THE 2000 PRESIDENTIAL ELECTION AND THE INFORMATION COST OF SENSITIVE VS. NON-SENSITIVE S&P 500 STOCKS

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Abstract

We investigate the information cost of stock trading during the 2000 presidential election. We find that the uncertainty of the election induces information asymmetry of politically sensitive firms under the Bush/Gore platforms. The unusual delay in election results in a significant increase in the adverse selection component of trading cost of politically sensitive stocks. This finding supports the contention that the vote recount in 2000 sets off heterogeneous interpretations of the news and causes information disparity among traders. Consistent with this prediction, cross-sectional variations in bid-ask spreads are significantly and positively related to changes in information cost, controlling for the effects of liquidity cost and stock characteristics. This empirical evidence is robust to different estimation methods.

JEL classification: G1

Keywords: Presidential election; information asymmetry; transaction costs; bid-ask spreads; adverse selection cost

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1. Introduction

Numerous studies have shown that political elections affect stock markets. Herbst and Slinkman (1984), Huang (1985), Hensel and Ziemba (1995), Santa-Clara and Valkanov (2003) analyze the difference in stock returns under Republican and Democratic presidents of the United States.[1] Pantzalis, Stangeland, and Turtle (2000) show that elections impact stock markets around political election dates across 33 countries. Nippani and Medlin (2002) document that the delay in the results of the 2000 presidential election affects the stock market, and find an initial negative return in stock market indices. Knight (2006) reports that policy platforms of Gore and Bush are capitalized into equity prices for a sample of 70 politically sensitive firms during the 2000 U.S. presidential election. Mattozzi (2005) finds similar results that policy platforms are factored in the prices of politically sensitive stocks. These past studies focus on the issues whether the market reacts to election news and whether policy platforms are capitalized into equity prices. Given all the findings, however, not much effort has been made to understand the information assimilation process of stock markets and adverse selection cost of trading at the intraday level in relation to polls and elections.

News related to polls and elections is public information. Public information releases may affect information asymmetry of stock trading if market participants differ in their ability to interpret the news (see Green, 2004). Krinsky and Lee (1996) investigate the components of the bid-ask spread around earnings announcements. They report that the adverse selection cost component significantly increases surrounding the public

[1] Recently, Fair (2006) employs the data from political betting markets to measure election uncertainty not revealed in the polling data.

announcements of earnings. In addition, studies in Treasury bond and currency markets also support the view of information asymmetry. Although there is no private information about cash flows in these two markets, information disparity among traders still arises due to heterogeneous interpretations of public news and differential order flows observed by individual dealers. Ito, Lyons, and Melvin (1998) provide evidence of private information in the foreign exchange market of Tokyo. Balduzzi, Elton, and Green (2001) investigate the effects of scheduled macroeconomic announcements on prices, trading volume, and bid-ask spreads of treasury securities. Green (2004) examines the impact of trading on government bond prices after the release of macroeconomic news, and documents a significant increase in the informational role of trading following economic news announcements. In this paper, we intend to investigate the informational role of stock trading in relation to polls and elections. Particularly, the public announcements of ballot recounts during the 2000 presidential election are unusual and they may set off various interpretations of the news among traders and investors, and therefore induce informational heterogeneity during the recount period.

The 2000 U.S. presidential election is different from elections in any other years. Normally the election outcome would be clear by the end of the election day or by the following day. For the 2000 presidential election, however, there was no clear winner by the end of November 7th or the next morning. Florida's electoral votes were too close to call, and so a recount was started. The uncertainty continued for 36 days until Al Gore publicly conceded the presidency on December 13. Regarding this election, a few unresolved issues are raised as follows. Does the news related to polls, elections, and

recounts contribute to the information asymmetry of stock trading? Do transaction costs change during the polling period and the unusual recount period in 2000? If so, does the change in transaction costs result from the change in information cost and/or other factors?

Transaction costs are often measured by quoted and effective bid-ask spreads.[2] Market microstructure theory suggests that transaction costs can be interpreted as the compensation for specialists and dealers. Market makers such as specialists and dealers face the problem of adverse selection and bear liquidity/inventory costs when they execute incoming buy and sell orders. Hence, the higher the information cost and/or the liquidity cost, the larger the quoted and effective bid-ask spreads. Previous studies have relied on various methods to measure information asymmetry. For instance, Bessembinder and Kaufman (1997) and Weston (2000) decompose the effective spread into the price impact and realized spread. The price impact represents the informed trading cost component, whereas the realized spread measures the execution cost excluding the adverse information effect. Easley, Kiefer, O'Hara, and Paperman (1996) use daily buy and sell order data to estimate the probability of informed trades (PIN) from a Bayesian model where the order arrival is characterized by a Poisson process. Madhavan, Richardson, and Roomans (1997) decompose bid-ask spread into the information and liquidity components in a framework linked to both the innovations in order flows and public information shocks.

Information asymmetry typically derives from two primary sources. One source is the private information. For example, some traders may possess private information about future cash flows of a firm. The other source is the heterogeneous interpretation of public

[2] The quoted bid-ask spread is defined as the difference between the posted ask and bid prices, while the effective bid-ask spread is defined as twice the difference between the trade price and the midquote.

information. Even though traders observe the same set of public news, they vary in their abilities to analyze it. Therefore, the public news related to polls, elections, and recounts can create a significant information disparity among traders. Stocks that are subject to the influence of election results may experience higher information asymmetry and a larger informed trading component of trading costs during a certain period of the election.

The 2000 presidential election offers a unique opportunity for us to study the effects of polls, elections, and recounts on the stock trading. First, this unprecedented event resulted in tremendous uncertainty for the election outcome stranded over a period of 36 days which were full of news reports for petitions, recounting, and halting and restarting of ballot recounts. Second, this unusual event is strictly pertaining to the presidential election, not Congressional races. This allows us to control for other factors and to focus exclusively on the effects of information release on the presidential election on stock trading.

In this paper, we examine three types of firms that are possibly subject to the influence of election results, i.e., partisan industries, top donors, and favored firms under the Bush/Gore political platforms. Using the three samples of stocks and a controlling sample, we examine the intraday trading costs in the base period (71/12000-8/31/2000), the polling period (9/1/2000-11/6/2000), the election & recount period (11/7/2000-12/13/2000), and the post-recount period (12/14/2000-12/31/2000). To examine the effects of the uncertainty surrounding the election outcome on stock trading and transaction costs, we employ two empirical methodologies. First, we adopt the approach of Madhavan, Richardson, and Roomans (or MRR, 1997) to estimate a quasi-structural model that incorporates the effects of order flows, public information shocks, and pricing rounding

errors induced by price discreteness. This approach allows us to explore the channels through which trading costs change over different election periods. This is accomplished by examining the cross-sectional relationship between trading cost change and MRR structural parameters and stock characteristics. Second, we use the portfolio approach suggested by Daniel and Titman (1997) to assess the role of information asymmetry and liquidity provision in affecting the trading costs during the 2000 election. Along this line, we form bivariate portfolios based on informed trading and liquidity cost parameters and examine the cross-sectional variations in bid-ask spreads related to informational and non-informational factors. An advantage of this approach is that it is free of the potential error-in-variable problem, and its adverse effect on the efficiency of estimation and statistical inference, associated with the two-step regression of changes in spreads against informed and liquidity cost parameters.

Our study mainly finds, first, that the change in dollar bid-ask spreads or information cost for politically sensitive firms relative to the controlling firms during the polling period is relatively mild compared to that occurs during the recount period. Second, the adverse-selection component of the trading cost for the politically sensitive stocks under the Bush/Gore political platforms experiences significant changes during the election & recount period. This pattern is particularly strong for the stocks belonging to the group of favored firms compiled by financial analysts. The politically favored stocks are recommended by security firms based on the expected performance of the stocks under the Bush/Gore administrations. These stocks are expected to be followed more closely by traders, investors, and speculators during the election. Third, there is evidence that the

unusual delay in election outcome causes a higher proportion of information cost out of bid-ask spread for politically sensitive stocks. Finally, we find that controlling for the effect of the liquidity cost and stock characteristics, the cross-sectional change in bid-ask spreads is significantly and positively related to the change in the information cost. This finding confirms that the uncertainty of the 2000 presidential election induces significant information asymmetry that increases the adverse selection component of trading cost.

The remainder of the paper is organized as follows. Section 2 discusses the data sample. Section 3 describes a transaction-level model of price formation, a regression model of changes in bid-ask spreads, and the empirical methodology. Section 4 presents empirical results. Finally, Section 5 summarizes the main findings of the paper.

