cycle

Company Name	Ticker	2008	2012	2016	2020
Boeing	BA	republican	democrat	republican	republican
United Airlines	UAL	republican	republican	republican	democrat
American Express	AXP	democrat	republican	republican	republican
Bank of America	BAC	democrat	republican	republican	republican
Capital One	COF	democrat	republican	republican	republican
Citi	C	democrat	republican	republican	republican
Goldman Sachs	GS	democrat	republican	republican	republican
MasterCard	MA	democrat	republican	republican	republican
Morgan Stanley	MS	democrat	republican	republican	republican
Johnson & Johnson	JNJ	democrat	republican	republican	republican
Merck	MRK	democrat	republican	republican	republican
Pfizer	PFE	republican	republican	republican	republican
Eli Lilly And Co	LLY	republican	republican	republican	democrat
Abbott Laboratories	ABT	republican	republican	republican	republican
Comcast	CMCSA	republican	democrat	republican	republican
Disney	DIS	democrat	democrat	democrat	democrat
Cocal Cola	KO	democrat	republican	democrat	republican
Kraft	KHC	republican	republican	republican	democrat
McDonalds	MCD	republican	republican	republican	republican
Pepsy	PEP	republican	republican	republican	republican
Wendy's	WEN	republican	republican	republican	republican
3M	MMM	republican	republican	democrat	republican
General Electric	GE	democrat	republican	republican	democrat
Procter & Gamble	PG	republican	republican	republican	republican
CVS	CVS	democrat	republican	republican	democrat
Home Depot	HD	republican	republican	republican	republican
Target	TGT	democrat	republican	republican	republican
Walmart	WMT	republican	democrat	republican	republican
Altria Group Inc	MO	republican	republican	republican	republican
UnitedHealth Group	UNH	democrat	republican	republican	republican
Microsoft	MSFT	democrat	republican	republican	republican
Facebook	META	republican	republican	republican	republican
Amazon	AMZN	democrat	democrat	republican	democrat
JP Morgan	JPM	republican	republican	republican	republican
SpaceX (tesla)	TSLA	democrat	democrat	republican	democrat
Visa	VI	republican	republican	republican	republican
berkshire hathaway	BRK-A	republican	republican	republican	democrat
ConocoPhillips	COP	republican	republican	republican	democrat
BP PLC	BP	republican	republican	republican	republican
Chevron	CVX	republican	republican	republican	republican
Exxon Mobil	XOM	republican	republican	republican	republican
Oracle	ORCL	democrat	democrat	democrat	democrat
Toyota	TM	neutral	neutral	republican	democrat
Intel	INTC	republican	democrat	republican	republican
Texas Instruments	TXN	republican	republican	republican	republican
Delta Air Lines	DAL	democrat	republican	republican	republican
Bayer	BAYRY	republican	republican	republican	republican
American Airlines	AAL	republican	republican	republican	republican
Google	GOOG	democrat	republican	republican	republican
Ralph Lauren Corp	RL	neutral	neutral	neutral	neutral
Automatic Data Processing Inc	ADP	neutral	neutral	neutral	neutral
Mettler-Toledo	MTD	neutral	neutral	neutral	neutral
MSCI Inc	MSCI	neutral	neutral	neutral	neutral
Schlumberger Limited	SLB	neutral	neutral	neutral	neutral
Welltower Inc	WELL	neutral	neutral	neutral	neutral
Nissan	NSANY	neutral	neutral	neutral	neutral
IBM	IBM	neutral	neutral	neutral	neutral

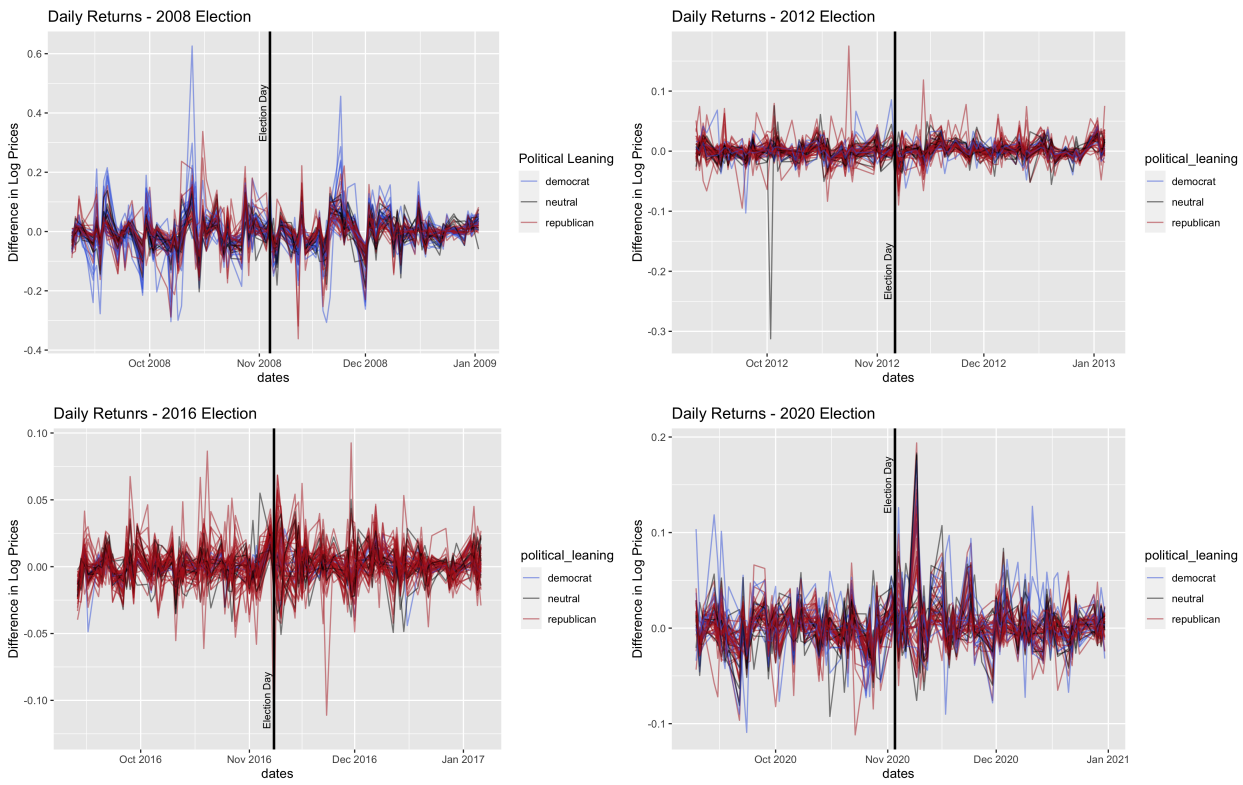

Figure 8: Stock Returns for Companies in the Sample

Appendix B

Table 10: Study I Results – 2008 Presidential Election Cycle

	Days After Election					
	$t_0 + 1$		$t_0 + 2$		$t_0 + 3$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.366***	−0.505***	−0.047	−0.030	−0.315***	−0.298***
	(0.128)	(0.154)	(0.070)	(0.084)	(0.094)	(0.105)
Democrat-Leaning (Winner)	0.022	0.021	−0.002	−0.004	−0.010	−0.011
	(0.015)	(0.016)	(0.008)	(0.009)	(0.011)	(0.011)
Republican-Leaning (Loser)	0.033**	0.030*	0.005	0.001	0.002	−0.002
	(0.015)	(0.015)	(0.008)	(0.008)	(0.011)	(0.010)
Observations	52	52	52	52	52	52
R^2	0.302	0.252	0.325	0.413	0.302	0.331
Adjusted R^2	0.226	0.171	0.251	0.349	0.226	0.258
Residual Std. Error (df = 46)	0.037	0.038	0.020	0.021	0.027	0.026
F Statistic (df = 5; 46)	3.974***	3.102**	4.424***	6.464***	3.977***	4.546***
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 10 – Continued

