Peering into the Crystal Ball:
The Information Content of Legislative Trading

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Abstract

This study introduces a new measure of political risk to the corporate finance literature. Using aggregated trading by U. S. Senators, we find that it is an important predictor of future returns and risk. Our measure possesses industry-relevant information beyond what is contained in existing measures of political risk. Further, such trading is more information about future industry performance than individual equities. Our findings are robust to various model specifications and are economically significant. Additionally, our results are not explained by previous measures of political risk.

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1. Introduction

Signalling theory has been used to address issues resulting from information asymmetry in diverse areas of finance, such as dividends, capital structure, capital expenditures, and equity trading (Bernanke and Kuttner, 2005; Boyd et al., 2005; Evans and Lyons, 2008: Chen and Ghysels, 2010). This research typically focuses on information asymmetries due to insider trading or managerial disclosures.[1] Little research, however, has been done regarding the information signalling that occurs from stock trading by elected politicians. Indeed, the research that does occur regarding political trading tends to emphasize either the ethics of such trading or the gains earned by the traders themselves (e.g., Blau et al., 2022; Hanousek et al., 2022). The information content of that trading and its ability to influence returns to various industry sectors has not been examined.

In this study, we introduce the aggregated stock trading of U.S. Senators as a new signal of economic, regulatory, or policy information that will be relevant to both the market and specific industries[2]. Following the passage of the STOCK Act in 2012, it is now possible to observe all transactions of senators and members of Congress.[3] Comparable to corporate insiders, senators gain an information advantage due to their committee memberships and political networks that can

[1] Macro announcements: (Bailey et al., 2012); Earning announcements: (Garcia et al., 2014); Financial news: (Dougal et al., 2012): Management disclosures: (Koonce et al.,2016); Insider trading: (Seyhun, 1988, Damodaran and Liu, 1993).

[2] Existing political factors employ country-level variables such as the degree of regulation, various country governance indicators, and election cycles, including orientation and change of the ruling parties (Boutchkova et al., 2010, Pantzalis et al., 2000, Goodell and Bodey, 2012, Pastor and Veronesi, 2012). Yasar et al., 2021 show that presidential speeches and announcements convey market-wise political signals. Finally, political factors on the industry and company level consider the political alignment index (PAI) and donations to politicians (Kim et al., 2012, Cooper et al., 2010, Brown and Huang, 2020). Our research approach and results extend existing research by adding time-industry varying dimensions to the estimation of political risk when examining industry risk and return.

[3] Before the STOCK Act, the transaction data could not be audited (Kim, 2013), meaning that senators could have omitted incriminating transactions or provided inaccurate information.

be revealed in their trading activities. Indeed, we contend that their trading can serve as a measure of political or regulatory uncertainty faced by firms within an industry. This policy uncertainty implies a political risk to the firm. Thus, our use of trading by senators also provides a new measure of political risk, which is likely to be more meaningful at the industry level because of the sector focus of most legislation or regulatory action.

Comparable to Boehmer et al. (2021) and their findings regarding retail orders, we argue that aggregated senators' transactions convey meaningful information to the equity market due to their assignment on important committees, engagement with corporate lobbyists, and awareness of proposed or pending legislation.[4] Furthermore, Schweizer (2011) and Christensen et al. (2017) find that politicians share their private information with firms and financial institutions. Consequently, the trading by Senators might indicate the nature of future trading undertaken by various institutional investors.

Based on our empirical findings, we conclude that trading by U.S. senators discloses important information about future returns of firms within a given industry. It also provides information about the risk that firms within an industry are likely to face. Our results are robust to various trading model specifications and are economically significant. Most importantly, our results cannot be explained by previous measures of political risk.

Our study contributes to the literature in two important ways. First, we introduce a new measure of political risk that can be explicitly measured and customized for specific sectors of the economy. We also contribute to the growing literature on political insider trading (e.g., Eggers and Hainmueller, 2014; Blau et al., 2022; Hanousek et al., 2022). We show that senators are most

[4] Boehmer et al. (2021) find that retail orders contain firm-level information that has not yet been incorporated into prices. Similarly, Da et al. (2021) use a crowdsourcing platform for ranking stocks and again find that a trading strategy that sorts stocks based on investor beliefs generates significant profits, indicating the presence of relevant information.

likely informed at the industry level, and their trading behavior predicts future returns and impacts the firm's risk. These results have substantial policy implications since legislators are allowed to notify financial institutions about upcoming legislation (Christen et al., 2016).

This study is structured as follows: Section 2 discusses previous research on political risk and develops our four hypotheses. Section 3 describes our data and methodology as well as the various measures of political and firm-specific risk. Section 4 explains how legislative trading contains new information relative to the currently existing measures of political risk in the literature. In Section 5, we report our results and associated robustness checks. We conclude our study in Section 6.

2. Hypothesis Development

2.1 Measuring Political Risk

Legislative knowledge and the resultant information asymmetry with investors can increase the political risk faced by a firm. Previous studies such as Hiochberg et al. (2009), Gao and Huang (2016), and Christensen et al. (2017) measure a firm's political risk by using lobbying or contribution data. Akey (2015) shows that firms enjoy positive abnormal returns when they donate to the winning politician. It suggests that a firm's political philanthropy can proxy the strength of its political network. Political connections are valuable since they can moderate possible regulation or adverse legislation effects. They can also be used to gain information about pending changes in the regulatory environment or proposed new legislation. Brown and Huang (2020) find evidence for such political benefits when they report positive abnormal stock returns following meetings between corporate executives and legislators.

Other research indicates that proximity to political power leads to increased future returns and is related to corporate political risk. Cooper et al. (2010) use PAC donations to construct measures of firm political connections and find significant correlations with future returns. Similarly, Kim et al. (2012) show that firms headquartered in areas with a high political alignment index (PAI) with the presidential party outperform those firms located in regions with low PAI [5]. These results suggest that proximity to political power leads to future returns and is related to political risk. Ferris et al. (2019) use four provisions to develop a "sweetheart index" of favorable contract terms. They find politically connected firms are more frequently awarded contracts having more of these favorable terms. Houston and Ferris (2022) use contributions made by firm-affiliated PACs to create a firm-specific measure of political influence. They find that a firm's political power explains important aspects of its federal contracting experience, such as the size of the contract, the number of contracts, and the favorableness of the contracting terms.

However, the existing measures of political risk are limited by construction and are only partially capturing the changing nature of a firm's political risk. They are updated only annually or with the election cycle and consequently lag the true nature of the firm's political risk. The PAI of Kim et al. (2012) and the political power index of Houston and Ferris (2022) remain constant during an election cycle and thus fail to capture more frequent changes to the firm's political risk. Cooper et al. (2010) create several measures of a firm's political connectedness using PAC donation data. But again, this measure is constant across an election cycle. Baker et al. (2016) developed a measure of policy risk based on the language sentiment analysis of newspaper

[5] Kim et al. (2012) construct their PAI as an index at the state level by accounting for the degree of presidential party control of a particular state's political institutions (i.e., governor's mansion and state legislatures) and for the percentage of the state's representatives in Congress (i.e., the state's representatives in Senate and House) that belong to the President's party. It is a state-level measure of alignment with the President's party.

coverage. However, the newspaper sentiment of Baker et al. (2016) is created at the market-wide level and does not allow for firm or industry variation.

Since we use the monthly trading reported by Senators, we are able to construct a more granular measure of the political risk faced by a firm. The highly dynamic nature of political risk is implied by Ferguson and Witte (2006), who report that stock returns are lower and volatility is higher when Congress is in session. Further, they discover that more than 90% of the Dow Jones Index's capital gains occur when Congress is in recess.