2. Data

During the 2000 presidential campaign, Texas Governor George W. Bush accepted the Republican Party's nomination on August 3, and Vice President Al Gore Jr. accepted the Democratic Party's nomination on August 17. The Gallup tracking poll data, which gauge public opinion of the presidential race over two- to three-day intervals, were first released on September 7, and then reported every day until the election day of November 7.[3] Before the election day, Bush and Gore were neck-and-neck at the polls. After the election day, Florida's electoral votes were too close to call so that a ballot recount was started, as mandated by Florida state legislature. Later, the U.S. Supreme Court overturned

[3] The poll data released on September 7, 2000 were based on the poll conducted during September 4-6.

the Florida Supreme Count's earlier decision, which put an end to any further recount. On December 13, Gore publicly conceded the presidency.

Our sample period for the intraday data ranges from 7/1/2000 to 12/31/2000, which is divided into 4 sub-periods. Period I (the base period) is from 7/1/2000 to 8/31/2000. Period II (the polling period) is from 9/1/2000 to 11/6/2000. Period III (the election & recount period) is from 11/7/2000 to 12/13/2000. Period IV (the post-recount period) is from 12/14/2000 to 12/31/2000.

Our initial intraday sample contains all the S&P 500 stocks obtained from the Compustat database. We then choose stocks from this sample according to the following criteria. (1) The average close price is between $1 and $200. (2) Changes in the amount of shares outstanding are less than 10% from 7/1/2000 to 12/31/2000. (3) The primary exchanges are the NYSE and AMEX.[4] (4) The minimum tick is $1/16. During our sample period, some stocks were included in the decimal pricing pilot program and were traded on decimals with the minimum tick of $0.01, while the rest of NYSE-listed stocks were traded on fractions with the minimum tick of $1/16.[5] Since stocks traded on fractional and decimal systems tend to differ in transaction costs, we select stocks traded on fractions only. The data of close price, shares outstanding, exchange, and minimum tick are obtained from the Trade and Quote (TAQ) database. After the filtering, we end up with 346 stocks in the sample.

[4] Studies find that bid-ask spreads are significantly higher on Nasdaq than on the NYSE. See Christie and Schultz (1994), Huang and Stoll (1996), Bessembinder and Kaufman (1997), and Weston (2000).

[5] The conversion from fractional to decimal trading in the U.S. markets has significantly reduced bid-ask spreads. See Chakravarty, Harris, and Wood (2001a, 2001b), Chung, Van-Ness, and Van-Ness (2001) Bacidore, Battalio, Jennings, and Farkas (2001), Gibson, Singh, and Yerramilli (2002), Bessembinder (2003) and He and Wu (2005).

As certain industries and/or firms have more or less stake with the outcome of elections, we construct three testing samples and one controlling sample based on the 346 stocks. The three testing samples include the partisan contributing industry sample, the top donor sample, and the politically favored firm sample. We categorize the firms in all three samples as the politically sensitive firms, which are closely associated with one party and may be particularly affected by the uncertainty surrounding the election.

The information on the partisan contributing industries is collected from Shon (2006). Data reported by Shon (2006), such as the top contributing industries to Bush and Gore and the relative proportion of contributions made to Bush and Gore, were originally collected from the Center for Responsive Politics (CRP). The most Bush-partisan contributing industries that overlap with our 346-stock sample include Oil & Gas, Forestry & Forest Products, Tobacco, Automotive, Building Materials & Equipment, Chemical & Related Manufacturing, Mining, Finance/Credit Companies, and Trucking. The most Gore-partisan contributing industries that overlap with our 346-stock sample include Environment and TV/Movies/Music. Using the industry codes for these industries, we were able to identify an initial partisan industry sample of 69 stocks that fall into this category, among which 61 are from the Bush-partisan industries and 8 from the Gore-partisan industries.

Moreover, we searched the partisan industry firms directly from the website of the Center for Responsive Politics. The Center for Responsive Politics published information for major contributing firms for each of the 20 most partisan industries in the 2000 U.S.

presidential election.[6] The contribution data for each company represent total bundled contributions from the firm's Political Action Committee (PAC), soft-money, and individuals associated with the firm. We selected companies among the top contributing firms which had at least 80% of their contribution going to one political party but were not included in our initial 69-stock sample described above. Crossing with our 346 S&P stock sample, we identified 26 new most partisan firms. In addition, from Cheng (2005), we identified another 7 firms from oil, major drugs, and defense industries which were widely believed to benefit significantly from the Bush platform. In all, we add 33 firms to the initial 69-stock sample.[7] Thus, the final sample of the partisan industry firms includes 102 firms.

The second sample is constructed based on the information for the top 100 donors. The proportion of donations of the top 100 donors made to Bush and Gore is collected from the Center for Responsive Politics.[8] Similar to the partisan industry data, the top donor data include all three sources of campaign contributions. Crossing the top donors with our 346-stock sample, we get 16 Bush-partisan firms and 3 Gore-partisan firms. Thus, a total of 19 stocks are in the category of top donors.

[6] The website is www.opensecrets.org/bigpicture/index.asp which supplies the historical data under the election overview (big picture).

[7] Some of 33 additional partisan firms were not identified in the initial sample for two reasons. First, we use the industry code in TAQ to identify the firms in an industry that is considered as partisan. We find that some firms in the CRP website are in the same industry but have a different industry code from that provided in TAQ. Second, we relax the limit for share change from 5% to 10%. This allows us to include more S&P 500 firms in the testing sample of partisan industries.

[8] Again, the data for the donation of each top donor represent the total amount of contribution, including PAC, soft-money, and individual contributions. The top donors considered in this study are categorized by the CRP as the top overall donors.

The third sample includes a group of firms favored under Bush or Gore platforms in the 2000 presidential election. The information on the favored firms under the Bush/Gore political platforms was collected from Knight (2006). The favored firms provided by Knight (2006) were originally collected from the financial analyst reports of Lehman Brothers, Prudential Securities, and International Strategy and Investment. These reports were produced by analysts of the three companies for politically sensitive individual firms during the 2000 campaign, which were likely to perform well under either Bush or Gore administration. They identified 41 firms likely to fare well under the Bush administration and 29 firms likely to fare well under the Gore administration. Crossing the favored firms with our 346-stock sample, we have 21 firms likely to perform well under the Bush platform and 11 firms likely to perform well under the Gore platform. Thus, a total of 32 sample stocks are in the category of favored firms under the Bush/Gore political platforms. Finally, the remaining 223 S&P 500 stocks that do not belong to any of the above three testing samples are included in the controlling sample.

The three testing samples have different features. The data for the favored firms were complied by analysts from the three securities firms independently prior to the election date of November 7.[9] Thus, these data represent ex-ante categorizations. By contrast, the data of the partisan industry firms and top donors were released after the election date. Some of these data were released on October 1, 2001 while others were released on January 3, 2002. Although these data were released after the election date, there are reasons to believe that they are less likely to be subject to serious ex-post

[9] In fact, Knight (2006) who used this data only report the analysis covering the period before November 7.

classification problem. First of all, major partisan industries can be identified by the public before the election date through news reports, candidate press releases, advertisements sponsored by political parties, and the presidential debates. For example, from press releases, television advertisements, and quotes from the three presidential debates, one can easily learn that pharmaceuticals, defense, oil & gas, and tobacco industries will fare quite well under the Bush administration (see Knight, 2006). Top donors are also often publicized by news agencies.[10] Thus, the potential endogeneity problem arising from firms being chosen as partisan firms by their response to political fluctuations ex post is likely to be minor. The classification of the partisan industry and top donors was based on the contributions made during the campaign. These contributions were recorded. The ex-post release of the information for top donors and most partisan industries merely reflects the past fact.

However, the partisan industry and top donor data are expected to be noisier than the favored firm data. The contribution amount and proportion of contribution by each firm and individual donor to each presidential candidate were generated from the filings mandated by Federal Election Campaign Act. Since the specific amount of contributions was released by the Federal Election Commission after the election date, investors would not have complete knowledge of the exact amount of contributions by each firm and individual during the campaign period. This imperfection will introduce noise to the partisan industry and top donor data because stock price will not completely reflect the precise amount of contributions by companies and individual donors. As a consequence, the empirical evidence for these two groups of firms may be somewhat weakened.