	Days After Election					
	$t_0 + 4$		$t_0 + 5$		$t_0 + 6$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.106	−0.101	−0.576***	−0.734***	0.062	0.107
	(0.082)	(0.095)	(0.121)	(0.142)	(0.121)	(0.146)
Democrat-Leaning (Winner)	0.022**	0.020**	−0.002	−0.004	−0.024	−0.026*
	(0.010)	(0.010)	(0.014)	(0.015)	(0.015)	(0.015)
Republican-Leaning (Loser)	0.019*	0.015	−0.018	−0.023	−0.011	−0.014
	(0.009)	(0.009)	(0.014)	(0.014)	(0.014)	(0.014)
Observations	52	52	52	52	52	52
R^2	0.130	0.095	0.749	0.765	0.337	0.275
Adjusted R^2	0.035	−0.003	0.722	0.739	0.265	0.196
Residual Std. Error (df = 46)	0.024	0.023	0.035	0.035	0.035	0.036
F Statistic (df = 5; 46)	1.371	0.968	27.500***	29.868***	4.676***	3.483***
Note:						*p<0.1; **p<0.05; ***p<0.01

	Days After Election					
	$t_0 + 7$		$t_0 + 8$		$t_0 + 9$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.169**	−0.084	−0.164**	−0.228***	−0.120	0.001
	(0.081)	(0.091)	(0.066)	(0.076)	(0.103)	(0.120)
Democrat-Leaning (Winner)	0.013	0.011	−0.016*	−0.017**	0.010	0.008
	(0.010)	(0.009)	(0.008)	(0.008)	(0.012)	(0.012)
Republican-Leaning (Loser)	0.005	0.001	0.009	0.006	0.023*	0.019
	(0.009)	(0.009)	(0.008)	(0.008)	(0.012)	(0.012)
Observations	52	52	52	52	52	52
R^2	0.200	0.313	0.633	0.550	0.236	0.268
Adjusted R^2	0.113	0.239	0.593	0.501	0.153	0.188
Residual Std. Error (df = 46)	0.023	0.022	0.019	0.019	0.030	0.029
F Statistic (df = 5; 46)	2.294*	4.200***	15.866***	11.228***	2.844**	3.367**
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 11: Study I Results – 2012 Presidential Election Cycle

	Days After Election					
	$t_0 + 1$		$t_0 + 2$		$t_0 + 3$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	0.325***	−0.032	0.023	0.004	0.101	0.144
	(0.116)	(0.099)	(0.137)	(0.120)	(0.106)	(0.086)
Democrat-Leaning (Winner)	−0.008	−0.007	0.011*	0.012*	−0.006	−0.005
	(0.005)	(0.005)	(0.006)	(0.006)	(0.005)	(0.004)
Republican-Leaning (Loser)	−0.002	−0.002	0.008	0.007	−0.004	−0.005
	(0.004)	(0.004)	(0.005)	(0.005)	(0.004)	(0.004)
Observations	55	55	55	55	55	55
R^2	0.615	0.607	0.371	0.386	0.399	0.384
Adjusted R^2	0.557	0.549	0.277	0.295	0.309	0.293
Residual Std. Error (df = 47)	0.010	0.010	0.012	0.012	0.009	0.009
F Statistic (df = 7; 47)	10.714***	10.378***	3.955***	4.228***	4.458***	4.192***
Note:						*p<0.1; **p<0.05; ***p<0.01

	Days After Election					
	$t_0 + 4$		$t_0 + 5$		$t_0 + 6$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.113	−0.162	−0.662***	−0.462***	0.176	0.130
	(0.125)	(0.103)	(0.110)	(0.093)	(0.134)	(0.117)
Democrat-Leaning (Winner)	0.005	0.006	−0.005	−0.004	0.019***	0.019***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)
Republican-Leaning (Loser)	0.001	0.001	0.001	−0.0003	0.002	0.001
	(0.005)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)
Observations	55	55	55	55	55	55
R^2	0.187	0.214	0.838	0.843	0.298	0.308
Adjusted R^2	0.066	0.097	0.814	0.820	0.194	0.205
Residual Std. Error (df = 47)	0.011	0.010	0.010	0.009	0.012	0.012
F Statistic (df = 7; 47)	1.542	1.827	34.832***	36.100***	2.851**	2.993**
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 11 – Continued

	Days After Election					
	$t_0 + 7$		$t_0 + 8$		$t_0 + 9$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.311**	−0.165	0.428***	0.417***	0.021	−0.081
	(0.137)	(0.118)	(0.104)	(0.090)	(0.105)	(0.086)
Democrat-Leaning (Winner)	0.0004	0.001	0.009*	0.009*	−0.002	−0.002
	(0.006)	(0.006)	(0.005)	(0.005)	(0.005)	(0.004)
Republican-Leaning (Loser)	−0.0004	−0.001	0.005	0.005	0.002	0.001
	(0.005)	(0.005)	(0.004)	(0.004)	(0.004)	(0.004)
Observations	55	55	55	55	55	55
R^2	0.408	0.393	0.520	0.507	0.249	0.231
Adjusted R^2	0.320	0.303	0.448	0.434	0.137	0.116
Residual Std. Error (df = 47)	0.012	0.012	0.009	0.009	0.009	0.009
F Statistic (df = 7; 47)	4.631***	4.349***	7.268***	6.909***	2.222**	2.016*

Note: *p<0.1; **p<0.05; ***p<0.01

Table 12: Study I Results – 2016 Presidential Election Cycle

	Days After Election					
	$t_0 + 1$		$t_0 + 2$		$t_0 + 3$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	0.837***	0.321*	0.080	0.027	0.660***	0.230
	(0.248)	(0.174)	(0.127)	(0.088)	(0.218)	(0.151)
Democrat-Leaning (Loser)	0.001	0.001	0.012	0.012*	−0.009	−0.008
	(0.014)	(0.015)	(0.007)	(0.007)	(0.013)	(0.013)
Republican-Leaning (Winner)	0.004	0.004	0.005	0.005	−0.003	−0.003
	(0.009)	(0.009)	(0.005)	(0.005)	(0.008)	(0.008)
Observations	55	55	55	55	55	55
R^2	0.250	0.235	0.251	0.224	0.235	0.214
Adjusted R^2	0.157	0.139	0.158	0.127	0.139	0.116
Residual Std. Error (df = 48)	0.023	0.024	0.012	0.012	0.021	0.020
F Statistic (df = 6; 48)	2.670**	2.451**	2.683**	2.308**	2.459**	2.183*
Note:						*p<0.1; **p<0.05; ***p<0.01

	Days After Election					
	$t_0 + 4$		$t_0 + 5$		$t_0 + 6$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.247*	0.232**	−0.163	−0.289***	0.282**	0.203**
	(0.134)	(0.092)	(0.135)	(0.095)	(0.115)	(0.080)
Democrat-Leaning (Loser)	−0.004	−0.004	−0.0001	0.0001	0.003	0.003
	(0.008)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)
Republican-Leaning (Winner)	−0.001	−0.001	−0.003	−0.004	0.004	0.004
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)
Observations	55	55	55	55	55	55
R^2	0.304	0.265	0.261	0.277	0.306	0.263
Adjusted R^2	0.217	0.173	0.169	0.186	0.219	0.171
Residual Std. Error (df = 48)	0.013	0.013	0.013	0.013	0.011	0.011
F Statistic (df = 6; 48)	3.498***	2.885**	2.830**	3.061**	3.528***	2.857**
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 12 – Continued