2.2 Hypotheses

It is well-known that asymmetric information is revealed in the trading activities of insiders and eventually reflected in market prices (e.g., John and Lang, 1991, Zhang, 2011). U.S. Senators have a strong information advantage due to their ability to design and pass new legislation that can impact industries and the firms that operate within. Given the nature of their committee assignments, the conventional scope of federal legislation, and the industry orientation of most lobbyists, the information advantages of U.S. senators are likely to be related to industry-level prospects or issues. (CITE)

Further, since the adoption of the STOCK Act, it has been legal for politicians to disclose private information about pending legislation to firms and financial institutions that would be affected by it. Thus, although a senator's trading volume is small *per se*, its market impact is likely to be multiplied by this "political information gathering" by investment funds and other financial institutions (Christensen et al., 2017, Hanousek et al., 2022). The information channels between politicians and financial institutions allow participants to trade more profitably and be better informed than the rest of the market.

Uncertainty regarding future legislation and its impact can significantly change the riskiness of firms within an industry. Christensen et al. (2017) show that brokerages connected with politicians provide better predictions, which suggests that senators are informed about upcoming legislation and share the information with others. As a result, we hypothesize that senators' transactions reflect private information about an industry or sector. For instance, it might reflect information about forthcoming legislation, new trade deals, changes in regulatory policies/interpretations, or possible executive actions. These actions can affect the industry's profitability and operations. Therefore, we propose our first hypothesis:

Hypothesis 1: *Legislative trading contains information relevant to the future risk in a given industry.*

The equity trading of senators can reveal the extent of this information advantage. Unlike previous studies by Ziobrowski et al. (2004), Eggers and Hainmueller (2014), and Belmont et al. (2022), we do not examine the returns following a transaction by a legislator. Instead, we analyze whether there is information contained in the aggregated trading of all senators. Our focus on aggregated trading eliminates possible noise from an individual senator's trading and tests the signaling potential of total Senatorial trading. Consequently, we propose our second hypothesis:

Hypothesis 2: *Legislative trading contains information relevant to the future stock returns in a given industry.*

When designing legislation, senators focus on responding to general trends and patterns. Their lawmaking is intended to develop a solution to broad economic, social, or political issues. Further, their need to gain a majority of votes to pass legislation requires them to focus on concerns and problems that are of interest to a number of stakeholders. Rarely will legislation be designed to address issues with a single firm. The goal of legislation will be to address problems or policies in an industry or economic sector.

But the usefulness of this information is likely to vary across firms within an industry. Based on the size, firms will differ with respect to the amount of assets under management, the vulnerability of their operating and capital structures to economic shocks, their sensitivity to the financial burdens of regulatory compliance, and the cashflow implications to changes in tax and foreign trade policies. These differences have implications for how the information contained in legislative trading affects a firm's risk and return. Consequently, we hypothesize:

Hypothesis 3: *The informativeness of legislative trading about risk and return will vary by firm size within an industry.*

It might be that some senators become informed about the prospects of a particular firm or subset of firms. This can occur from the staff analysis of pending or proposed legislation, conversations with lobbyists or industry representatives, or private information shared by the firms themselves. Through these possible channels, the senator might become more informed about the prospects for a specific firm and trade accordingly. Thus, we hypothesize:

Hypothesis 4: *The risk and return of legislators' traded stocks differ from that of non-traded stocks within an industry.*

3. Sample and Data

To construct our measure of industry-level political risk, we use senator stock transactions obtained from the United States Senate Financial disclosures (https://efdsearch.senate.gov/). We focus on senators because we expect them to be better informed. We expect senators to be more experienced and influential and thus have better access to information. This assumption is justified for several reasons. Empirical research by Kim (2013) and Eggers and Hainmueller (2013) find that senators tend to perform better than representatives with their equity trading, implying the possession of superior private information. Senators face reelection only one-third as frequently

as members of Congress, allowing them a better opportunity to build a support network and to gain political experience. This greater institutional stability enables a Senator to develop longer-term relations with fellow legislators and consequently accumulate higher amounts of social capital. Further, since senators must campaign statewide and not just in a smaller Congressional district, their social network and web of influence must, perforce, be greater.

Per the requirements of the STOCK Act, each senator and their immediate family must file their transactions within 30 days of order execution. We collect all of these stock transactions, encode them accordingly, and then link the transacted firm with the CRSP and Compustat databases. We manually record paper-completed reports and align them with the electronic filling template to ensure data comparability for our empirical analysis. Our dataset contains all electronic and paper-completed transaction data from January 2012 through December 2020 for all currently serving senators and those who had not retired before 2014. The U.S. Senate's Office of Ethics maintains these records for six years after the politician leaves office.

We aggregate the transactions at the industry and calendar month levels and link them with the universe of stocks contained in the CRSP database. We further restrict our sample to firms that are included in the Compustat database. Consistent with most corporate finance studies, we exclude financial services firms from our analysis because politicians do not have to report all transactions with financial firms[6].

[6] Per the STOCK Act, politicians do not have to report transactions of "An excepted investment fund (e.g., publicly-traded mutual or exchange-traded funds, regulated investment companies, pooled investment funds, pensions, or deferred compensation plans);". Detailed list available at https://www.ethics.senate.gov/public/index.cfm/financialdisclosure

3.1 Measures of Political Risk

3.1.1. Legislative trading

To capture the actual trading undertaken by U. S. Senators, we construct two measures that are aggregated at industry and calendar month levels: a) the number of non-diluted (non-repeating) buy/sell transactions, and b) the total dollar amount bought or sold. Our measures are constructed using a senator's previous month's trading and are aggregated into groups using the Fama French 48-industry classification.

We observe that some senators prefer to split larger transactions into several smaller ones. Hanousek et al. (2022) define this practice as transaction-diluting behavior motivated by a desire to mask the accurate scale of their trading.[7] We only consider non-diluted trades when calculating the number of buy/sell transactions. Although our primary variable of interest is the number of buy or sell transactions, we note that the use of the dollar amount traded performs similarly, and all measures are significant predictors of both risks and returns.[8]

Since not all senators are equally informed (e.g., Hanousek et al., 2022, Eggers and Hainmueller, 2014; Hanousek et al., 2022), we calculate a weighted summation of senatorial trading where the weight reflects the importance of the senator. We contend that a weighted trading measure that includes the senator's prominence is more likely to capture the information content contained in senatorial stock transactions. We estimate the politician's importance by the total number of unique corporate PAC donors the senator had in the previous calendar year. This approach mimics the measures used by Christensen et al. (2017).

[7] The transaction is considered diluted if the senator has made several transactions involving a given security on the same day or if the senator trades the same security in immediately subsequent trading days.

[8] A senator does not have to specify the exact dollar amount invested. Rather, the senator chooses from one of the specified categories: $1,001-$15,000$, $5,001-$50,000; $50,001-$100,000; $100,001-$250,000; $250,001-$500,000; $500,001-$1,000,000; $1,000,001-$5,000,000; $5,000,001-$25,000,000; $25,000,001-$50,000,000, and Over $50,000,000$. In this study we assume that the invests the lowest amount in any given range. Consequently, the estimations are likely to be a lower bound for the real effect.

To complete our data construction, we aggregate senatorial trading with net sales from purchases to arrive at the senators' net equity ownership position. We estimate the net equity (NEP) position of senatorial holdings in the industry *i* for month m as follows:

$$NEP_{i,m} = \sum_{j \in J} importance\ of\ senator_{j,m} * Buy\ transactions_{j,i,m} - \sum_{j \in J} importance\ of\ senator_{j,m} * Sell\ transactions_{j,i,m} \quad (1)$$

Where the variable $Buy\ transactions_{j,i,m}$ ($Sell\ transactions_{j,i,m}$) equals the number of non-diluted transactions senator *j* bought (sold) of stock in the industry *i* during year-month *m*. The variable $importance\ of\ senator_{j,m}$ represents the number of unique corporate donors who made contributions to the PAC (Political Action Committee) of senator *j* during the previous calendar year.

3.1.2 Existing Measures

To test the usefulness of senatorial equity trading as a measure of firm or industry political risk, we introduce two existing measures of political risk into our analysis. First, we use an index by Cooper et al. (2010), who define political risk as

$$PI_{it}^{Candidates} = \sum Cand_{jt,t-5} \quad (2)$$

Where $Cand_{jt,t-5}$ is a dummy variable equal to 1 if a firm donated to candidate *j* over the years *t*-5 to *t*.