[10] For example, Enron, through Kenneth Lay, was well known as a major donor to Bush during the campaign.

In summary, among the 346 S&P 500 stocks, 123 are in the three testing samples and 223 are in the controlling sample. Table 1 provides the list of the 123 firms in the testing sample as well as the categories which they belong to. The partisan industry category contains 102 stocks, the top donor category contains 19 stocks, and the favored firm category contains 32 stocks. Finally, 25 firms belong to more than one category; 20 firms belong to two of the three categories and 5 firms belong to all three.

Intraday data are collected from the Trade and Quote (TAQ) database for all the 346 stocks in the sample. Trade data consist of transactions coded as regular trades. Trades and quotes outside normal market hours (9:30 a.m. to 4:00 p.m. Eastern Standard Time) are excluded. The first trade in a trading day is deleted. Small trades transacted at the same price within a second are lumped into one trade. Quotes and trades are matched concurrently in our empirical estimation. That is, we pair each trade with the quote posted concurrently or earlier but within the same trading day. Quote data are used to sign the trade initiation variable (x). A trade at or above the ask price is classified as a buyer-initiated trade, and we assign 1 to the trade initiation variable. A trade at or below the bid price is classified as a seller-initiated trade, and we assign -1 to the trade initiation variable. For a trade that crosses within the prevailing bid-ask spread, we assign 0 to the trade initiation variable.

In addition to the intraday data, we collect daily stock prices from the CRSP tape for firms in both testing and controlling samples over the period from July 1, 1995 to December 31, 2000. These daily data are used later to perform event study analysis to determine whether the firms in the testing samples are indeed politically sensitive firms.

The period from July 1, 1995 to June, 2000 is the estimation period, over which we obtain the historical estimate of beta to control for the systematic risk in the calculation of abnormal returns. The period from July 1 to December 31 is the testing period which is further divided into four subperiods as indicated earlier.

3. Empirical Method

3.1. Bid-ask spread components: Information and liquidity costs

To understand the effect of presidential election on transaction costs, we estimate both the information and liquidity cost components of bid-ask spread by employing the quasi-structural model of Madhavan, Richardson, and Roomans (1997). This model is a generalization of earlier microstructural models of Glosten and Milgrom (1985) and Stoll (1989). The MRR model is more structural because it accommodates unexpected public information and microstructural effects, and serial correlation in order flow. In the MRR model, the revision in beliefs is linked to the innovations in order flows and public information shocks. In addition to the informational impacts, the model incorporates the effect of stochastic rounding errors induced by price discreteness or time-varying returns. The following is a brief description of the MRR model.

Let Δp_t be the transaction price change from time t-1 to t. θ is the parameter which measures the degree of information asymmetry or the permanent effect of order flow innovations on prices, and ϕ measures the transitory effect of order flow on prices. ε_t is the revision in beliefs due to new public information, and ξ_t is the effect of price rounding errors. Both ε_t and ξ_t are independent and identically distributed. In addition, denote x_t as

an indicator variable for trade initiation, where x_t equals +1 if a trade is buyer initiated, -1 if it is seller initiated, and 0 if the trade crosses within the prevailing bid-ask spread. The variance of x_t is normalized to one. Order flow may be serially correlated where ρ denotes the first-order autocorrelation of the order flow x_t. Given this setting, MRR show that price changes can be characterized by the following process:

$$\Delta p_t = (\phi + \theta)x_t - (\phi + \rho\theta)x_{t-1} + u_t, \quad (1)$$

where $u_t = \varepsilon_t + \xi_t - \xi_{t-1}$, θ measures the degree of information asymmetry, and ϕ represents the compensation for liquidity provision and order process costs. ϕ captures the temporary effect of order flow on prices whereas θ captures the permanent effect associated with fundamental information. The parameter ρ reflects the autocorrelation of order flow. When order flow is autocorrelated, only the innovations reveal information. Hence, the autocorrelation parameter ρ can be used to determine the expectation and innovations of order flow. Based on (1), we can calculate the model-implied bid-ask spread (ISPR) as

$$\text{ISPR} = 2(\theta + \phi), \quad (2)$$

We use the Generalized Method of Moments (GMM) to estimate the parameters ρ, θ, and ϕ in (1). The Newey and West (1987) procedure is adopted to account for the autocorrelation and conditional heteroskedasticity in observed price changes. In empirical investigation, we jointly estimate the model parameters by pooling the intraday data over the four subperiods from July 1 to December 31, 2000 to increase the estimation efficiency. This procedure allows the microstructural parameters to vary over the four subperiods. Specifically, the estimated model is

$$\Delta p_t = \sum_{i=1}^{4}(\phi_i + \theta_i)I_i x_t - (\phi_i + \rho_i\theta_i)I_i x_{t-1} + u_t \qquad (3)$$

Let $v_t = \sum_{i=1}^{4} I_i(x_t - \rho_i x_{t-1})$. The following moment conditions exactly identify the parameters to be estimated:

$$E\begin{bmatrix} v_t I_1 x_{t-1} \\ v_t I_2 x_{t-1} \\ v_t I_3 x_{t-1} \\ v_t I_4 x_{t-1} \\ u_t \\ u_t I_1 x_t \\ \vdots \\ u_t I_4 x_t \\ u_t I_1 x_{t-1} \\ \vdots \\ u_t I_4 x_{t-1} \end{bmatrix} = 0 \qquad (4)$$

where $u_t = \Delta p_t - [\sum_{i=1}^{4}(\phi_i + \theta_i)I_i x_t - (\phi_i + \rho_i\theta_i)I_i x_{t-1}]$. The first set of moment conditions defines the first-order autocorrelation in order flow. The second set of moment conditions requires that the mean of residuals in (1) to be zero. The third and fourth sets of conditions maintain that these residuals are independent from the trade initiation variables in the current and lagged-one periods.

3.2. Tests of cross-sectional variation in changes of bid-ask spreads

To examine the transaction costs of stocks in relation to their stock features and spread components, we regress the change in bid-ask spread over two periods against the changes in stock features, information cost, and liquidity cost for testing and controlling sample stocks. The testing model is

$$\Delta Y = n_0 + n_1*\Delta P + n_2*\Delta VOLA + n_3*\Delta DV + n_4*\Delta\theta + n_5*\Delta\phi$$
$$+ D*(s_0 + s_1*\Delta P + s_2*\Delta VOLA + s_3*\Delta DV + s_4*\Delta\theta + s_5*\Delta\phi), \quad (5)$$

where Y can be the quoted bid-ask spread (SPR) or the effective bid-ask spread (ESPR), P is the average close price, VOLA is the absolute daily change in the log of close price, DV is the daily dollar volume, θ is the information cost parameter, and ϕ is the liquidity cost parameter. Δ represents the log change in a variable. For example, from the base period to the polling period, ΔP is equal to the log price of the polling period minus the log price of the base period. Parameters n_1, n_2, n_3, n_4, and n_5 are the coefficients of changes in P, VOLA, DV, θ, and ϕ, respectively. D is a dummy variable, where D = 1 for testing sample firms and 0 for controlling sample firms. Parameter s_0 represents the difference between the testing and controlling firms in the change of bid-ask spread, with the control of changes in P, VOLA, DV, θ, and ϕ. Parameters s_1, s_2, s_3, s_4, and s_5 represent the differences between the testing and controlling firms in the coefficients on changes in P, VOLA, DV, θ, and ϕ, respectively. We use the Generalized Method of Moments (GMM) to estimate the parameters of the regression model in (5).

3.3 Tests of the relation between spread and information cost using the portfolio approach

The above cross-sectional regression includes regressors (θ and ϕ) estimated from the MRR model. While the estimated coefficients of Δθ and Δϕ are still unbiased, the estimated standard errors may be inconsistent (see Pagan, 1984). To resolve this problem, we use a portfolio approach suggested by Daniel and Titman (1997) to test the relation between changes in spreads and changes in information and liquidity costs. Using this approach, we form bivariate portfolios based on Δθ and Δϕ and report the differences in

spread changes. This enables us to examine the cross-sectional variations in spread changes over the election periods due to changes in information and liquidity costs. An advantage of this portfolio approach is that it is robust to the generated regressor problem encountered in the cross-sectional regression.