	Days After Election					
	$t_0 + 7$		$t_0 + 8$		$t_0 + 9$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.068	−0.048	−0.289***	−0.078	−0.222*	−0.023
	(0.085)	(0.058)	(0.094)	(0.064)	(0.125)	(0.085)
Democrat-Leaning (Loser)	−0.004	−0.004	−0.008	−0.007	−0.002	−0.002
	(0.005)	(0.005)	(0.005)	(0.005)	(0.007)	(0.007)
Republican-Leaning (Winner)	0.003	0.002	0.002	0.001	−0.002	−0.002
	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.004)
Observations	55	55	55	55	55	55
R^2	0.291	0.269	0.281	0.294	0.136	0.135
Adjusted R^2	0.202	0.178	0.191	0.206	0.028	0.027
Residual Std. Error (df = 48)	0.008	0.008	0.009	0.009	0.012	0.012
F Statistic (df = 6; 48)	3.284***	2.943**	3.130**	3.337***	1.256	1.248

Note: *p<0.1; **p<0.05; ***p<0.01

Table 13: Study I Results – 2020 Presidential Election Cycle

	Days After Election					
	$t_0 + 1$		$t_0 + 2$		$t_0 + 3$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	0.345	0.521**	−1.146***	−0.801***	4.605***	3.394***
	(0.289)	(0.219)	(0.258)	(0.188)	(0.731)	(0.600)
Democrat-Leaning (Winner)	0.002	0.002	−0.004	−0.003	−0.020	−0.024
	(0.008)	(0.008)	(0.007)	(0.007)	(0.021)	(0.022)
Republican-Leaning (Loser)	0.006	0.006	−0.008	−0.007	−0.009	−0.007
	(0.007)	(0.007)	(0.006)	(0.006)	(0.017)	(0.018)
Observations	55	55	55	55	55	55
R^2	0.353	0.334	0.324	0.302	0.705	0.669
Adjusted R^2	0.272	0.251	0.239	0.215	0.668	0.627
Residual Std. Error (df = 48)	0.017	0.017	0.015	0.014	0.043	0.046
F Statistic (df = 6; 48)	4.357***	4.008***	3.834***	3.460***	19.134***	16.139***
Note:						*p<0.1; **p<0.05; ***p<0.01

	Days After Election					
	$t_0 + 4$		$t_0 + 5$		$t_0 + 6$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	−0.693*	−0.616*	−1.117***	−0.919***	−0.622***	−0.416***
	(0.409)	(0.315)	(0.264)	(0.192)	(0.174)	(0.126)
Democrat-Leaning (Winner)	0.014	0.014	0.015*	0.016**	−0.004	−0.003
	(0.012)	(0.012)	(0.008)	(0.007)	(0.005)	(0.005)
Republican-Leaning (Loser)	0.008	0.010	0.011*	0.013**	0.002	0.003
	(0.009)	(0.010)	(0.006)	(0.006)	(0.004)	(0.004)
Observations	55	55	55	55	55	55
R^2	0.262	0.283	0.584	0.595	0.409	0.386
Adjusted R^2	0.170	0.193	0.531	0.544	0.335	0.310
Residual Std. Error (df = 48)	0.024	0.024	0.015	0.015	0.010	0.010
F Statistic (df = 6; 48)	2.840**	3.152**	11.210***	11.757***	5.534***	5.035***
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 13 – Continued

	Days After Election					
	$t_0 + 7$		$t_0 + 8$		$t_0 + 9$	
	Market Model	Constant Mean Model	Market Model	Constant Mean Model	Market Model	Constant Mean Model
Intercept (Control Group)	0.725***	0.617***	1.487***	1.005***	0.501	0.695**
	(0.212)	(0.168)	(0.293)	(0.237)	(0.354)	(0.273)
Democrat-Leaning (Winner)	−0.010	−0.011*	−0.005	−0.006	−0.017	−0.016
	(0.006)	(0.006)	(0.008)	(0.009)	(0.010)	(0.010)
Republican-Leaning (Loser)	−0.012**	−0.011**	−0.011	−0.009	−0.014*	−0.013
	(0.005)	(0.005)	(0.007)	(0.007)	(0.008)	(0.008)
Observations	55	55	55	55	55	55
R^2	0.538	0.544	0.583	0.565	0.205	0.185
Adjusted R^2	0.480	0.487	0.531	0.511	0.106	0.084
Residual Std. Error (df = 48)	0.012	0.013	0.017	0.018	0.021	0.021
F Statistic (df = 6; 48)	9.305***	9.549***	11.193***	10.401***	2.068*	1.821
Note:						*p<0.1; **p<0.05; ***p<0.01