Second, we use the political alignment index (PAI) developed by Kim et al. (2012) to measure firm proximity to political power and exposure to local political risk. The measure is defined as

$$PAI_{y,s} = \frac{1}{4}\left(Senators_{y,s}\right) + \frac{1}{4}\left(Representatives_{y,s}\right) + \frac{1}{4}\left(Governor_{y,s}\right) + \frac{1}{4}\left[\frac{1}{2}\left(State\ Senators_{y,s}\right) + \frac{1}{2}\left(State\ Representatives_{y,s}\right)\right] \quad (3)$$

In equation (3) above, *y* represents that year, and *s* captures the specific state[9]. The variable *Senator* (*Representatives*) is the ratio of senators (house representatives) belonging to the president's party. The variable *Governor* is a dummy variable equal to one if the state governor belongs to the president's party. Similarly, the variable *State Senators* (*State Representatives*) is a dummy variable equal to one when more than 50% of State Senators (State Representatives) belong to the president's party. Consistent with Bradley et al. (2016), we also include an interaction term, PAI $* PI_{Candidate}$, because PAI might also depend on the extent of the firm's PAC contributions.

Lastly, we use two measures created at the market level that capture the dynamic effect of policy uncertainty. First is an economic policy uncertainty (EPU) based on newspaper coverage frequency developed by Baker et al. (2016)[10]. Second, we control legislative intensity since it is the primary source of legislative uncertainty. Fergusson and Witte (2006) show that when Congress is in session, the volatility is higher, and returns are lower. This effect dominates other previously discovered calendar anomalies, suggesting that legislative activity is a significant predictor of risks and returns. Consequently, we define *Legislative Intensity* as the number of days the Congress is in session in a given calendar month. This variable can proxy for the extent and intensity of legislative activity.

[9] For firms that are located outside of USA or that do not provide address information we set PAI equal to zero, since that firm does not have geographical access to political power.
[10] Available at http://www.policyuncertainty.com/

3.2 Measures of firm-level risk

To capture risk at the firm level, we estimate several different measures. First, we use the bid-ask spread. We calculate a weighted average bid-ask spread for the month, where the weights are the daily share volumes. Secondly, we use the standard deviation of daily returns over the month. Lastly, we use the Ang et al. (2006) measure of idiosyncratic volatility, denoted as *IV* (AHXZ), and defined as the standard deviation of residuals from the Fama-French three-factor model. It is estimated using the daily data from the previous month.

Additionally, we include a number of control variables suggested by the literature that can affect a firm's risk. We use the Fama-French three-factors constructed on a monthly frequency, *illiquidity* defined by Amihud (2002), past returns defined by Brennan et al. (2012), *size,* and *the book-to-market ratio.* We provide more detailed definitions of these variables in the Appendix.

4. Legislative Trading as a Measure of Political Risk

4.1 Relation with Existing Measures

As noted in section 3.1.2, several existing measures of political risk are considered in the literature. Thus, we examine to what extent our measure provides new marginal information about the political risk that firms within an industry are likely to face. In Table 1, we regress our various legislative trading measures against existing political risk measures. We find that the donation measure defined by Cooper et al. (2010) and the PAI of Kim et al. (2012) are consistently negatively related to legislative trading. However, the interaction between these two measures mitigates that effect, suggesting that senators trade firms in industries where they have established relationships.

We observe that our measures are positively related to the news uncertainty defined by Baker et al. (2016), suggesting that senators trade stocks during periods of greater political uncertainty. As political insiders, they can use their superior information to select industries that will be most impacted. We further find that Congress's Intensity is mostly negatively related to legislative trading. Senators might not have enough time to actively trade on the stock market when Congress is in session for extended periods. Furthermore, senators might trade ahead of information when Congress is not in session.

We conclude from this analysis that although legislative trading is related to existing measures of political risk, it is distinct from them. Legislative trading contains information not captured in the measures of political risk currently appearing in the literature. Indeed, the R^2 values ranging from 5% to 25% indicate substantial variation in legislative trading activity that is not captured by the existing measures of political risk.

4.2 Factor Analysis

In Table 2, we further examine the relationship between legislative trading and the other measures of political risk by undertaking a principal component analysis (PCA) analysis. This analysis will allow us to determine what factors explain variation in political risk. We find that the three factors emerge from the principal components analysis. However, two factors account for about 95% of the total variation. The first factor, *F1*, significantly loads on only the number of sell and buy transactions. Hence, we refer to this factor as "Legislative Trading'. We note that this is the dominant factor, accounting for nearly 90% of the variability in political risk. The second factor, F2, loads on news uncertainty and congressional intensity and captures more market or economy-

wide phenomena. This factor accounts for about 14% of the variance in political risk.[11] We refer to this factor as "Uncertainty and Intensity." The third factor, F3, loads on the political alignment and political connectedness measures but explains only a negligible fraction of the variation in political risk. We refer to this factor as "Region and Contributions" and can be interpreted as capturing the long-term political risks faced by a firm due to geography and long-term relationships with legislators.

The results from this analysis, in combination with those of Table 1, support our claim that trading activity by U.S. Senators possesses new economically relevant information that is not captured in existing measures of political risk appearing in the literature. That information is distinct from that contained in firm political power or alignment measures, news-based political uncertainty, and Congressional activity. We believe that our measure complements these existing measures and more fully describes the political risks faced by firms operating within an industry.

5. Empirical Findings

5.1 Descriptive Statistics

We begin our empirical analysis with a set of descriptive statistics regarding our key variables of interest presented in Table 3. We see that the average firm donates to only four candidates in a calendar year. Furthermore, as defined by Cooper et al. (2010), only one in ten firms has a long-term relationship with a politician. This is not unexpected since, as Cooper et al. (2010) note, most donations come from large firms, and most firms have zero political connections. We also observe

[11] Note that the percentages of explained variation used here are based on the results of unrotated factor analysis. The explained variances reported in Table 2 are associated with the rotated factors, which are dependent. Therefore, the sum of the total variance explained in Table 2 could be higher than 100 percent.

that our sample has news uncertainty higher than 100, suggesting that our sample period is associated with a higher policy uncertainty than historical levels (Baker et al.,2016).

5.2 Industry Risk

In Table 4, we test our first hypothesis by examining the relationship between political risk and firm risk. To measure the firm's equity risk, we use bid-ask spread, return volatility, and Ang et al. (2006) idiosyncratic volatility (IV). We find that all of the dimensions of legislative trading significantly affect each of the measures of a firm's equity risk. For example, one buy transaction in a given industry is associated with a mean spread increase of 0.025% for every firm within the industry. Similarly, return volatility is impacted by 0.007% (0.006%) for every buy (sell) transaction.

We also observe that previous measures of political risk are significant predictors. Consistent with the literature, more political connections predict higher levels of risk. This is consistent with the premise that firms donate more and try to establish relations with politicians if they are exposed to political risk. We find that PAI is associated with a higher bid-ask spread, but lower return volatility and IV. This negative effect is, however, mitigated when the firms have political connections, which is consistent with Bradley et al. (2016). We also observe that News Uncertainty is a significant positive predictor of a firm's equity risk. Finally, we discover that Congressional Intensity is a significant negative predictor of risk. However, Fergusson and Witte (2006) argue that congressional activity and the resultant market reaction depend on the popularity of the given Congress, which might explain the adverse effect. Our results are also robust to focusing on transaction sizes as measures of senator transaction activity. We report those results in our Internet Appendix for this study.

These findings suggest that previous measures of political risk appearing in the literature establish a baseline for the firm's exposure. But these measures are limited by their low frequency of updating or their construction based on macroeconomic data. They are unable to capture short-term related industry-specific risk conveyed with monthly legislative trading.

5.3 Industry Returns

In Table 5, we test our second hypothesis and examine whether legislative trading is informative about future industry returns. We observe that all variables for legislative trading are statistically significant in explaining abnormal returns. On average, one buy transaction in a given industry results in an increase in value-weighted adjusted returns by 0.06% for every stock in the industry. We observe an opposite effect for sell-side transactions, where a sale in the given sector is associated with a decrease in value-weighted returns by 0.05%. Our results suggest that senators are informed about negative information, but they might overestimate the effect of this information on their equity investments.