3.4 Impacts of election news on stock returns

Intuitively, the Bush firms should experience a positive return and the Gore firms should exhibit negative returns following favorable news for Bush. Previous studies (see Cheng, 2005; Shon, 2006; and Knight, 2006) have documented this relation using either the polling or electronic market data. However, all of these studies have attributed the stock return to changes in expected future cash flows. Strictly speaking, stock price changes can be due to either cash flow changes or discount rate changes.[11]

One way to separate the impacts of election news on cash flows and discount rates is to decompose the price change due to news announcement into the components associated with these two variables. We can first estimate the change in discount rate in a period surrounding the event and then adjust the return for the change in the discount rate. The adjusted return should reflect the change in cash flows. If this adjusted return is significantly positive surrounding the event, it would suggest that the election news impact the cash flows underlying the security.

To examine whether the discount rates of politically sensitive stocks change over the election period, we estimate the following market model with dummy variables:

$$R_{it} = \alpha_i + \beta_{0i} R_{mt} + \beta_{1i} D_1 R_{mt} + \beta_{2i} D_2 R_{mt} + \beta_{3i} D_3 R_{mt} + \beta_{4i} D_4 R_{mt} + \varepsilon_t \qquad (6)$$

where D_j, j =1, 2, 3, and 4, equals 1 if an observation falls into period j and zero, otherwise. β_{0i} is the base beta for stock i and the beta for subperiod j is equal to $\beta_{0i} + \beta_{ji}$. In empirical estimation, we use return data from July 1, 1995 to December 31, 2000. The base period runs from July 1, 1995 to June 30, 2000. For this period, D_j = 0 and beta risk equals to β_{0i}. For any of the four election subperiods, beta risk is equal to base beta β_{0i} plus an incremental beta for that period. If beta risk changes over the election subperiods, this would imply that the discount rate also changes. By accounting for the beta change in each subperiod, we can provide a better picture whether the election news will have an impact on the cash flows of the politically sensitive firms.

Specifically, we calculate the abnormal returns using a method similar to the traditional event-study methodology. For each stock in each election subperiod j, we calculate the abnormal return for an individual stock in each day t as follows:

$$AR_{it} = R_{it} - \alpha_i - (\beta_{0i} + \beta_{ji} D_j) R_{mt} \qquad (7)$$

The calculation of this abnormal return is different from the traditional event study method which employs historical beta estimated from the data prior to the event. Instead, we use the beta estimated for each subperiod to capture the potential impacts of beta changes during the 2000 presidential election period. Since returns are adjusted for the change in beta risk (and discount rate) associated with the election event, a significant abnormal return will imply that the return of the politically sensitive stock derives also from changes

[11] This contrasts with Treasury coupon bonds where cash flow is fixed and virtually risk free, and so Treasury bond returns are predominantly associated with changes in discount rate (see Green, 2004).

in the expected cash flow. That is, there is a significant stock price change over and beyond that is accounted by the change in the discount rate.

The cumulative abnormal return for each individual stock is calculated as follows:

$$CAR_{it} = \sum_{j=-T_1}^{t} AR_{ij} \tag{8}$$

where $t = -T_1$ to T_1. In our empirical investigation, we set $T_1 = 3$ and $t = 0$ is the event day. The individual abnormal returns and cumulative abnormal returns are then averaged cross firms to get the average abnormal return and cumulative abnormal returns associated with a particular event:

$$AR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{9}$$

and

$$CAR_t = \frac{1}{N}\sum_{i=1}^{N} CAR_{it} \tag{10}$$

where N is the sample size. In the empirical investigation, we focus on two clear event days: the election date and the Supreme Court's decision date to stop the Florida ballot recount. We next turn to empirical estimation.

4. Empirical Results

4.1. Stock features and transaction costs

We first report the mean (median) and standard deviation of stock features and bid-ask spreads for stocks in the partisan industry, top donors, favored firms, and controlling samples, respectively, in Panels A, B, C, and D of Table 2. In order to examine the effects

of presidential election on stock features and bid-ask spreads, we compare the log change in a variable over two periods for testing sample stocks with the log change in the same variable over the same two periods for controlling sample stocks by conducting the *t* tests and the Wilcoxon sign tests in Panels A, B, and C of Table 2. Each later period (the polling period, the election & recount period, or the post-recount period) is compared with the base period. The log change is defined as the log value of a variable in a later period minus the log value of a variable in the base period. The *t*-statistic is on the mean difference between the testing and controlling samples in the log change of a variable over two periods, and the Wilcoxon sign test statistic (z-score) is on the median difference between the two samples in the log change of a variable over two periods.

Panel A of Table 2 summarizes stock characteristics and bid-ask spreads for 102 partisan industry stocks. From the base period to the polling period, the log changes of the partisan industry stocks are insignificantly different from the log changes of controlling stocks in price, market capitalization, volume, dollar volume, number of trades, volatility, bid-ask spread in dollars, effective bid-ask spread in dollars, bid-ask spread in percentage, and effective bid-ask spread in percentage. Here the spread in percentage is defined as the quoted (effective) bid-ask spread in dollars divided by the midquote. In addition, from the base period to the election & recount period and from the base period to the post-recount period, there are still no significant differences in the log changes of variables between the testing and controlling samples. Volume increases over these periods, though not significant. As shown later, higher volume increases liquidity and offsets the impact of

information asymmetry on the bid ask spread. This may explains why changes in bid-ask spreads are not significant here.

Panel B of Table 2 reports stock features and bid-ask spreads for 19 top donor stocks. From the base period to the polling period, the log changes of the top donors are insignificantly different from the log changes of controlling stocks in price, market capitalization, volume, dollar volume, volatility, effective bid-ask spread in dollars, bid-ask spread in percentage, and effective bid-ask spread in percentage. Notably, quoted spreads are significantly different from those of controlling stocks. From the base period to the election & recount period, there are significant differences between the testing and controlling samples in the log changes of bid-ask spreads. The changes in effective spreads for the top donor firms are significantly higher than those of the controlling firms at the 5% level whereas the changes in quoted spread change are significant at the 10% level. From the base period to the post-recount period, all variables are insignificantly different except for the number of trades.

Panel C of Table 2 reports stock features and bid-ask spreads for 32 favored-firm stocks. From the base period to the polling period, the log changes of favored firms are significantly different from those of controlling firms in stock price, market capitalization, effective bid-ask spread in dollars, quoted bid-ask spread in percentage, and effective bid-ask spread in percentage, supported by both *t*-statistics and z-scores. From the base period to the election & recount period, the log changes of favored firms are significantly different from those of controlling stocks in price, market capitalization, dollar volume, quoted bid-ask spread in dollars and percentage, and effective bid-ask spread in dollars.

From the base period to the post-recount period, the log changes of favored firms are significantly different from those of controlling firms in stock price, market capitalization, and quoted and effective bid-ask spread in dollars. The results show that in general favored firms are more responsive to the election events than the firms in other two categories.

In summary, first, the price and market capitalization of favored firms go up significantly more than those of controlling stocks during the polling period, the election & recount period, and the post-recount period, respectively. Second, both the quoted and effective bid-ask spreads in percentage of favored firms tend to decrease more than those of controlling stocks during the polling period. These decreases in percentage bid-ask spreads mainly result from the increase in price level. Third, both quoted and effective bid-ask spreads in dollars for top donors and favored firms increase more than those for the controlling stocks during the election & recount period. Therefore, the transaction costs of these firms' stocks appear to be more sensitive to the election & recount activities. Finally, the stock price and bid-ask spread (in dollars) of favored firms significantly increase over all three subperiods, suggesting that these firms are most responsive to the election events.

The results on stock features and bid-ask spreads of politically sensitive firms lead to a few questions as follows. Is any increase in transaction costs (measured by dollar bid-ask spreads) merely a result of the changes in stock characteristics (such as price or market capitalization)? Do the news of election & recount and the various interpretations of the public news affect the asymmetric information of politically sensitive stocks? Is the increase in transaction costs related to any change in information cost? To answer these questions, we estimate the information and liquidity cost components of bid-ask spreads.

We then decompose the dollar bid-ask spread into information and liquidity costs for each stock, and examine the cross-sectional relation between changes in bid-ask spreads and changes in stock characteristics, information cost, and liquidity cost.

4.2. Response of returns to election news

Before we formally test the effects of information asymmetry on stock trading and bid-ask spreads, we examine the response of prices of the stocks in the testing samples to election news. An important question is whether the firms included in the testing samples are indeed politically sensitive entities whose stock returns will react positively (negatively) to favorable (unfavorable) election news. If this is the case, the next question is whether election news impact cash flows or discount rates of these firms. In this section, we examine these two issues.