Table 14: Study II Results - 2008, 1-hour betas

	Dependent variable:		
	Beta (Calculated every hour)		
	Republican	Democrat	Neutral
t-1 10:00	0.609***	1.057***	1.109***
	(0.213)	(0.222)	(0.315)
t-1 11:00	0.851***	1.586***	0.788***
	(0.084)	(0.263)	(0.132)
t-1 12:00	0.956***	3.169**	0.687***
	(0.138)	(1.309)	(0.205)
t-1 13:00	0.968***	2.928**	0.714***
	(0.199)	(1.184)	(0.123)
t-1 14:00	0.755***	3.714	0.747***
	(0.167)	(3.019)	(0.171)
t-1 15:00	0.919***	1.299**	0.685***
	(0.112)	(0.530)	(0.203)
t-1 16:00	0.732***	1.533***	0.751***
	(0.095)	(0.378)	(0.142)
t 10:00	0.886***	1.074***	0.081
	(0.158)	(0.413)	(0.416)
t 11:00	0.905***	1.021***	0.712***
	(0.075)	(0.127)	(0.101)
t 12:00	0.832***	1.331***	0.625***
	(0.093)	(0.175)	(0.101)
t 13:00	0.619***	1.241***	0.721***
	(0.211)	(0.236)	(0.103)
t 14:00	0.778***	−0.804	0.770***
	(0.114)	(1.312)	(0.142)
t 15:00	0.977***	1.129*	0.767***
	(0.089)	(0.579)	(0.102)
t 16:00	0.949***	1.042***	0.808***
	(0.094)	(0.071)	(0.045)
t+1 10:00	0.888***	0.860***	1.074**
	(0.100)	(0.296)	(0.512)
t+1 11:00	0.819***	0.721*	1.077***
	(0.139)	(0.416)	(0.316)
t+1 12:00	0.950***	−0.646	0.754***
	(0.148)	(1.311)	(0.067)
t+1 13:00	0.883***	1.447***	0.764***
	(0.142)	(0.473)	(0.039)
t+1 14:00	0.839***	1.381***	0.831***
	(0.166)	(0.505)	(0.121)
t+1 15:00	0.932***	0.798***	0.925***
	(0.066)	(0.284)	(0.094)
t+1 16:00	1.006***	1.137***	0.810***
	(0.083)	(0.138)	(0.072)
t+2 10:00	0.978***	−0.232	0.669***
	(0.127)	(1.048)	(0.188)
t+2 11:00	0.911***	1.714***	0.777***
	(0.069)	(0.408)	(0.114)
t+2 12:00	0.906***	2.128**	0.912***
	(0.063)	(1.040)	(0.123)
t+2 13:00	0.911***	0.863***	0.808***
	(0.060)	(0.166)	(0.170)
t+2 14:00	0.917***	1.244***	0.818***
	(0.058)	(0.210)	(0.087)
t+2 15:00	0.930***	0.592	0.878***
	(0.062)	(0.444)	(0.131)
t+2 16:00	0.899***	1.559***	0.903***
	(0.065)	(0.475)	(0.067)
t+3 10:00	0.823***	2.163***	0.654***
	(0.102)	(0.560)	(0.220)
t+3 11:00	0.861***	1.220***	0.847***
	(0.090)	(0.205)	(0.168)
t+3 12:00	0.830***	0.915***	0.978***
	(0.135)	(0.228)	(0.138)
t+3 13:00	1.016***	−0.706	0.971***
	(0.104)	(1.681)	(0.165)
t+3 14:00	0.858***	0.824***	1.041***
	(0.116)	(0.190)	(0.179)
t+3 15:00	0.957***	0.758*	0.927***
	(0.062)	(0.447)	(0.130)
t+3 16:00	0.951***	0.854***	0.889***
	(0.077)	(0.140)	(0.145)
Observations	665	700	210
R^2	0.755	0.147	0.798
Adjusted R^2	0.741	0.102	0.757
Residual Std. Error	0.518 (df = 630)	3.703 (df = 665)	0.456 (df = 175)
F Statistic	55.412*** (df = 35; 630)	3.263*** (df = 35; 665)	19.742*** (df = 35; 175)
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 15: Study II Results - 2008, 2-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 12:00	0.820***	1.790***	0.828***
	(0.091)	(0.437)	(0.160)
t-1 14:00	0.879***	3.259*	0.733***
	(0.104)	(1.865)	(0.137)
t-1 16:00	0.798***	1.453***	0.737***
	(0.091)	(0.378)	(0.155)
t 12:00	0.882***	1.154***	0.519***
	(0.073)	(0.193)	(0.140)
t 14:00	0.722***	−0.064	0.757***
	(0.144)	(0.773)	(0.105)
t 16:00	0.960***	1.103***	0.793***
	(0.086)	(0.233)	(0.056)
t+1 12:00	0.852***	0.314	0.986***
	(0.083)	(0.425)	(0.236)
t+1 14:00	0.857***	1.432***	0.798***
	(0.155)	(0.491)	(0.073)
t+1 16:00	0.983***	1.036***	0.844***
	(0.071)	(0.152)	(0.064)
t+2 12:00	0.925***	1.273***	0.802***
	(0.069)	(0.197)	(0.123)
t+2 14:00	0.911***	1.041***	0.812***
	(0.056)	(0.162)	(0.124)
t+2 16:00	0.915***	1.063***	0.888***
	(0.059)	(0.071)	(0.093)
t+3 12:00	0.838***	1.347***	0.839***
	(0.092)	(0.137)	(0.138)
t+3 14:00	0.941***	−0.298	0.999***
	(0.082)	(1.239)	(0.167)
t+3 16:00	0.958***	0.818***	0.904***
	(0.063)	(0.227)	(0.118)
Observations	285	300	90
R^2	0.837	0.183	0.884
Adjusted R^2	0.828	0.140	0.861
Residual Std. Error	0.402 (df = 270)	2.972 (df = 285)	0.327 (df = 75)
F Statistic	92.324*** (df = 15; 270)	4.245*** (df = 15; 285)	38.103*** (df = 15; 75)
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 16: Study II Results - 2012, 1-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 10:00	5.364**	1.180**	1.024***
	(2.523)	(0.518)	(0.330)
t-1 11:00	5.978	0.879***	0.952***
	(4.546)	(0.215)	(0.108)
t-1 12:00	−4.560	0.927***	1.092***
	(7.506)	(0.139)	(0.178)
t-1 13:00	21.897	0.484	0.679***
	(18.046)	(0.299)	(0.161)
t-1 14:00	7.764	1.214***	0.955***
	(13.874)	(0.226)	(0.171)
t-1 15:00	2.996	0.837***	0.618***
	(1.896)	(0.123)	(0.150)
t-1 16:00	−1.599	0.921***	0.820***
	(1.737)	(0.276)	(0.121)
t 10:00	−4.364	1.342***	1.188***
	(5.151)	(0.249)	(0.273)
t 11:00	−0.777	0.812***	0.505**
	(1.940)	(0.168)	(0.243)
t 12:00	5.607*	0.914***	0.622***
	(3.112)	(0.139)	(0.115)
t 13:00	−2.698	0.882***	1.027***
	(4.419)	(0.201)	(0.278)
t 14:00	2.925**	0.682***	0.809***
	(1.464)	(0.086)	(0.151)
t 15:00	−8.684	0.858***	0.733***
	(6.331)	(0.194)	(0.159)
t 16:00	−0.871	1.021***	0.789***
	(1.976)	(0.079)	(0.218)
t+1 10:00	0.090	0.887***	0.755***
	(2.014)	(0.188)	(0.253)
t+1 11:00	−0.426	0.758***	0.795***
	(1.153)	(0.066)	(0.092)
t+1 12:00	2.753*	0.844***	0.754***
	(1.505)	(0.156)	(0.079)
t+1 13:00	−3.883	0.782***	0.631***
	(4.170)	(0.285)	(0.132)
t+1 14:00	7.142	0.779***	0.761***
	(4.729)	(0.185)	(0.117)
t+1 15:00	2.452	0.955***	0.776***
	(2.036)	(0.136)	(0.149)
t+1 16:00	0.489	0.927***	0.749***
	(0.432)	(0.073)	(0.130)
t+2 10:00	6.964*	1.200***	0.708***
	(3.734)	(0.246)	(0.183)
t+2 11:00	2.405**	0.788***	0.829***
	(0.985)	(0.117)	(0.098)
t+2 12:00	−0.705	0.775***	0.815***
	(2.478)	(0.092)	(0.113)
t+2 13:00	3.702**	0.785***	0.622***
	(1.597)	(0.091)	(0.143)
t+2 14:00	−1.620	0.864***	0.933***
	(2.270)	(0.082)	(0.143)
t+2 15:00	4.654	1.022***	0.825***
	(3.164)	(0.101)	(0.108)
t+2 16:00	0.037	0.822***	0.638***
	(1.614)	(0.068)	(0.098)
t+3 10:00	0.681	1.001***	0.815***
	(1.062)	(0.179)	(0.203)
t+3 11:00	0.289	0.833***	0.760***
	(1.116)	(0.101)	(0.137)
t+3 12:00	2.122	0.878***	0.926***
	(1.990)	(0.161)	(0.114)
t+3 13:00	1.658	0.911***	0.605***
	(6.659)	(0.124)	(0.101)
t+3 14:00	−1.377	0.816***	0.848***
	(1.499)	(0.120)	(0.102)
t+3 15:00	−4.576	0.792***	0.791***
	(4.059)	(0.091)	(0.117)
t+3 16:00	−1.361	0.801***	0.796***
	(1.539)	(0.169)	(0.068)
Observations	1,190	245	245
R^2	0.033	0.797	0.803
Adjusted R^2	0.004	0.763	0.770
Residual Std. Error	29.216 (df = 1155)	0.493 (df = 210)	0.434 (df = 210)
F Statistic	1.121 (df = 35; 1155)	23.527*** (df = 35; 210)	24.464*** (df = 35; 210)
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 17: Study II Results - 2012, 2-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 12:00	3.661	0.995***	0.999***
	(2.586)	(0.284)	(0.152)
t-1 14:00	13.293	0.927***	0.847***
	(14.987)	(0.151)	(0.158)
t-1 16:00	−0.105	0.893***	0.758***
	(1.474)	(0.204)	(0.116)
t 12:00	1.243	0.969***	0.712***
	(1.579)	(0.103)	(0.112)
t 14:00	0.121	0.780***	0.913***
	(2.423)	(0.132)	(0.124)
t 16:00	−3.665	0.967***	0.764***
	(3.390)	(0.101)	(0.185)
t+1 12:00	0.742	0.818***	0.773***
	(0.480)	(0.110)	(0.106)
t+1 14:00	3.043	0.779***	0.718***
	(1.997)	(0.215)	(0.105)
t+1 16:00	1.026*	0.934***	0.758***
	(0.551)	(0.046)	(0.130)
t+2 12:00	2.079***	0.833***	0.807***
	(0.693)	(0.101)	(0.104)
t+2 14:00	0.343	0.836***	0.802***
	(1.290)	(0.071)	(0.106)
t+2 16:00	1.899**	0.878***	0.708***
	(0.896)	(0.064)	(0.091)
t+3 12:00	1.248	0.878***	0.811***
	(0.916)	(0.106)	(0.131)
t+3 14:00	−1.015	0.836***	0.810***
	(1.672)	(0.112)	(0.097)
t+3 16:00	−2.809	0.798***	0.794***
	(2.503)	(0.124)	(0.083)
Observations	510	105	105
R^2	0.026	0.864	0.876
Adjusted R^2	−0.004	0.841	0.856
Residual Std. Error	24.771 (df = 495)	0.376 (df = 90)	0.325 (df = 90)
F Statistic	0.866 (df = 15; 495)	38.125*** (df = 15; 90)	42.484*** (df = 15; 90)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 18: Study II Results - 2016, 1-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 10:00	−6.042	0.256	0.977***
	(12.892)	(0.186)	(0.356)
t-1 11:00	2.481	0.642***	0.947***
	(5.482)	(0.205)	(0.146)
t-1 12:00	68.783	2.028**	2.334***
	(55.124)	(0.856)	(0.298)
t-1 13:00	−17.171*	1.207***	1.695***
	(10.366)	(0.168)	(0.261)
t-1 14:00	−62.952*	3.156***	2.544***
	(37.437)	(0.119)	(0.434)
t-1 15:00	0.877	1.196***	1.453***
	(25.661)	(0.222)	(0.173)
t-1 16:00	3.899	1.483***	1.795***
	(7.468)	(0.285)	(0.084)
t 10:00	9.412	−0.123	2.915***
	(5.873)	(0.561)	(0.510)
t 11:00	4.684	0.386	1.083***
	(7.699)	(0.390)	(0.069)
t 12:00	6.987**	1.352***	1.384***
	(3.466)	(0.168)	(0.063)
t 13:00	52.858	6.006***	7.072***
	(66.942)	(1.216)	(0.432)
t 14:00	−7.761	1.502***	1.942***
	(19.516)	(0.374)	(0.149)
t 15:00	−2.440	1.040***	1.411***
	(3.717)	(0.121)	(0.055)
t 16:00	−0.443	1.803***	2.112***
	(3.059)	(0.396)	(0.107)
t+1 10:00	4.519***	2.484***	7.374***
	(1.029)	(0.397)	(1.199)
t+1 11:00	2.875**	1.088***	2.523***
	(1.247)	(0.236)	(0.255)
t+1 12:00	1.063	1.054***	1.421***
	(0.793)	(0.114)	(0.031)
t+1 13:00	−0.832	1.165***	1.893***
	(1.698)	(0.224)	(0.156)
t+1 14:00	−0.881	1.522***	2.137***
	(1.934)	(0.135)	(0.254)
t+1 15:00	−0.807	2.718***	2.738***
	(2.764)	(0.298)	(0.111)
t+1 16:00	4.143	1.360***	1.794***
	(3.813)	(0.196)	(0.096)
t+2 10:00	0.491	0.705	1.150***
	(0.833)	(0.442)	(0.174)
t+2 11:00	0.968	0.297	1.351***
	(0.845)	(0.235)	(0.275)
t+2 12:00	4.160*	0.510**	1.036***
	(2.442)	(0.220)	(0.166)
t+2 13:00	−1.779	0.794***	1.570***
	(3.070)	(0.210)	(0.121)
t+2 14:00	−0.432	1.084***	2.036***
	(2.240)	(0.144)	(0.113)
t+2 15:00	2.520	0.440*	1.532***
	(1.830)	(0.231)	(0.151)
t+2 16:00	2.908	0.703***	1.258***
	(3.424)	(0.220)	(0.109)
t+3 10:00	8.907	−0.061	5.754***
	(6.683)	(0.458)	(0.721)
t+3 11:00	4.814**	0.682**	1.778***
	(1.967)	(0.299)	(0.241)
t+3 12:00	−8.952	0.580*	2.463***
	(9.360)	(0.345)	(0.273)
t+3 13:00	−3.525	1.281***	1.505***
	(5.359)	(0.251)	(0.191)
t+3 14:00	−1.419	1.650***	2.022***
	(8.807)	(0.196)	(0.214)
t+3 15:00	−11.391	2.412***	4.041***
	(13.867)	(0.127)	(0.503)
t+3 16:00	12.704*	1.813***	1.736***
	(6.889)	(0.237)	(0.079)
Observations	1,400	140	210
R^2	0.029	0.879	0.931
Adjusted R^2	0.004	0.838	0.917
Residual Std. Error	112.124 (df = 1365)	0.737 (df = 105)	0.810 (df = 175)
F Statistic	1.149 (df = 35; 1365)	21.759*** (df = 35; 105)	67.481*** (df = 35; 175)
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 19: Study II Results - 2016, 2-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 12:00	6.944	0.754***	1.223***
	(5.455)	(0.249)	(0.161)
t-1 14:00	−36.461*	2.003***	2.055***
	(21.314)	(0.120)	(0.303)
t-1 16:00	2.369	1.419***	1.714***
	(5.150)	(0.183)	(0.104)
t 12:00	6.412	0.790***	1.470***
	(4.519)	(0.223)	(0.071)
t 14:00	−0.323	2.082***	2.611***
	(10.338)	(0.478)	(0.183)
t 16:00	−0.817	1.410***	1.723***
	(1.912)	(0.252)	(0.069)
t+1 12:00	2.689***	1.448***	3.420***
	(0.495)	(0.191)	(0.325)
t+1 14:00	−0.874	1.358***	2.035***
	(1.711)	(0.062)	(0.202)
t+1 16:00	1.742	1.970***	2.210***
	(1.486)	(0.191)	(0.091)
t+2 12:00	2.031**	0.445*	1.199***
	(0.849)	(0.239)	(0.195)
t+2 14:00	−1.223	0.909***	1.757***
	(2.506)	(0.176)	(0.099)
t+2 16:00	2.971**	0.558**	1.415***
	(1.466)	(0.226)	(0.107)
t+3 12:00	2.164	0.560*	2.500***
	(1.364)	(0.302)	(0.294)
t+3 14:00	−2.798	1.411***	1.716***
	(4.024)	(0.183)	(0.174)
t+3 16:00	5.549*	1.985***	2.377***
	(3.181)	(0.141)	(0.169)
Observations	600	60	90
R^2	0.053	0.922	0.959
Adjusted R^2	0.029	0.896	0.951
Residual Std. Error	42.715 (df = 585)	0.465 (df = 45)	0.461 (df = 75)
F Statistic	2.183*** (df = 15; 585)	35.619*** (df = 15; 45)	118.031*** (df = 15; 75)
Note:			*p<0.1; **p<0.05; ***p<0.01