We find that previous measures of political risk, such as PAI and PI_{cand}, are also significant negative predictors of returns. However, this effect is mitigated by their interaction, suggesting that it is primarily firms located in areas aligned with the presidential party that can leverage their political connections to reduce uncertainty and increase returns. This result is consistent with Bradley et al. (2016). Neither News Uncertainty nor Congressional Intensity are significant predictors of equity returns.

5.4 Political Risk and Firm Size

It is expected that political risk does not affect every firm in the same way. As Bradley et al. (2016) point out, even firms that are in high PAI areas can reduce their political risk by donating to multiple politicians. The risk factors created in Section 4.2 also allow disentangling the political risk measures (factors) effect on different categories of firms (such as size). Cooper et al. (2010) point out most relevant donations come from large firms, with smaller firms donating very little. Furthermore, Brown and Huang (2020) find that size is a significant positive predictor of an executive receiving a White House visit related to more government contracts and regulatory relief. Therefore, we expect that the effect of senator trading is not the same for every firm in the given industry but will also depend on the firm's size. We split the firms into quartiles to better identify the relationship between the different measures of political risk and firms' size. The results of this analysis are available in Table 6, where we test our third hypothesis regarding the differential effect of the information contained in legislative trading based on firm size.

We find that legislative trading has the most substantial effect on the smallest firms. Indeed, the coefficient for both the first and second factors is significantly positive across all three measures of equity risk. The smallest firms suffer from an increased bid-ask spread, return volatility, and idiosyncratic volatility. The corresponding coefficients for the interaction terms with the larger quartiles are generally negative. This indicates that these larger firms experience a reduction in risk with increased legislative trading.

Christensen et al. (2017) observe that it is legal for politicians to inform firms about pending or proposed legislation. Not all firms, however, will be informed equally. More politically connected firms are more likely to be notified and thus prepared to respond. Therefore, it is probable that smaller firms are more affected when this legislative information asymmetry is

higher. This result is consistent with previous findings since it suggests that donation and lobbying, which are positively related to size, reduce political shocks.

In the last column, we analyze the value-weighted returns across size quartiles. We see that the baseline effect is negative for the first factor, suggesting that a high level of legislative information asymmetry negatively impacts abnormal market returns. The impact varies, however, with firm size. The smallest firms are adversely affected, while the largest firms earn positive abnormal returns.

5.5 Legislative Trading of Individual Equities

5.5.1 Methodology

To test Hypothesis 4, we must compare firms traded by senators to comparable untraded ones within the same industry. To undertake this comparison, we perform a nearest-neighbor matching analysis with bias corrections for continuous variables and robust standard errors (Abadie & Imbens, 2006; 2011). Our approach is to compare abnormal returns, bid-ask spread, and illiquidity of traded firms to those of similar firms but untraded by senators within the same industry and month. We use firms traded by senators as the "treated" group, and the un-traded firms constitute the control group.

To further describe our methodology, let $D = 1$ for the firm traded by a senator and $D = 0$ otherwise. Similarly, Y_1 is the abnormal return (spread or illiquidity) of a firm traded by a senator while Y_0 denotes the counterpart variable for the un-traded firm (i.e., the control group). We can only observe a firm as either traded by a senator or not. Then an observed firm's effect, Y, is equal to:

$$Y = DY_1 + (1 - D)\, Y_0 \tag{4}$$

To undertake our matching to create a sample of similar but un-traded firms, we apply exact matching on industry (48 Fama-French industry classification) and the transaction month. We then combine this with a nonparametric nearest neighbor matching procedure that accounts for various firm-specific characteristics to further control for similarity. To control for the political firm similarities, we include the following political risk variables: PAI, $PI_{Candidate}$, and $Number\ of\ donations_{year}$[12].

5.5.2 Traded vs. Non-Traded Comparison

In Table 7, we present our findings regarding the effect of legislative trading on the risk and return of individual equities as described in Hypothesis 4. In Panel A, we examine aggregated trading, the net equity position, rather than directional trading. We observe that there is a significant effect on returns, return volatility, and bid-ask spread. This suggests that senators might also be informed about which firms in which to invest. This may be explained by the fact that politicians are frequently lobbied by corporate and industry lobbyists or receive private information from their social and legislative networks. Such information can give them a better inside into how each firm might be affected by pending legislation or regulation (Eggers and Hainmueller, 2014). When we distinguish based on the direction of the trade, we observe that there are only significant effects when senators are selling (Panel C).

While this analysis shows that there seems to be a firm-specific effect of senator trading, the overall impact is hard to capture. The explanation might be that only a few senators are informed at the company level, or they might be informed only at a specific time. This would

[12] Number of donations refers to the number of donations firms made to different politicians, consistent with Cooper et al. (2010)

further explain the differences in the previous literature (e.g., Belmont et al., 2020, Hanousek et al., 2022). Our results suggest that senators are informed at the industry level, and their trading activity can be used as a signal of upcoming political and legislative shocks. Finding a way to classify which transactions are also motivated by inside information about the specific company is an interesting question for further research.

6 Summary and Discussion

This study introduces the aggregated stock trading by U.S. Senators as a new measure of political risk due to its information content. Because of important committee assignments, social networks, and the relative political longevity of senators, we find that their equity trading has a meaningful impact on an industry's prospects and risks. Therefore, we introduce several measures of industry-level political risk using the monthly frequency of senators' purchases and sales aggregated at the industry level.

The new measure is also associated with market sentiment and firm risk measures such as the bid-ask spread, returns volatility, and idiosyncratic volatility. We used the whole battery of existing political risk measures, and through the principal component analysis (PCA), we disentangle general risk into three political risk factors.

The first factor, *F1*, which we called "Senators' trading signals and news uncertainty," comprises two signals – the number of purchase/sell transactions and uncertainty proxied by news content. The second factor, *F2*, called "Legislative intensity and news uncertainty," is loaded by previously defined senate intensity and news uncertainty. Finally, the third factor, *F3*, is called "Region and Firms' political connectedness," primarily formed by the PAI and PI_{cand}. Not surprisingly, the first two factors explain 97% of the total variation; therefore, the third factor does

not play any significant role in dynamic effects, yet it could be influential in setting the mean impact.

We used the firm size (based on quartiles) in interactions with all three factors and always found the most substantial effect for the smallest firms. The smallest firms suffer the highest bid-ask spread, return volatility, and idiosyncratic volatility, with the largest firms being impacted the least. This result suggests that the smallest firms are most affected by senator trading or perhaps by legislative information. This result is intuitive. As Christensen et al. (2017) point out, it is legal for politicians to inform firms about the upcoming legislature. However, not all firms will be informed equally, with more politically connected firms having a larger likelihood of being notified. As a result, it is intuitive that smaller firms will be more affected when the legislative information asymmetry is higher. This result also supports previous findings since it suggests that donation and lobbying, which are positively related to size, reduce political shocks.

We expected the legislative trading to be more informative about the industry than individual firm returns. However, we found cases when senators may also be informed about which company to invest in. This may be explained by the fact that politicians frequently observe corporate lobbying, which might give them a better inside into how each firm may be impacted by regulation and also potentially gives them inside information about the firm (Eggers and Hainmueller, 2014). While our analysis suggests that there seems to be a firm-specific effect of senator trading, the overall impact is hard to capture.

We show, across various specifications, that senator transaction activity can signal upcoming political shocks and possible legislative information asymmetry. This effect is crucial; as Christensen et al. (2017) point out, politicians frequently share information about forthcoming legislation with firms impacted by the possible legislation and financial institutions. As a result,

legislative information asymmetry can significantly impact the future performance of stocks in a given industry, which is supported by our results. Furthermore, not allowing senators to trade individual stocks would not stop legislative information asymmetry since disclosing inside information about upcoming legislation is legal (Christensen et al., 2017). Therefore, there needs to be further discussion about not only strengthening the STOCK Act but further increasing transparency.