We perform the event analysis surrounding two important dates: November 7, 2000, the election day, and December 13, the day that the U.S. Supreme Court stopped the Florida recount. We first estimate the abnormal returns for each stock using the traditional event study method which assumes that beta risk does not change during the event period. Specifically, we estimate beta risk using stock returns over a five-year estimation period from July 1, 1995 to June 30, 2000 based on the following market model:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_t \tag{11}$$

The abnormal return (AR) for each stock in the event window is calculated as follows:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \tag{12}$$

where $\hat{\alpha}_i$ and $\hat{\beta}_i$ are estimates from (11) using historical data. Note that because we do not allow for the change in beta risk (and discount rate) in the event window, the abnormal

returns in (12) reflect changes in both cash flows and discount rates of the underlying stock. We also calculate the cumulative abnormal return using the formula in (8). These individual abnormal returns and cumulative average abnormal returns are then averaged cross firms to get the mean abnormal return and cumulative abnormal returns using the formulas in (9) and (10).

Table 3 reports the results of abnormal returns and cumulative average abnormal returns. The abnormal returns are calculated under constant betas. The results show that the abnormal returns and cumulative average abnormal returns are generally insignificant surrounding the election on November 7, except for very few cases. This can be attributed to the uncertain nature of the election outcome. The results suggest that the market was clouded with considerable uncertainty at that time. On the other hand, the abnormal returns are significantly positive at the event day of December 13, particularly for top donors, favored firms and overlapping firms which are favored under the Bush platform. The abnormal returns for the partisan industry firms under the Bush platform are significant on day t = -1. The abnormal returns on the event day (t = 0) are also positive but only the cumulative abnormal return is significant. This result indicates that the partisan industry stocks are less responsive to the election news. To provide further diagnosis, we report the abnormal returns for the 69 stocks included in the initial partisan data sample. Recall that these firms were identified using the industry codes with no information for their specific contribution amount. Therefore, the data for these firms' stocks should be even noisier. Panel C reports the abnormal returns for this 69-stock sample. The results show that the abnormal returns for the stocks under the Bush platform are much smaller than those of the

entire partisan industry sample, and both abnormal and cumulative average abnormal returns are statistically insignificant on both event dates. These results confirm our conjecture that the initial partisan industry sample data are indeed quite noisy.

The preceding event analysis primarily looks into the responsiveness of stock returns to the election news. We next further examine whether the abnormal returns reflect the impacts of election news on firms' cash flows or discount rate. In this exercise, we estimate the model in (6) and calculate the abnormal return by allowing for the effect of beta changes on returns in both event periods (see (7)). Panel A of Table 4 shows the abnormal returns surrounding November 7 after accounting for the changes in betas during the period. We note that in general the uncertain outcome on the election date has no significant effect on the returns of the stocks in the testing sample, no matter how we partition the testing sample. Except for very few cases, the abnormal returns on the event day are insignificantly different from zero.

Panel B of Table 4 reports the results surrounding December 13, 2000. In contrast to the results surrounding November 7, we see a much clearer pattern for the stock price response to the news even after controlling for the effect of changes in discount rates (or betas). The abnormal returns or cumulative abnormal returns on event day 0 are significantly positive for Bush-favored firms. This finding holds for each subsample: partisan industries, top donors, favored firms, as well as for overlapping firms and the entire testing sample. Since the abnormal returns are calculated by accounting for the change in beta during the election period (see Eq. (7)), these abnormal returns are already adjusted for the impact of election news on discount rates. The significantly positive

abnormal returns for Bush-favored firms thus strongly suggest that the election news impact the cash flows of politically sensitive firms.

Panel C reports the results for the initial 69 partisan firm sample for comparison. The results are weaker and only the cumulative abnormal return is significant on December 13. Results again confirm that the price data for the initial partisan sample are quite noisy. Despite this problem, we retain these stocks in our testing sample because as shown later, adding these stocks substantially improves the efficiency in our cross-sectional tests.

4.3. Information and liquidity costs

Table 5 reports estimates of information cost and other parameters of the MRR model. Panel A reports the results for all firms under the Bush/Gore political platforms and controlling firms. Estimates of the first-order autocorrelation of order flow (ρ), the information cost parameter (θ), and the liquidity cost parameter (ϕ) are all significant, and the standard errors are quite small. Results indicate that the MRR model fits the transaction data of the firms in the testing and controlling samples very well. The implied bid-ask spread ($ISPR=2\theta+2\phi$) and the proportion of information cost out of bid-ask spread ($\theta/(\theta+\phi)$) are calculated based on the estimated parameters.

From the base period to the polling period, the log changes of politically sensitive stocks are insignificantly different from those of controlling stocks in the first-order autocorrelation of order flow, the liquidity cost parameter, and the model-implied bid-ask spread in dollars. Changes in θ and the proportion of information cost out of bid-ask spread for the politically sensitive stocks are larger than those for the controlling stocks but only significant at the 10% level.

From the base period to the election & recount period, the log changes of politically sensitive firms are significantly different from those of controlling stocks in the information cost parameter, the model-implied bid-ask spread in dollars, and the proportion of information cost out of bid-ask spread. From the base period to the post-recount period, the changes of politically sensitive firms are significantly different from those of controlling firms in the information and liquidity cost parameters, and the model-implied bid-ask spread in dollars.

Panels B to G report the results for each subsample. The results for the partisan industry firms in Panel B show that the difference between the partisan industry firms and controlling firms drops to the 10% significance level for the information cost change from the base period to the election & recount period. As noted earlier, the partisan sample includes 69 firms in the initial sample and 33 additional firms. The additional 33 firms either have well-recorded contribution ratios to Bush or Gore, or they are more partisan by nature. Therefore, we expect the data for these firms to be less noisy and trading of these firms' stocks to be more responsive to the election and recount events. We thus further divide the partisan industry sample into two subsamples: the 69 firms in the initial sample and the 33 firms later added, and compare their results to get a sense of the impact of data quality.

Panel C reports the results for the 69-firm sample. As indicated, the information cost parameters for these firms are not significantly different from those for the controlling firms from the base period to the election & recount period. By contrast, the results in Panel D show that for the additional 33 partisan firms, both the information cost and the

proportion of the information cost out of bid-ask spreads are significantly different from those for the controlling firms from the base period to the election & recount period, and to the post-recount period. The results confirm the conjecture that the 69-firm data in the initial partisan sample are indeed noisier than the 33 firms later added to the partisan industry group.

Panel E reports the results for the top donor firms. Similar to the results for the entire sample in Panel A, changes in the information cost and the proportion of the information cost to the sum of total market-making cost (information plus liquidity) are significant at the 5% level from the controlling firms from the base period to the election and recount period. In addition, the liquidity cost parameter for the top-donor group is significantly lower than that of the controlling firms.

Panel F reports the results for the favored-firm sample. The results for this group are more significant than the entire sample in panel A. In addition, the implied spread estimates (ISPR) are significantly higher for the favored firm group for all three periods. Finally, Panel G reports the results for the overlapping firms. Compared to partisan industry and top donor groups, the results for the overlapping firms are much stronger as expected. Changes in the information cost, the proportion of information cost out of bid-ask spread and the implied spread are all significant in three subperiods.

In summary, first, it appears that the events in the 2000 election have affected the information cost and the proportion of information cost out of bid-ask spread for politically sensitive firms. These effects are stronger during the election & recount period between November 7 and December 13 than the post-recount and the polling periods. Second, the

liquidity cost decreases in the election & recount and the post-recount periods as trading volume increases. However, the impact of election events on liquidity cost is generally not as significant as that on the information cost. Third, the effects of the election events are more clearly manifested in the favored-firm sample, followed by top donors and partisan industry firms. Nevertheless, the unusual delay in election outcome generally causes a higher information cost and a higher proportion of information cost out of bid-ask spread for most politically sensitive firms.

With the estimates of information and liquidity costs, we are ready to examine the cross-sectional changes in bid-ask spreads against the information cost, liquidity cost and changes in stock features for firms in the testing and controlling samples.

4.4. Tests of changes in bid-ask spreads

Table 6 reports the correlation of changes in variables for a combination of 123 politically sensitive firms and 223 controlling firms. The log changes in price (P), volatility (VOLA), dollar volume (DV), information cost parameter (θ), and liquidity cost parameter (ϕ) are used to explain the log changes in bid-ask spreads. As shown, the correlations among these variables are low. We do not include market capitalization (MV), share volume (V), and number of trades (T) because they are highly correlated with other stock features.