Table 20: Study II Results - 2020, 1-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 10:00	−0.979	0.961***	0.451
	(0.954)	(0.333)	(0.294)
t-1 11:00	7.340	2.670***	3.189***
	(4.937)	(0.412)	(0.305)
t-1 12:00	6.476	1.851***	1.829***
	(4.755)	(0.194)	(0.142)
t-1 13:00	6.433	1.726***	1.871***
	(4.076)	(0.126)	(0.139)
t-1 14:00	−17.742	3.165***	3.807***
	(20.716)	(0.668)	(0.112)
t-1 15:00	−0.725	2.363***	2.460***
	(3.801)	(0.200)	(0.168)
t-1 16:00	3.405**	2.213***	2.016***
	(1.682)	(0.100)	(0.151)
t 10:00	5.351*	1.876***	1.594***
	(2.837)	(0.413)	(0.256)
t 11:00	4.934	2.884***	2.439***
	(3.491)	(0.258)	(0.269)
t 12:00	5.521**	2.367***	2.074***
	(2.672)	(0.267)	(0.196)
t 13:00	6.360**	2.664***	2.773***
	(3.240)	(0.243)	(0.142)
t 14:00	−5.449	2.275***	2.229***
	(5.827)	(0.223)	(0.108)
t 15:00	1.560	2.817***	2.402***
	(2.725)	(0.159)	(0.157)
t 16:00	5.378***	2.889***	2.484***
	(1.639)	(0.166)	(0.220)
t+1 10:00	−0.261	4.317***	3.941***
	(5.509)	(0.475)	(0.534)
t+1 11:00	7.261***	5.531***	4.354***
	(1.842)	(0.359)	(0.488)
t+1 12:00	−6.366	5.140***	5.675***
	(12.191)	(0.277)	(0.413)
t+1 13:00	22.172	4.968***	4.338***
	(21.752)	(0.385)	(0.248)
t+1 14:00	−2.928	2.279***	2.982***
	(4.890)	(0.256)	(0.270)
t+1 15:00	−0.157	2.096***	2.083***
	(4.729)	(0.177)	(0.125)
t+1 16:00	3.471	3.219***	3.002***
	(4.522)	(0.185)	(0.289)
t+2 10:00	1.788	1.505***	0.834***
	(2.652)	(0.251)	(0.185)
t+2 11:00	2.737	1.709***	1.609***
	(2.109)	(0.403)	(0.141)
t+2 12:00	14.241*	4.567***	3.584***
	(8.398)	(0.336)	(0.371)
t+2 13:00	7.381	2.161***	2.207***
	(4.606)	(0.206)	(0.106)
t+2 14:00	−22.110	2.054***	2.353***
	(14.105)	(0.413)	(0.457)
t+2 15:00	8.972	3.177***	2.908***
	(6.026)	(0.196)	(0.400)
t+2 16:00	−1.416	3.757***	3.355***
	(7.627)	(0.425)	(0.316)
t+3 10:00	−14.647	5.508***	5.374**
	(16.640)	(1.104)	(2.253)
t+3 11:00	1.861	1.419***	1.444***
	(1.753)	(0.103)	(0.273)
t+3 12:00	−0.055	1.839***	2.166***
	(2.453)	(0.285)	(0.244)
t+3 13:00	−22.250	3.538***	4.041***
	(21.288)	(0.588)	(0.353)
t+3 14:00	−9.045	3.299***	3.766***
	(8.632)	(0.819)	(0.587)
t+3 15:00	−16.186	1.969***	2.253***
	(10.694)	(0.316)	(0.375)
t+3 16:00	−2.729	2.378***	2.056***
	(3.220)	(0.155)	(0.227)
Observations	1,155	385	245
R^2	0.036	0.863	0.865
Adjusted R^2	0.006	0.849	0.842
Residual Std. Error	49.987 (df = 1120)	1.282 (df = 350)	1.267 (df = 210)
F Statistic	1.192 (df = 35; 1120)	62.909*** (df = 35; 350)	38.432*** (df = 35; 210)