References

Akey, P. (2015). Valuing changes in political networks: Evidence from campaign contributions to close congressional elections. The Review of Financial Studies, 28(11), 3188-3223.

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The quarterly journal of economics*, *131*(4), 1593-1636.

Bailey, W., Zheng, L., & Zhou, Y. (2014). What makes the VIX tick? *Available at SSRN 2143891*.

Beaulieu, M., Cosset, J. and Essaddam, N. (2005), "The impact of political risk on the volatility of stock returns: the case of Canada", Journal of International Business Studies, Vol. 36 No. 6, pp. 701-718.

Bekaert, G. and Wu, G. (2000), "Asymmetric volatility and risk in equity markets", Review of Financial Studies, Vol. 13 No. 1, pp. 1-42.

Belmont, W., Sacerdote, B., Sehgal, R., & Van Hoek, I. (2022). Do senators and house members beat the stock market? Evidence from the STOCK Act. Journal of Public Economics, 207, 104602.

Bernanke, B.S. and Kuttner, K.N. (2005), "What explains the stock market's reaction to federal reserve policy?", The Journal of Finance, Vol. 60 No. 3, pp. 1221-1257.

Bialkowski, J., Gottschalk, K. and Wisniewski, T. (2008), "Stock market volatility around national elections", Journal of Banking and Finance, Vol. 32 No. 9, pp. 1941-1953.

Blau, B. M., Griffith, T. G., & Whitby, R. J. (2022). On the Ethics of "Non-Corporate" Insider Trading. Journal of Business Ethics, 177(1), 79-93.

Bloom, N. (2009), "The impact of uncertainty shocks", Econometrica, Vol. 77, pp. 623-685.

Boehmer, E., Jones, C. M., Zhang, X., & Zhang, X. (2021). Tracking retail investor activity. The Journal of Finance, 76(5), 2249-2305.

Bomfim, A.N. (2003), "Pre-announcement effects, news effects, and volatility: monetary policy and the stock market", Journal of Banking and Finance, Vol. 27 No. 1, pp. 133-151.

Borges, M.R. (2010), "Efficient market hypothesis in European stock markets", The European Journal of Finance, Vol. 16 No. 7, pp. 711-726.

Bossaerts, P., Ghirardato, P., Guarnaschelli, S. and Zame, W.R. (2010), "Ambiguity in asset markets: theory and experiment", Review of Financial Studies, Vol. 23 No. 4, pp. 1325-1359.

Boutchkova, M., Doshi, H., Durnev, A. and Molchanov, A. (2010), "Precarious politics and return volatility", Review of Financial Studies, Vol. 25 No. 4, pp. 1111-1154.

Boyd, J.H., Hu, J. and Jagannathan, R. (2005), "The stock market's reaction to unemployment news: why bad news is usually good for stocks", The Journal of Finance, Vol. 60 No. 2, pp. 649-672.

Brown, J. R., & Huang, J. (2020). All the president's friends: Political access and firm value. *Journal of Financial Economics*, *138*(2), 415-431.

Brennan, M.J., Chordia, T., Subrahmanyam, A., Tong, Q., 2012. Sell-order liquidity and the cross-section of expected stock returns. Journal of Financial Economics 105, 523-541

Chen, X. and Ghysels, E. (2010), "News – good or bad – and its impact on volatility predictions over multiple horizons", Review of Financial Studies, Vol. 24 No. 1, pp. 46-72.

Christensen, D. M., Mikhail, M. B., Walther, B. R., Wellman, L. A. (2017). From K Street to Wall Street: Political Connections and Stock Recommendations. The Accounting Review, 92 (3), 87–112.

Cohen, L., Malloy, C., 2010. Friends in high places. Unpublished working paper. Harvard Business School and National Bureau of Economic Research.
Connelly, B.L., Certo, S.T., Ireland, R.D. and Reutzel, C.R. (2011), "Signaling theory: a review and assessment", Journal of Management, Vol. 37 No. 1, pp. 39-67.
Corgnet, B., Kujal, P. and Porter, D. (2011), "The effect of reliability, content and timing of public announcements on asset trading behavior", Chapman UniversityWorking Paper 11-02.
Da, Zhi, Xing Huang, and Lawrence J. Jin. "Extrapolative beliefs in the cross-section: What can we learn from the crowds?." Journal of Financial Economics 140.1 (2021): 175-196.
Damodaran, A., & Liu, C. H. (1993). Insider trading as a signal of private information. *The Review of Financial Studies*, *6*(1), 79-119.
De Bondt, W.F.M. and Thaler, R.H. (1985), "Does the stock market overreact", The Journal of Finance, Vol. 40 No. 3, pp. 793-808.
Dougal, C., Engelberg, J., Garcia, D. and Parsons, C. (2012), "Journalists and the stock market", Review of Financial Studies, Vol. 25 No. 3, pp. 639-679.
Easley, D. and O'Hara, M. (2010), "Liquidity and valuation in an uncertain world", Journal of Financial Economics, Vol. 97 No. 1, pp. 1-11.
Ederington, L.H. and Lee, J.H. (1993), "How markets process information: news releases and volatility", The Journal of Finance, Vol. 48 No. 4, pp. 1161-1190.
Edwards, G.C. III. (2003), On Deaf Ears: The Limits of the Bully Pulpit, Yale University Press, New Haven.
Eggers, A., Hainmueller, J., (2013), "Capitol Losses: The Mediocre Performance of Congressional Stock Portfolios". *The Journal of Politics* 75, 535-551
Ekholm, A.G. (2006), "How do different types of investors react to new earnings information?", Journal of Business Finance and Accounting, Vol. 33 Nos 1/2, pp. 127-144.
Fowler, J. (2006), "Elections and markets: the effect of partisanship, policy risk, and electoral margins on the economy", The Journal of Politics, Vol. 68 No. 1, pp. 89-103.
Fuss, R. and Bechtel, M. (2008), "Partisan politics and stock market performance: the effect of expected government partisanship on stock returns in the 2002 German federal election", Public Choice, Vol. 135 Nos 3/4, pp. 131-150.
Galil, K. and Soffer, G. (2011), "Good news, bad news and rating announcements: an empirical investigation", Journal of Banking and Finance, Vol. 35 No. 11.
Gao, M., and J. Huang. 2016. Capitalizing on Capitol Hill: Informed trading by hedge fund managers. Journal of Financial Economics 121 (3): 521–545.
Garcia, C., Herrero, B. and Ibanez, A. (2014), "Information and investor behavior surrounding earnings announcements", Journal of Behavioral Finance, Vol. 15 No. 2, pp. 133-143.
Goodell, J. and Vähämaa, S. (2013), "US presidential elections and implied volatility: the role of political uncertainty", Journal of Banking and Finance, Vol. 37 No. 3, pp. 1108-1117.
Goodell, J.W. and Bodey, R.A. (2012), "Price–earnings changes during US presidential election cycles: voter uncertainty and other determinants", Public Choice, Vol. 150 Nos 3/4, pp. 633-650.
Hainmueller, J., Eggers, A.C., 2014. Political Capital: Corporate Connections and Stock Investments in the U.S. Congress, 2004-2008. Quarterly Journal of Political Science 9, 169-202
Hochberg, Y., P. Sapienza, and A. Vissing-Jørgensen. 2009. A lobbying approach to evaluating the Sarbanes-Oxley Act of 2002. Journal of Accounting Research 47: 519–583.