We estimate the cross-sectional regression model in (5) for each subperiod, i.e., from the base period to the polling period, the election & recount period, and the post-recount period, respectively. Table 7 reports the results of cross-sectional regression of log changes in bid-ask spreads against log changes in stock characteristics, and information

and liquidity costs. Panel A shows results on quoted bid-ask spreads, while Panel B provides results on effective bid-ask spreads. We first note that in general the cross-sectional variation of changes in bid-ask spreads is positively and significantly related to changes in price, volatility, and liquidity cost and negatively related to dollar volume. More importantly, the change in information cost is significantly related to the change in bid-ask spreads, even with the control of stock features. Second, parameter s_0 is insignificant at the 5% level, indicating that controlling for changes in stock characteristics, information cost, and liquidity cost, there is no longer any difference in the change of bid-ask spreads between the testing and controlling firms. Third, there is no significant difference between the testing and controlling firms in the response of spreads to the information cost, liquidity cost, and stock characteristic variables. Overall, results show that controlling for the effects of stock characteristics, changes in bid-ask spreads are explained by changes in the information cost. Thus, the increase in bid-ask spreads is not merely a result of the increase in stock price. Results suggest that the uncertainty in the 2000 presidential race and the unusual delay in election outcome cause higher information cost which exerts a pressure on the bid-ask spreads for politically sensitive firms.

4.5. Robustness Check

4.5.1. The instrumental variable approach

The cross-sectional regression above relies upon the parameters θ and ϕ estimated from the time-series MRR model to determine whether the bid-ask spread changes are significantly related to information and liquidity costs. Since this two-step estimation involves the generated regressors, it may cause an error-in-variable problem in parameter

estimation which could cause inconsistency and inefficiency in regression tests. This two-step estimation problem is quite common in asset pricing tests which employ systematic risk estimates as explanatory variables. The standard approach to overcome this problem is to form portfolios and perform rolling regression tests (e.g., Fama and MacBeth, 1973; Litzenberger and Ramaswamy, 1979). However, in the present case, our choice is limited by the length of the sample period and number of firms in our sample due to the nature of event study. Therefore, we adopt the instrumental variable approach suggested by Easley, Hvidkjaer and O'Hara (2002) instead. In this approach, the solution to the error-in-variable problem is to create an instrumental variable. The implementation procedure is as follows. We first rank all firms in the testing and controlling samples by θ and divide them into 10 portfolios in each sample.[12] We calculate the average θ for each portfolio, Ptheta, and this variable is then assigned to each individual stock in the portfolio as an instrumental variable for θ. This instrumental variable (Ptheta) mitigates the error-in-variable problem caused by the two-step estimation and yet is closely related to θ. Finally, we run the cross-sectional regression of spread changes using both $\Delta\theta$ and ΔPtheta. If there is a serious error-in-variable problem and the instrumental variable Ptheta resolves it, then the coefficient of ΔPtheta will be significant while the coefficient of $\Delta\theta$ will be close to zero. Conversely, if there is no error-in-variable problem, the coefficient of ΔPtheta will be close to zero and the coefficient of $\Delta\theta$ will not be significantly affected by the inclusion of ΔPtheta in the regression. In this way, we can detect whether the cross-sectional

[12] There are 12 or 13 stocks in each portfolio for the testing sample, and 22 or 23 stocks in each portfolio for the controlling sample. In the testing sample, there are three portfolios having 13 stocks and in the controlling sample, there are three portfolios with 23 stocks.

relationship between spread and θ changes in Table 7 is spurious due to the two-step estimation.

The cross-sectional regression results using the portfolio θ are reported in Tables 8 and 9. Table 8 reports the results by replacing Δθ with ΔPtheta as the information cost variable. The results show that ΔPtheta is significant at the 5% level in both quoted and effective spread regressions. In addition, the coefficient of ΔPtheta is very close to the coefficient of Δθ in Table 7. This finding suggests that ΔPtheta is an effective instrumental variable for Δθ.

Table 9 reports the results of cross-sectional regression using both Δθ and ΔPtheta as the explanatory variables for the change in the information cost. The results show that the coefficient of Δθ remains highly significant while the coefficient of ΔPtheta becomes insignificant. Moreover, the coefficient of ΔPtheta is close to zero. These results strongly suggest the error-in-variable problem is not a serious concern in the cross-sectional spread change regression.

4.5.2. The portfolio approach

The portfolio approach provides another tool which is robust to the error-in-variable problem. This approach is used extensively in the finance literature (see for example, Daniel and Titman, 1997; Pastor and Stambaugh, 2003; Gebhardt, Hvidkjaer, and Swaminathan, 2005). The portfolio approach allows us to analyze the cross-sectional variation in bid-ask spread changes associated with the information cost change while isolating the influence of the change in the liquidity or non-information cost. Using this

portfolio approach, we form portfolios to assess the effect of the information cost on bid-ask spreads over the four subperiods in 2000 presidential election.

Table 10 reports the results of the bivariate portfolio analysis on spread changes. Stocks in both testing and controlling samples are first sorted each period independently into three $\Delta\theta$ portfolios (high, median and low) and two $\Delta\phi$ portfolios (high and low) based on the fact that the information cost has a stronger role in bid-ask spreads than the liquidity cost. This creates six portfolios in the intersection of $\Delta\theta$ and $\Delta\phi$. We then calculate the average spread change for each portfolio between the base period and any of the later three periods (polling, election & recount, and post recount).

Panel A reports the results of spread changes for the bivariate portfolios formed from the 123 politically sensitive firms. The figures in each column are the log-spread changes corresponding to low, middle and high $\Delta\theta$ groups given a level of the liquidity cost change $\Delta\phi$. The figures in each row are the log-spread changes corresponding to low and high $\Delta\phi$ groups given the information cost change $\Delta\theta$. Results show that controlling for the effect of the liquidity cost $\Delta\phi$, spread changes increase monotonically as the value of the information cost change $\Delta\theta$ increases. Similarly, controlling for the effect of $\Delta\theta$, the spread change increases as $\Delta\phi$ increases. Thus, there is clear evidence of a positive relationship between spread changes and the information and the liquidity cost changes for the politically sensitive firms.

Panel B reports the results of spread changes for the bivariate portfolios constructed from the 223 controlling firms. Results again show that after controlling for the effect of the liquidity cost $\Delta\phi$, spread changes increase monotonically as $\Delta\theta$ increases. Likewise,

controlling for the effect of the information cost change, we find that spread change increases with $\Delta\phi$. Once more, these findings are consistent with the prediction of microstructure theory.

We next analyze the difference in the spreads between testing and controlling firms. If the uncertainty in the 2000 election causes greater information asymmetry for politically sensitive stocks, the change in the information cost will be greater for testing firms than for controlling firms. This in turn will cause the change in bid-ask spread over the period of the election to be greater for politically sensitive firms, other things being equal. To test this hypothesis, we first sort the controlling firms into 6 controlling portfolios similar to Panel B by $\Delta\theta$ and $\Delta\phi$, and calculate the mean $\Delta\theta$ and $\Delta\phi$ for each portfolio. These mean changes in the information and liquidity costs for the controlling firms serve as the benchmark values. We then sort the 123 firms in the testing sample into 6 testing portfolios similar to the procedure in Panel A. For each firm in each of the 6 portfolios, we calculate the difference between the testing firm's $\Delta\theta$ (or $\Delta\phi$) and the mean $\Delta\theta$ (or $\Delta\phi$) value of the corresponding benchmark portfolio. For example, if a testing firm is classified in portfolio 1 with low $\Delta\theta$ and $\Delta\phi$, we subtract the firm's $\Delta\theta$ from the benchmark $\Delta\theta$ value associated with controlling portfolio 1. Similarly, we calculate the differences in log spread changes and $\Delta\phi$ between the testing firm and the benchmark portfolio. This procedure is repeated for all firms in the testing sample. Finally, we sort the 123 firms in the testing sample into 3 x 2 portfolios by the differences in $\Delta\theta$ and $\Delta\phi$ between the testing firm and the benchmark portfolio (of the controlling firms), that is, by $(\Delta\theta^T - \Delta\theta^C)$ and $(\Delta\phi^T - \Delta\phi^C)$ where the superscripts *T* and *C* represent the testing firm and the control (benchmark)

portfolio, respectively. We report the average difference in log spread changes between the testing firm and the benchmark portfolio in Panel C of Table 10 for each portfolio.