Note: *p<0.1; **p<0.05; ***p<0.01

Table 21: Study II Results - 2020, 2-hour betas

	Dependent variable:		
	Beta (Calculated every 2 hours)		
	Republican	Democrat	Neutral
t-1 12:00	5.691***	2.366***	1.968***
	(1.859)	(0.174)	(0.148)
t-1 14:00	−1.705	2.460***	2.498***
	(3.182)	(0.179)	(0.115)
t-1 16:00	3.564**	2.741***	2.383***
	(1.609)	(0.143)	(0.182)
t 12:00	3.581	1.683***	1.638***
	(2.345)	(0.261)	(0.186)
t 14:00	−2.811	2.299***	2.637***
	(8.072)	(0.291)	(0.111)
t 16:00	2.355	2.226***	2.081***
	(1.456)	(0.090)	(0.113)
t+1 12:00	2.258	4.765***	4.229***
	(3.786)	(0.185)	(0.385)
t+1 14:00	2.038	2.858***	3.282***
	(4.149)	(0.243)	(0.226)
t+1 16:00	2.239	2.759***	2.625***
	(4.281)	(0.155)	(0.215)
t+2 12:00	4.180**	2.025***	1.619***
	(1.940)	(0.310)	(0.148)
t+2 14:00	0.105	1.958***	2.003***
	(3.121)	(0.168)	(0.103)
t+2 16:00	3.696	3.538***	3.196***
	(5.055)	(0.275)	(0.351)
t+3 12:00	0.006	1.918***	2.077***
	(2.300)	(0.146)	(0.451)
t+3 14:00	−20.350	3.832***	4.327***
	(17.490)	(0.703)	(0.482)
t+3 16:00	−5.552	2.309***	2.132***
	(4.462)	(0.132)	(0.268)
Observations	495	165	105
R^2	0.034	0.913	0.946
Adjusted R^2	0.003	0.904	0.937
Residual Std. Error	33.463 (df = 480)	0.896 (df = 150)	0.695 (df = 90)
F Statistic	1.109 (df = 15; 480)	104.984*** (df = 15; 150)	105.923*** (df = 15; 90)
Note:			*p<0.1; **p<0.05; ***p<0.01