John, K., & Lang, L. H. (1991). Insider trading around dividend announcements: Theory and evidence. *The Journal of Finance*, *46*(4), 1361-1389.
Jones, C.M., Lamont, O. and Lumsdaine, R.L. (1998), "Macroeconomic news and bond market volatility", Journal of Financial Economics, Vol. 47 No. 3, pp. 315-337.
Kim, C. F., Pantzalis, C., & Park, J. C. (2012). Political geography and stock returns: The value and risk implications of proximity to political power. Journal of Financial Economics, 106(1), 196-228.
Kim, S.H. (2013). What governmental insider trading teaches us about corporate insider trading. In: Research handbook on insider trading. Edward Elgar Publishing.
Kim, S.H., 2013a. Insider trading as private corruption. UCLA L. Rev. 61, 928
Koonce, L., Seybert, N. and Smith, J. (2016), "Management speaks, investors listen: are investors too focused on managerial decisions?", Journal of Behavioral Finance, Vol. 17 No. 1, pp. 31-44.
Mehdian, S., Nas, T. and Perry,M.J. (2008), "An examination of investor reaction to unexpected political and economic events in Turkey", Global Finance Journal , Vol. 18 No. 3, pp. 337-350.
Pantzalis, C., Strangeland, D.A. and Turtle, H.J. (2000), "Political elections and the resolution of uncertainty: the international evidence", Journal of Banking and Finance, Vol. 24 No. 10, pp. 1575-1604.
Pastor, L. and Veronesi, P. (2012), "Uncertainty about government policy and stock prices", The Journal of Finance, Vol. 67 No. 4, pp. 1219-1264.
Ridge, J., Hill, A. and Ingram, A. (2016), "The signalling role of politician stock ownership: effects on firm lobbying intensity", Journal of Management, Vol. 44 No. 5, pp. 1-26.
Seyhun, H. N. (1988). The information content of aggregate insider trading. *Journal of Business*, 1-24.
Scholtus, M., van Dijk, D. and Frijns, B. (2014), "Speed, algorithmic trading, and market quality around macroeconomic news announcements", Journal of Banking and Finance, Vol. 38, pp. 89-105.
Schweizer, P. 2011. Throw Them All Out. New York, NY: Houghton Mifflin Harcourt Publishing Company.
Spence, M. (1973), "Job market signalling", The Quarterly Journal of Economics, Vol. 87 No. 3, pp. 355-374.
Stiglitz, J.E. (2002), "Information and the change in the paradigm in economics", American Economic Review, Vol. 92 No. 3, pp. 460-501.
Sy, O. and Al Zaman, A. (2011), "Resolving the presidential puzzle", Financial Management, Vol. 40, No. 2, pp. 331-355.
Tarek A Hassan, Stephan Hollander, Laurence van Lent, Ahmed Tahoun, Firm-Level Political Risk: Measurement and Effects, The Quarterly Journal of Economics, Volume 134, Issue 4, November 2019, Pages 2135–2202, https://doi.org/10.1093/qje/qjz021
Wamser, G. (2014). The Impact of Thin-Capitalization Rules on External Debt Usage–A Propensity Score Matching Approach. Oxford Bulletin of Economics and Statistics, 76(5), 764-781.
Ziobrowski, A.J., Cheng, P., Boyd, J.W., Ziobrowski, B.J., 2004. Abnormal returns from the common stock investments of the US Senate. Journal of Financial and Quantitative Analysis 39, 661-676

Zhang, G. (2001). Regulated managerial insider trading as a mechanism to facilitate shareholder control. *Journal of Business Finance & Accounting*, *28*(1-2), 35-62.

Appendix: Variable Definition

Variable	*Description*
Dependent variables	
Value-weighted adjusted return	Defined as the difference between stock return and the CRSP value-weighted portfolio return over the given month. Data sources: CRISP.
Returns volatility	Defined as the standard deviation of daily returns for the given calendar month. Data source: CRSP.
Bid-ask Spread	Defined as a weighted mean of the daily bid-ask spread, where the weights are the daily volumes. The daily bid-ask spread is defined as (ASK-BID)/PRICE. Data source: CRSP.
IV (AHXZ)	Ang et al. (2006) define this measure of information asymmetry. It is calculated as the standard deviation of residuals from the Fama-French 3-factor model, using daily data from the given calendar month. Source: CRSP
Senator stock transaction measures	
Number of buy (sell) transactions	The number of purchase (sell) stock transactions by senators in the given calendar month and industry. We use Fama-French 48 industry classification. We omit diluting transactions. We define a transaction as diluted if either a) the senator has made a transaction with given security on the same day or b) he has traded the same security in immediate subsequent trading days.
Weighted number of buy (sell) transactions weighted	The number of purchases (sells) of non-diluted transactions by senators in the given calendar month and industry. We use weights to capture the senator's importance. The weights are calculated as the log (1+number of corporate donors the senator had in the previous calendar year).
Net Equity Position	Difference between the number of weighted buy transactions and the number of weighted sell transactions.
Dollar amount purchased (sold)	Total dollar amount worth of stocks senators have purchased (sold) in the given calendar month and industry. Since senators only choose from one of the specified categories. We assume the senator has invested the lower bound of any category (i.e., in the case of the lowest category, \$1,001-\$15,000, we assume that the senator has invested \$1,001).
Dollar amount purchased (sold) weighted	Total dollar amount worth of stocks senators have purchased (sold) in the given calendar month and industry, where we use weights to capture the senator's importance. The weights are calculated as log(1+number of corporate donors senators had in the previous calendar year). The variable is reported at \$10,000.
Other measures of policy-related risk	
PAI	The Political Alignment Index is defined by Kim et al. (2012). It is calculated as $\text{PAI}_{y,s} = \frac{1}{4}\left(\text{Senators}_{y,s}\right) + \frac{1}{4}\left(\text{Representatives}_{y,s}\right) + \frac{1}{4}\left(\text{Governor}_{y,s}\right) + \frac{1}{4}\left[\frac{1}{2}\left(\text{State Senators}_{y,s}\right) + \frac{1}{2}\left(\text{State Representatives}_{y,s}\right)\right]$, where *y* stands for the year and *s* for the state. The variable Senator (Representatives) is the

	ratio of senators (house representatives) belonging to the president's party. The variable Governor is a dummy variable equal to one if the state governor belongs to the president's party. Similarly, the variable State Senators (State Representatives) is a dummy variable equal to one when more than 50% of State Senators (State Representatives) belong to the president's party. Source: OpenSecrets.
$PI_{Candidate}$	Political connectedness measure defined by Cooper et al. (2010). It is the total number of candidates the firm has donated to continuously for a minimum of 5 years. Source: CRSP and OpenSecrets.
News Uncertainty	A measure of policy uncertainty was defined by Baker et al. (2016). The methodology and data are available at http://www.policyuncertainty.com/.
Congress Intensity	Calculated as the number of days Congress was in session for the given calendar month. Source: congress.gov
$Number\ of\ donations_{year}$	The number of donations to different politicians the firm has made in the previous calendar year.
Firm control variables	
Past profitability	Group of variables R_{m-1}, $R_{[m-3,m-2]}$, $R_{[m-6,m-4]}$, and $R_{[m-12,m-6]}$, which stand for return over the last month, months 3 to 2, 6 to 4, and 12 to 6, respectively. Defined by Brennan et al. (2012). Data sources: CRSP and Compustat.
Illiquidity	Defined as a sum of absolute values of daily returns divided by daily volume for the year, multiplied by 10^6. Defined by Amihud (2002). Data sources: CRSP and Compustat.
Firm size	It is defined as the natural logarithm of the market value of equity. Data sources: CRSP and Compustat.
Book-to-market ratio	It is defined as book equity divided by market equity. Data sources: CRSP and Compustat.
HML and SMB	Fama-French three factors. Available on Kenneth French website.

Table 1: Legislative Trading and Existing Political Risk Measures

This table reports the relationship between legislative trading activity and existing measures of political risk. The dependent variables are based on the number of non-diluted stock transactions by senators. Standard errors are clustered at the firm level to control for unobserved time-invariant firm-level heterogeneity. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Control variables capturing size, book-to-market, past profitability, illiquidity, and Fama-French three factors, are included for each model.