The first two columns in each subperiod in Panel C show the differences in log-spread changes between the testing and controlling firms for the low, middle and high $(\Delta\theta^T - \Delta\theta^C)$ groups given a level of $(\Delta\phi^T - \Delta\phi^C)$. The differences in spread changes between high and low $(\Delta\theta^T - \Delta\theta^C)$ groups are reported in the bottom row for each subperiod. The first three rows of each spread category (quoted or effective) in each subperiod show the differences in spread changes for low and high $(\Delta\phi^T - \Delta\phi^C)$ groups given a level of $(\Delta\theta^T - \Delta\theta^C)$. The differences in spread changes between high and low $(\Delta\phi^T - \Delta\phi^C)$ groups are reported in the third column of each spread category for each subperiod.

Consistent with the prediction, we find that the difference in spread changes generally increases as the difference in the information cost $(\Delta\theta^T - \Delta\theta^C)$ increases holding the difference in the liquidity cost $(\Delta\phi^T - \Delta\phi^C)$ constant. Similarly, the difference in spread changes increases as the difference in liquidity cost $(\Delta\phi^T - \Delta\phi^C)$ increases, holding the difference in the information cost $(\Delta\theta^T - \Delta\theta^C)$ constant. Conditional on the value of $(\Delta\phi^T - \Delta\phi^C)$, the differences in the bid-ask spreads between the high and low $(\Delta\theta^T - \Delta\theta^C)$ groups are significantly positive at the 5% level from the base period (I) to the polling period (II), and to the election & recount period (III). The differences between the high and low $(\Delta\theta^T - \Delta\theta^C)$ groups are also positive from the base period to the post-recount period but are only significant at the 10% level for one case associated with quoted

spread. Overall, these results are consistent with the findings in the regression analyses, which suggest that the information cost increases during the election periods and these increases have a positive impact on spread changes of the politically sensitive stocks.

5. Conclusions

This paper investigates the information and liquidity cost components of stock trading at the intraday level during the 2000 presidential election. Our results show that the information cost of the politically sensitive firms under the Bush/Gore platforms is affected by the delay in election outcome.

In a typical presidential election, the uncertainty about the election outcome, if there is any, is usually resolved by the end of the election day or by the next day. During the 2000 presidential election, however, the uncertainty about the election outcome lasts for about 36 days. It is likely that the unusual delay in election outcome leads to various interpretations of public information or a large information disparity. The politically sensitive stocks under the Bush/Gore platform tend to be affected by this information disparity during the election & recount period. In specific, we find that the information cost component of spreads and the proportion of information cost to the total bid-ask spread increase over the election period. The politically sensitive stocks are explicitly exposed to the attention of investors and traders and their future financial performances are directly linked to the election outcome. When the election outcome is delayed unusually, there are likely differential interpretations regarding the performances of these stocks, and speculators would trade based on their own private information or superior forecast. As a

consequence, market makers incur higher information cost in executing buy and sell orders of these stocks.

We find that the information cost increases, particularly during the election and recount period for most politically sensitive stocks. At the same time, the liquidity cost for the politically sensitive stocks declines relative to the stocks in the controlling sample. The decrease in the liquidity partially offsets the increase in the information cost for politically sensitive stocks. The net increase in bid-ask spread depends on the relative strength of these two components in different subperiods and testing samples. More importantly, we find that cross-sectional variations in the spread changes are significantly related to changes in stock price, volatility, dollar volume, and the information and liquidity costs. Our results support the contention that the uncertainty in the 2000 presidential election causes informational asymmetry for politically sensitive stocks and increases their information cost of trading and price volatility. These changes in turn exert a pressure on bid-ask spreads during the election and recount period.

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Table 1
Testing Samples. This table provides a list of 123 stocks in three testing samples. The three testing samples are: partisan contributing industries, top partisan donors, and favored firms under the Bush/Gore political platforms.

Total (123)	Partisan industries (102)	Top donors (19)	Favored firms (32)	Gore or Bush
AA	partisan industries			B
ABT	partisan industries			B
AET			favored firms	B
AGC			favored firms	G
AHC	partisan industries			B
AN	partisan industries			B
AL	partisan industries			B
APA	partisan industries			B
APC	partisan industries			B
APD	partisan industries			B
ASH	partisan industries			B
ATI	partisan industries			B
AW	partisan industries			G
BA	partisan industries		favored firms	B
BCC	partisan industries			B
BHI	partisan industries		favored firms	B
BLS		top donors		B
BMY	partisan industries		favored firms	B
CAG	partisan industries			B
CAT	partisan industries			B
CB			favored firms	G
CCE	partisan industries			B
CCR	partisan industries			B
CCU	partisan industries			G
CHV	partisan industries			B
COF	partisan industries			B
COP	partisan industries			B
CTX	partisan industries			B
DE			favored firms	G
DIS	partisan industries	top donors		G
DOW	partisan industries			B
DYN	partisan industries			B
EC	partisan industries			B
EK	partisan industries			G
EMN	partisan industries			B
ENE		top donors		B
EPG	partisan industries		favored firms	B
FBF		top donors	favored firms	G
FCX	partisan industries			B
FLR	partisan industries			B
FNM	partisan industries		favored firms	B/G*
FO	partisan industries			G
FRE	partisan industries	top donors	favored firms	B/G*

GD	partisan industries		favored firms	B
GE	partisan industries	top donors		B
GLK	partisan industries			B
GM	partisan industries			B
GP	partisan industries		favored firms	B
GT	partisan industries			B
HAL	partisan industries			B
HAS	partisan industries			G
HDI	partisan industries			G
HI			favored firms	B
HIG			favored firms	G
HM	partisan industries			B
HPC	partisan industries			B
HRB			favored firms	G
IFF	partisan industries			B
IP	partisan industries	top donors		B
ITT	partisan industries			B
JCI	partisan industries			B
JNJ	partisan industries			B
KBH	partisan industries			B
KMG	partisan industries			B
LEG	partisan industries			B
LEH	partisan industries			B
LLL	partisan industries			B
LLY	partisan industries	top donors	favored firms	B
LMT	partisan industries			B
LNC			favored firms	G
LPX	partisan industries			B
LTR	partisan industries		favored firms	B
MAS	partisan industries			B
MBI			favored firms	B
MEA	partisan industries			B
MET		top donors		G
MO	partisan industries	top donors	favored firms	B
MRK	partisan industries		favored firms	B
MRO	partisan industries			B
MWD		top donors		B
NE	partisan industries			B
NEM	partisan industries			B
NOC	partisan industries		favored firms	B
NUE	partisan industries			B
ONE		top donors	favored firms	B/G*
OXY	partisan industries			B
P	partisan industries			B
PCH	partisan industries			B
PCL	partisan industries			B
PD	partisan industries			B
PDG	partisan industries			B
PFE	partisan industries	top donors	favored firms	B
PHA	partisan industries	top donors	favored firms	B

PHM	partisan industries			B
PX	partisan industries			B
Q		top donors		B
RD	partisan industries			B
RDC	partisan industries			B
RIG	partisan industries			B
ROH	partisan industries			B
SBC			favored firms	B
SGP	partisan industries		favored firms	B
SLM			favored firms	B
SO		top donors		B
SUN	partisan industries			B
SWK	partisan industries			B
TOS	partisan industries			B
TX	partisan industries			B
TYC	partisan industries			B
UCL	partisan industries			B
UNP	partisan industries	top donors		B
UST	partisan industries	top donors		B
UTX	partisan industries			B
W	partisan industries			B
WLL	partisan industries			B
WLP			favored firms	B
WMB	partisan industries			B
WMI	partisan industries			G
WOR	partisan industries			B
WPI			favored firms	G
WY	partisan industries		favored firms	B
X	partisan industries			B
XOM	partisan industries	top donors		B

*FNM is a Bush-partisan industry stock, but a favored firm under the Gore platform. FRE is a Bush-partisan industry stock and a Bush-partisan top donor, but a favored firm under the Gore platform. ONE is Bush-partisan top donor, but a favored firm under the Gore platform.