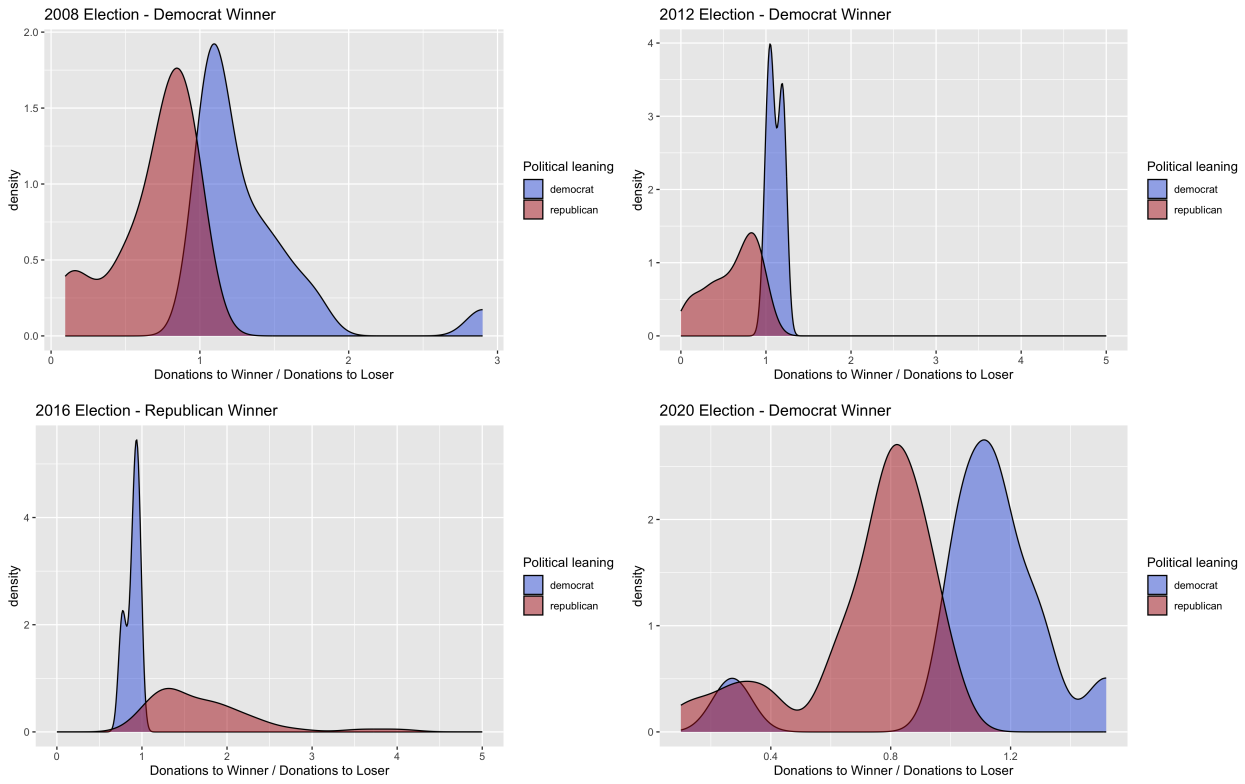

Figure 9: Distribution of companies' ratio of donations to winning candidate to donations to losing candidate.