Political Risk Measures	**Dependent Variable**				
	Raw Number of Buys	Raw Number of Sells	Weighted Number of Buys	Weighted Number of Sells	Net Equity Position
PAI	-0.0924***	-0.0896***	-0.3504***	-0.2602***	-0.0902**
	(0.0133)	(0.0106)	(0.0525)	(0.0362)	(0.0352)
$PI_{Candidate}$	-0.0288**	-0.0085	-0.1239**	-0.0457	-0.0782**
	(0.0124)	(0.0113)	(0.0482)	(0.0409)	(0.0370)
PAI $*$ $PI_{Candidate}$	0.0657***	0.0268	0.2749***	0.1233	0.1516**
	(0.0250)	(0.0218)	(0.0979)	(0.0799)	(0.0702)
News Uncertainty	0.0109***	0.0216***	0.0389***	0.0668***	-0.0279***
	(0.0002)	(0.0002)	(0.0007)	(0.0008)	(0.0008)
Congress Intensity	-0.0273***	0.0007	-0.0920***	-0.0209***	-0.0711***
	(0.0008)	(0.0005)	(0.0034)	(0.0022)	(0.0040)
Constant	-2.2893***	-4.5352***	-8.1360***	-14.1839***	6.0479***
	(0.0509)	(0.0608)	(0.1752)	(0.1961)	(0.1650)
Controls	YES	YES	YES	YES	YES
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
R^2	0.2642	0.2349	0.2174	0.1885	0.0549
Number of observations	469,119	469,119	469,119	469,119	469,119

Table 2: Principal Components Analysis of Political Risk

Table 2 contains unrotated factor analysis results computed by the Principal Component Analysis (PCA). For each factor, we used bold-faced fonts to highlight significant loadings. Using the principal factor loadings, we assign the following interpretation/meaning to factors F1-F3: Factor *F1* is called "Industry-specific political risk," factor *F2* captures "Idiosyncratic market-wide political risk," and factor *F3* is related to the "Region and Firms' political connectedness." Rotated factor loadings are slightly higher for the main components, but the differences are negligible. For simplicity, we present the rotated versions of the factor. The unrotated counterparts are available in the Internet appendix.

Factor Analysis Results (rotated factors)			
	Variance	Difference	Proportion
Factor 1, *F1*	0.8964	0.7550	1.3349
Factor 2, *F2*	0.1414	0.1115	0.2106
Factor 3, *F3*	0.0299	.	0.0446

Factor loadings				
Variable	Factor 1	Factor 2	Factor 3	Uniqueness
PAI	-0.0461	-0.1499	**0.1096**	0.9634
$PI_{Candidate}$	-0.0244	-0.0032	**0.1319**	0.9820
News Uncertainty	0.2528	**0.2428**	-0.0199	0.8768
Congress Intensity	0.0585	**0.2381**	0.0047	0.9399
Num. purchase transactions	**0.6354**	-0.0004	-0.0087	0.5961
Num. sell transactions	**0.6500**	0.0577	-0.0013	0.5741

Note that the explained variances reported in Table 2 are associated with the rotated factors, which are dependent. Therefore, the sum of the total variance explained could be higher than 100 percent.

Table 3: Sample descriptive statistics

This table provides descriptive statistics for our measures of political risk, dependent variables, and the various control variables used in the analysis.

	N	Mean	SD	P25	Median	P75
Dynamic measures of Political Risk						
Num. purchase transactions	482,625	1.341	2.352	0.000	0.000	2.000
Num. sell transactions	482,625	1.300	2.606	0.000	0.000	2.000
Num. purchase transactions weighted	482,625	4.924	9.078	0.000	0.000	6.516
Num. sell transactions weighted	482,625	4.763	9.888	0.000	0.000	5.375
Net equity position	482,625	0.161	9.594	-0.478	0.000	2.944
Fixed measures of Political Risk						
PAI (adjusted)	482,625	0.391	0.377	0.033	0.232	0.802
PAI (original)	389,575	0.484	0.361	0.083	0.431	0.900
$PI_{Candidate}$	482,625	0.098	0.499	0.000	0.000	0.000
News Uncertainty	482,625	134.2	51.38	99.343	118.5	150.1
Congress Intensity	469,119	15.59	4.078	14.000	16.00	18.00
$Number\ of\ donations_{year}$	482,625	4.350	24.474	0.000	0.000	0.000
Dependent variables						
Value-weighted adjusted return	477,626	0.012	17.25	-6.495	-0.658	5.081
Returns volatility	481,481	2.917	3.194	1.443	2.192	3.474
Bid-ask Spread	481,867	3.937	3.206	2.085	3.139	4.993
IV (AHXZ)	481,481	2.402	2.873	1.070	1.733	2.899
Control Variables						
Past two-month stock returns	474,316	1.019	0.247	0.917	1.009	1.099
Past three-month stock returns	466,934	1.025	0.299	0.897	1.013	1.124
Past six-month stock returns	452,224	1.031	0.401	0.842	1.014	1.171
Book to market	478,587	3.227	112.7	0.253	0.545	0.981
Firm size	480,129	6.443	2.166	4.900	6.437	7.925
Illiquidity	481,663	4.280	133.4	0.001	0.005	0.061
Market return	482,625	1.253	4.026	-0.190	1.430	3.440
SMB	482,625	0.026	2.395	-1.890	0.260	1.290
HML	482,625	-0.425	2.740	-1.900	-0.440	1.100

Table 4: Political Risk and its Effect on Equity Risk

This Table reports the effect of political risk on the firm's equity risk. The dependent variables are Bid-ask spread, Return volatility, and IV (AHXZ), respectively. The Bid-asks spread is calculated as a weighted mean using daily data for the month, where the weights are daily volumes. Return volatility is the standard deviation of daily returns for the month. Lastly, IV (AHXZ) is calculated using Ang et al. (2006) as the standard deviation of residuals from the Fama-French three-factor model, using daily data for the given month. Control variables for every regression include Size, Book to market, Past profitability, illiquidity, Fama French 3 factor models at the monthly frequency (HML, SMB, and Market), including the year and Fama-French 48 industry dummies. Standard errors are clustered at the firm level to control for unobserved time-invariant firm-level heterogeneity. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively.

Variables	**Equity Risk**								
	Bid-ask Spread			Return volatility			Idiosyncratic Volatility		
Number purchase transactions	0.0246***			0.0072***			0.0098***		
	(0.0022)			(0.0027)			(0.0025)		
Number sell transactions	0.0101***			0.0062***			0.0014		
	(0.0017)			(0.0023)			(0.0021)		
Number of purchase transactions weighted		0.0104***			0.0052***			0.0042***	
		(0.0006)			(0.0007)			(0.0006)	
Number of sell transactions weighted		-0.0028***			-0.0027***			-0.0021***	
		(0.0004)			(0.0005)			(0.0005)	
Net equity position			0.0059***			0.0037***			0.0029***
			(0.0004)			(0.0005)			(0.0004)
PAI	0.1035***	0.1031***	0.1010***	-0.0618**	-0.0620**	-0.0627**	-0.1131***	-0.1132***	-0.114***
	(0.0379)	(0.0379)	(0.0379)	(0.0248)	(0.0248)	(0.0247)	(0.0225)	(0.0225)	(0.0225)
$PI_{Candidate}$	0.2470***	0.2473***	0.2468***	0.1963***	0.1965***	0.1964***	0.2036***	0.2037***	0.2036***
	(0.0287)	(0.0286)	(0.0287)	(0.0203)	(0.0203)	(0.0203)	(0.0172)	(0.0172)	(0.0172)
PAI $*$ $PI_{Candidate}$	-0.0113	-0.0119	-0.0104	0.0388*	0.0384*	0.0389*	0.0561***	0.0559***	0.0563***
	(0.0281)	(0.0281)	(0.0282)	(0.0204)	(0.0204)	(0.0204)	(0.0188)	(0.0188)	(0.0189)

Table 4: Political Risk and its Effect on Equity Risk (Continue)

Variables	Equity Risk								
	Bid-ask Spread			Bid-ask Spread			Bid-ask Spread		
News Uncertainty	0.0114***	0.0117***	0.0120***	0.0090***	0.0092***	0.0094***	0.0046***	0.0047***	0.0048***
	(0.0001)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0001)	(0.0002)	(0.0002)
Congress Intensity	-0.0129***	-0.0129***	-0.0133***	-0.0102***	-0.0101***	-0.0102***	-0.0079***	-0.0079***	-0.008***
	(0.0006)	(0.0006)	(0.0006)	(0.0009)	(0.0009)	(0.0009)	(0.0008)	(0.0008)	(0.0008)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	5.9477***	5.8950***	5.8235***	4.6000***	4.5621***	4.5389***	4.7715***	4.7485***	4.7292***
	(0.3200)	(0.3200)	(0.3200)	(0.1929)	(0.1930)	(0.1931)	(0.1769)	(0.1769)	(0.1771)
R^2	0.3698	0.3700	0.3697	0.2121	0.2122	0.2122	0.2091	0.2092	0.2091
Number of observations	436,094	436,094	436,094	436,094	436,094	436,094	436,094	436,094	436,094

Table 5: Legislative Trading and Returns

This Table reports the analysis of value-weighted adjusted monthly returns, which serves as the dependent variable. Return volatility is the standard deviation of daily returns for the month. Lastly, IV (AHXZ) is calculated using Ang et al. (2006) as the standard deviation of residuals from the Fama-French three-factor model, using daily data for the given month. Control variables for every regression include Size, Book to market, Past profitability, illiquidity, Fama French 3 factor models at the monthly frequency (HML, SMB, and Market), including the year and Fama-French 48 industry dummies. Standard errors are clustered at the firm level to control for unobserved time-invariant firm-level heterogeneity. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Detailed results with all control variables are available in Internet Appendix.

Variables	**Model (1)**	**Model (2)**	**Model (3)**
Number of purchase transactions	0.0591***		
	(0.0166)		
Number of sell transactions	-0.0496***		
	(0.0148)		
Number of purchase transactions weighted		0.0091**	
		(0.0040)	
Number of sell transactions weighted		-0.0085**	
		(0.0035)	
Net Equity Position			0.0088***
			(0.0031)
PAI	-0.2634***	-0.2634***	-0.2636***
	(0.0749)	(0.0749)	(0.0749)
$PI_{Candidate}$	-0.7356***	-0.7362***	-0.7363***
	(0.0464)	(0.0465)	(0.0465)
PAI $*$ $PI_{Candidate}$	0.1672***	0.1683***	0.1684***
	(0.0583)	(0.0583)	(0.0583)
News Uncertainty	-0.0011	-0.0013	-0.0013
	(0.0012)	(0.0012)	(0.0012)
Congress Intensity	-0.0090	-0.0095	-0.0096
	(0.0065)	(0.0065)	(0.0065)
Controls	YES	YES	YES
Constant	-0.3920	-0.3562	-0.3611
	(0.4872)	(0.4874)	(0.4890)
R^2	0.0195	0.0195	0.0195
Number of observations	436,091	436,091	436,091

Table 6 – Stock risk and returns: a link with the constructed political risk factors

This Table reports the sensitivity analysis of the constructed political risk factors to the company size (grouped by quartiles). The dependent variables are Bid-ask spread, Return volatility, IV (AHXZ), and value-weighted adjusted monthly return. The Bid-asks spread is calculated as a weighted mean using daily data for the month, where the weights are daily volumes. Return volatility is the standard deviation of daily returns for the month. Lastly, IV (AHXZ) is calculated using Ang et al. (2006) as the standard deviation of residuals from the Fama-French three-factor model, using daily data for the given month. Control variables are the same as in Table 2 (3). The base (omitted) category for each interaction represents the smallest firms (the first quartile of the company size). Standard errors are clustered at the firm level to control for unobserved time-invariant firm-level heterogeneity. ***, **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Detailed results with all control variables are available in Internet Appendix.

Variables	Bid-ask spread	Return volatility	IV (AHXZ)	Value weighted returns
Factor F1-Senators' trading signals and news uncertainty	0.3695***	0.1780***	0.1505***	-0.2779**
	(0.0325)	(0.0250)	(0.0227)	(0.1182)
Factor F1 interaction size Q2	-0.1067**	-0.0082	-0.0566**	0.2264
	(0.0423)	(0.0310)	(0.0280)	(0.1491)
Factor F1 interaction size Q3	-0.1760***	-0.0189	-0.0735***	0.3397**
	(0.0428)	(0.0309)	(0.0279)	(0.1336)
Factor F1 interaction size Q4	-0.2531***	-0.0900***	-0.1295***	0.4072***
	(0.0421)	(0.0296)	(0.0270)	(0.1240)
Factor F2-Legislative intensity and news uncertainty	0.6225***	0.4503***	0.3777***	0.3823
	(0.0521)	(0.0554)	(0.0505)	(0.2560)
Factor F2 interaction size Q2	-0.1903***	0.0103	-0.1445**	-1.4226***
	(0.0728)	(0.0683)	(0.0617)	(0.3151)
Factor F2 interaction size Q3	-0.3475***	-0.1584**	-0.3420***	-0.9206***
	(0.0696)	(0.0662)	(0.0595)	(0.2942)
Factor F2 interaction size Q4	-0.5056***	-0.2869***	-0.3633***	-1.2391***
	(0.0685)	(0.0641)	(0.0578)	(0.2722)
Factor F3-Region and Firms' political connectedness	-0.0232	-0.8008***	-0.9921***	-0.2222
	(0.3840)	(0.2577)	(0.2363)	(0.7510)
Factor F3 interaction size Q2	1.1339***	1.4557***	1.2778***	-4.1059***
	(0.4220)	(0.2865)	(0.2615)	(0.8973)
Factor F3 interaction size Q3	0.9605**	1.2496***	1.0614***	-2.0349**
	(0.4175)	(0.2821)	(0.2565)	(0.8305)
Factor F3 interaction size Q4	0.8396**	1.4474***	1.6414***	-1.7667**
	(0.3930)	(0.2632)	(0.2403)	(0.7536)
Constant	7.8948***	6.0389***	5.3841***	-1.0067**
	(0.3129)	(0.1825)	(0.1668)	(0.4351)
Firm controls	Yes	Yes	Yes	Yes
Industry and year FE	Yes	Yes	Yes	Yes
R^2	0.363	0.207	0.208	0.0201
Number of Observations	436,094	436,094	436,094	436,091

Table 7: Legislative Trading, Risk, and Return

This Table reports the Average Treatment Effect on Treated (ATET) results measuring the impact of senators' trading signals on particular firms within the actively traded industries. We used the matching procedure *tefect* implemented in Stata. Exact matching was done on the industry level and monthly frequency. Approximate matching includes the following variables: size (log of the market value of the company), PAI (Political alignment index), $PI_{Candidate}$, and $Number\ of\ donations_{year}$, the number of political connections the firm has had. We add the control for the existing (static) proxies of the firms' political connectedness to separate established political relations (and associated risks) from the trading signals provided by the senators.

Matching is conducted using nearest neighbor matching, on the common support, kernel estimation using caliper 0.005. The standard errors of the ATET are computed with the robust option (at least two suitable matches for each treated). **, and * denote statistical significance at 1%, 5%, and 10%, respectively. Detailed balancing tests, including balancing graphs for all control variables, are available in Internet Appendix.

Matching outcome variables	Dependent Variables			
	Market abnormal return	Illiquidity	Return volatility	Bid-ask spread
Panel A: All trades				
ATET	51.58***	0.085	0.0686***	0.097***
(std. error)	(19.81)	(0.172)	(0.262)	(0.028)
p-value	0.009	0.619	0.009	0.001
Number of treated	3,305	3,305	3,305	3,305
Number of observations	162,893	163,774	163,747	163,849
Panel B: Buys				
ATET	-13.04	0.31	0.061	0.0719
(std. error)	(33.53)	(0.526)	(0.044)	(0.047)
p-value	0.697	0.556	0.164	0.124
Number of treated	1,085	1,085	1,085	1,085
Number of observations	69,925	70,369	70,357	70,396
Panel C: Sells				
ATET	65.25*	0.0002	0.085**	0.088*
(std. error)	(36.18)	(0.021)	(0.049)	(0.055)
p-value	0.071	0.991	0.089	0.109
Number of treated	1,072	1,072	1,072	1,072
Number of observations	57, 399	57,636	57,630	57,654