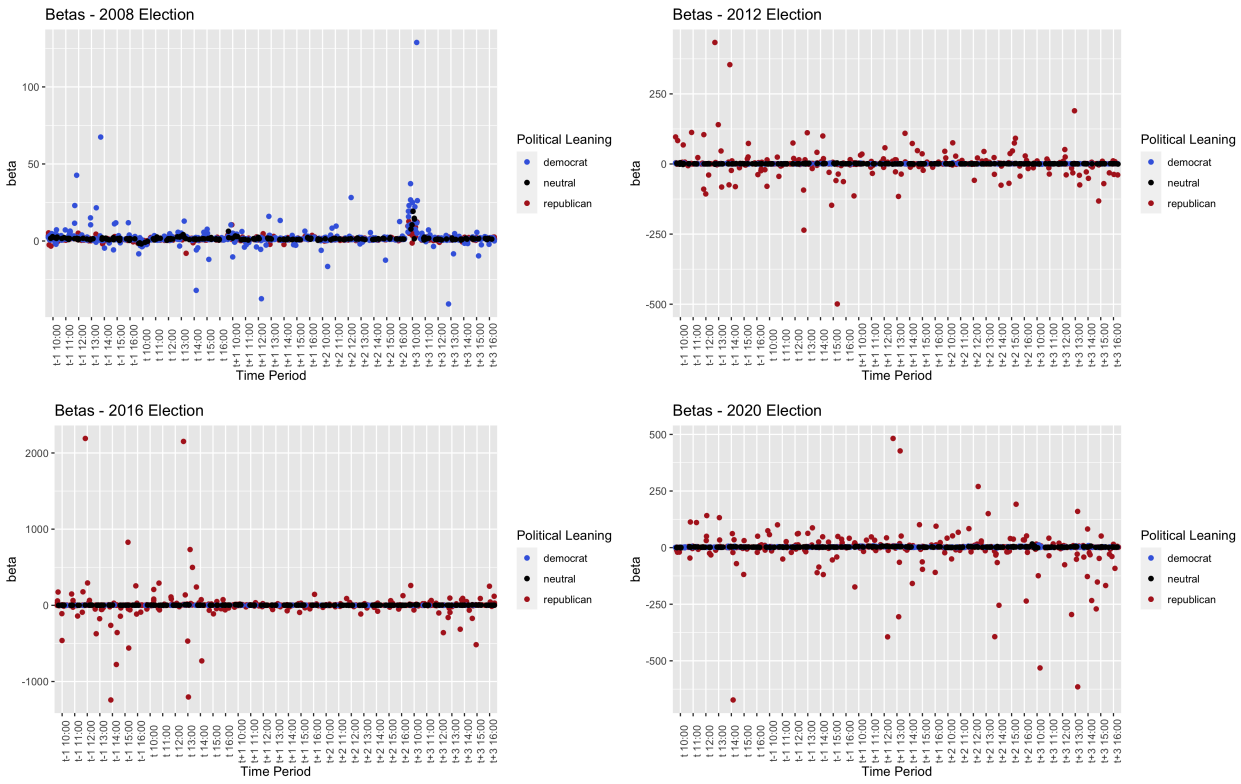

Figure 10: Betas generated in one-hour intervals, including outliers

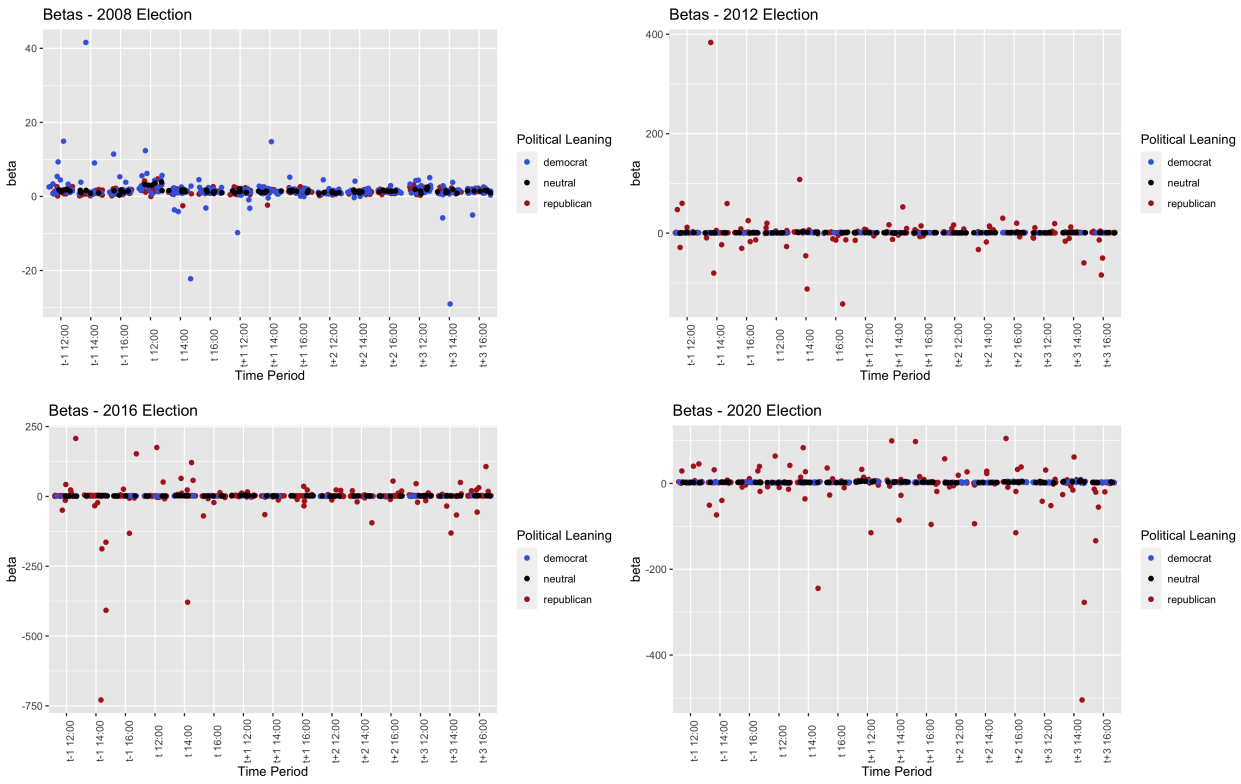

Figure 11: Betas generated in two-hour intervals, including outliers

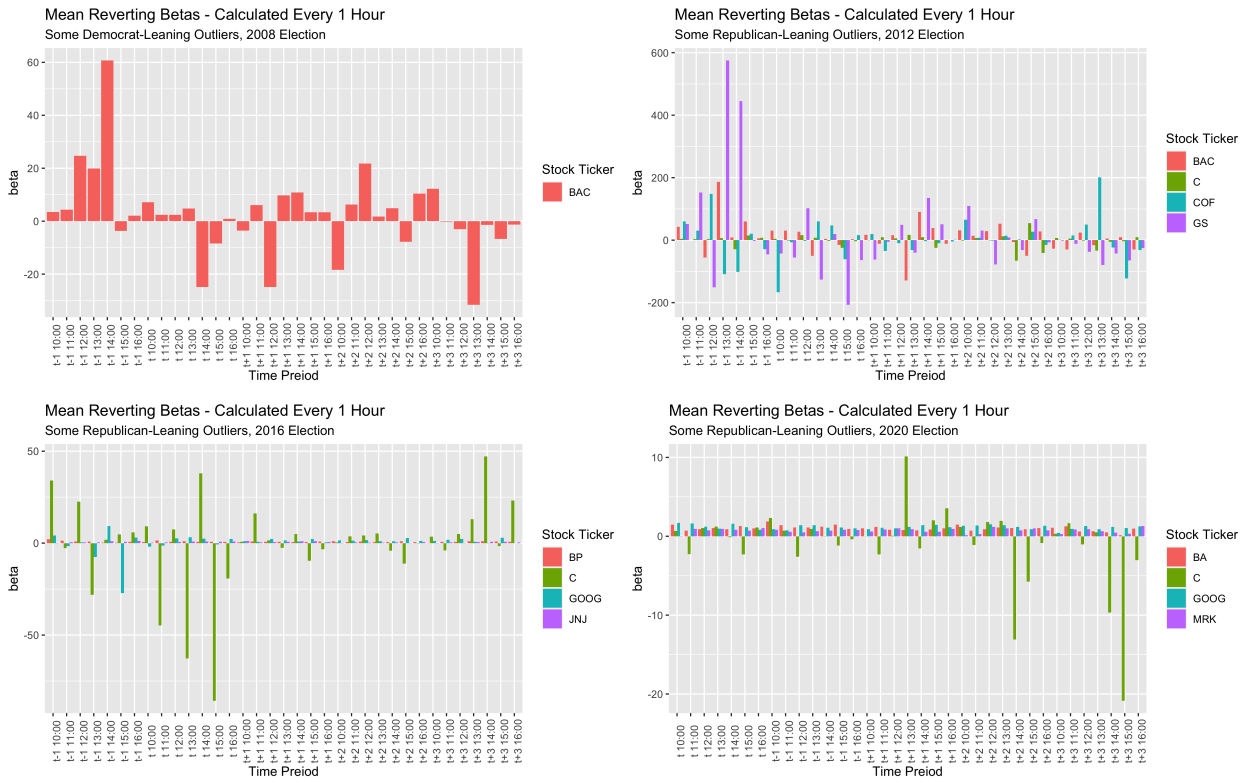

Figure 12: Mean-reverting outliers for Betas generated in one-hour intervals

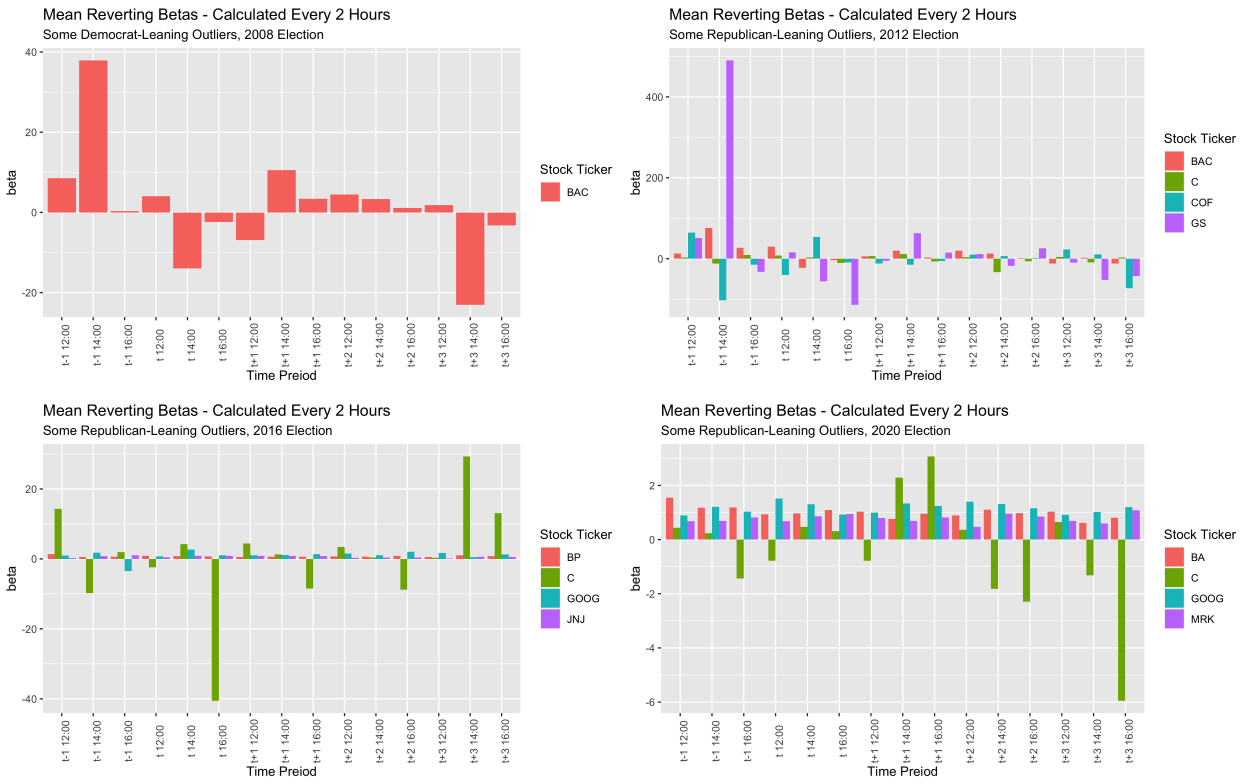

Figure 13: Mean-reverting outliers for Betas generated in two-hour intervals