Table 2

Stock Features and Bid-Ask Spreads. This table provides statistics on the features of 102 partisan contributing industry stocks in Panel A, 19 top partisan donors in Panel B, 32 favored firms under the Bush/Gore political platforms in Panel C, and 223 controlling stocks in Panel D. The sample period is from 7/1/2000 to 12/31/2000, and it is divided into 4 sub-periods. Period I (the base period) is from 7/1/2000 to 8/31/2000, Period II (the polling period) is from 9/1/2000 to 11/6/2000, Period III (the election & recount period) is from 11/7/2000 to 12/13/2000, and Period IV (the post-recount period) is from 12/14/2000 to 12/31/2000. P is the average close price, MV is the average market capitalization, V is the daily share volume, DV is the daily dollar volume, T is the daily number of trades, VOLA is the absolute daily change in the log of close price, SPR ($) is the average bid-ask spread in dollars, ESPR ($) is the average effective bid-ask spread in dollars, SPR (%) is the average bid-ask spread in percentage, and ESPR (%) is the average effective bid-ask spread in percentage. The t-statistic is on the mean difference between one of the testing samples and the controlling sample in the log change of a variable from Period I to Period II (III or IV), and the Wilcoxon sign test statistic (z-score) is on the median difference between the two samples in the log change of a variable from Period I to Period II (III or IV).

Panel A. Partisan Industry Stocks (102)

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
P	Mean	39.12	40.54	t=0.06	40.79	t=-0.35	42.21	t=0.57
($)	Std. Dev.	21.63	22.47	z=-0.56	21.54	z=-0.89	22.13	z=-0.34
	Median	34.78	35.22		36.46		38.16	
MV	Mean	29,421,198	27,842,007	t=0.06	31,407,979	t=-0.35	31,579,765	t=0.57
($1000)	Std. Dev.	74,893,341	72,374,158	z=-0.56	77,117,403	z=-0.89	74,736,885	z=0.34
	Median	6,644,356	7,458,118		6,149,917		6,746,500	
V	Mean	1,363,058	1,689,041	t=0.18	1,653,497	t=1.06	1,695,040	t=0.64
	Std. Dev.	1579571	1952307	z=-0.05	1937377	z=0.72	1,955,548	z=0.70
	Median	841,965	953,512		1,032,581		1,070,514	
DV	Mean	64,599,385	78,904,922	t=0.17	80,889,880	t=0.66	83,601,096	t=0.76
($1000)	Std. Dev.	89,251,172	107,757,925	z=0.68	113,506,129	z=-0.11	112,142,584	z=0.47
	Median	26,556,936	31,947,582		34,870,726		40,782,032	
T	Mean	565	670.09	t=-0.28	705	t=-0.10	752	t=0.27
	Std. Dev.	487	557.49	z=-0.05	537	z=-0.76	544	z=-0.01
	Median	368	451.89		491		589	
VOLA	Mean	0.0326	0.0206	t=-1.09	0.0202	t=0.25	0.0238	t=0.76
	Std. Dev.	0.0136	0.0077	z=-1.11	0.0069	z=0.17	0.0089	z=0.68
	Median	0.0305	0.0189		0.0195		0.0212	
SPR	Mean	0.1135	0.1152	t=0.11	0.1152	t=-0.92	0.1167	t=0.02
($)	Std. Dev.	0.0262	0.0277	z=-1.25	0.0236	z=-1.20	0.0265	z=-0.23
	Median	0.1104	0.1087		0.1130		0.1096	
ESPR	Mean	0.0875	0.0881	t=-1.13	0.0867	t=-1.82	0.0893	t=-0.31
($)	Std. Dev.	0.0184	0.0178	z=-0.20	0.0133	z=-1.61	0.0162	z=0.09
	Median	0.0860	0.0859		0.0850		0.0870	
SPR	Mean	0.39%	0.40%	t=-0.06	0.39%	t=-0.07	0.39%	t=-0.57
(%)	Std. Dev.	0.27%	0.30%	z=0.32	0.31%	z=-0.03	0.31%	z=-0.05
	Median	0.33%	0.31%		0.31%		0.30%	
ESPR	Mean	0.30%	0.31%	t=-0.25	0.31%	t=-0.35	0.30%	t=-0.69
(%)	Std. Dev.	0.19%	0.22%	z=0.11	0.26%	z=0.01	0.23%	z=0.18
	Median	0.24%	0.25%		0.24%		0.23%	

(Continued)

Table 2 continued.

Panel B. Top Donor Stocks (19)

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
P	Mean	48.03	49.04	t=-0.73	49.03	t=0.43	50.37	t=0.76
($)	Std. Dev.	23.12	21.40	z=-0.37	20.01	z=0.04	19.81	z=0.10
	Median	42.24	41.04		43.94		43.30	
MV	Mean	96,589,039	99,570,603	t=-0.73	97,181,472	t=0.43	96,254,630	t=0.76
($1000)	Std. Dev.	145,804,334	152,581,500	z=-0.37	143,987,939	z=0.04	136,116,966	z=0.10
	Median	38,620,629	42,175,047		41,611,650		46,063,527	
V	Mean	3,314,400	3,868,724	t=-1.92	4,122,646	t=0.66	4,092,344	t=-0.59
	Std. Dev.	2,382,843	2,956,226	z=-1.73	2,917,055	z=0.63	3,095,498	z=-0.38
	Median	2,493,891	2,791,528		3,556,684		3,380,264	
DV	Mean	166,263,348	200,778,034	t=-1.85	203,991,650	t=0.76	205,432,346	t=-0.10
($1000)	Std. Dev.	132,203,284	174,078,487	z=-1.41	153,791,070	z=0.42	160,709,691	z=-0.01
	Median	135,351,766	170,248,242		163,142,126		177,354,405	
T	Mean	1,090	1,190	t=-2.45*	1,235	t=-2.71*	1,282	t=-3.73*
	Std. Dev.	676	697	z=-3.35	665	z=-2.56	692	z=-3.04*
	Median	921	1,056		1,066		1,086	
VOLA	Mean	0.029	0.020	t=-0.02	0.021	t=1.28	0.021	t=0.02
	Std. Dev.	0.011	0.005	z=0.05	0.006	z=1.25	0.009	z=0.14
	Median	0.028	0.020		0.019		0.018	
SPR	Mean	0.1042	0.1062	t=2.10*	0.1089	t=1.71	0.1057	t=-0.01
($)	Std. Dev.	0.0154	0.0159	z=1.93	0.0182	z=1.14	0.0191	z=-0.23
	Median	0.1006	0.1031		0.1057		0.1036	
ESPR	Mean	0.0827	0.0846	t=1.32	0.0873	t=2.95*	0.0850	t=0.84
($)	Std. Dev.	0.0106	0.0121	z=1.16	0.0126	z=2.34	0.0119	z=0.48
	Median	0.0814	0.0797		0.0841		0.0831	
SPR	Mean	0.26%	0.25%	t=1.45	0.25%	t=0.13	0.23%	t=-0.80
(%)	Std. Dev.	0.12%	0.10%	z=0.97	0.09%	z=0.00	0.07%	z=-0.35
	Median	0.25%	0.25%		0.23%		0.23%	
ESPR	Mean	0.21%	0.20%	t=-1.03	0.20%	t=0.67	0.19%	t=-0.58
(%)	Std. Dev.	0.09%	0.07%	z=-0.83	0.07%	z=0.62	0.06%	z=-0.08
	Median	0.19%	0.19%		0.18%		0.18%	

(Continued)

Table 2 continued.

Panel C. Favored Stocks (32)

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
P	Mean	52.30	56.99	t=2.86*	60.83	t=3.75*	62.05	t=3.09*
($)	Std. Dev.	15.95	18.14	z=3.07*	20.35	z=2.57*	20.77	z=2.22*
	Median	50.47	56.76		59.48		62.21	
MV	Mean	39,966,572	42,800,724	t=2.86*	47,365,763	t=3.75*	48,812,850	t=3.09*
($1000)	Std. Dev.	52,755,063	54,634,668	z=3.07*	62,428,582	z=2.57*	64,136,717	z=2.22*
	Median	13,518,479	15,280,071		16,445,237		16,667,169	
V	Mean	2,031,062	2,385,772	t=-0.44	2,404,341	t=0.84	2,397,894	t=-0.74
	Std. Dev.	1,962,385	2,185,451	z=-0.47	2,279,669	z=0.47	2,365,315	z=-0.46
	Median	1,229,352	1,617,210		1,573,270		1,483,823	
DV	Mean	99,729,871	126,024,282	t=0.68	137,144,602	t=2.48*	136,859,629	t=0.91
($1000)	Std. Dev.	96,846,538	109,932,123	z=1.28	127,759,843	z=1.51	125,015,636	z=0.94
	Median	52,240,232	70,296,430		83,122,414		71,290,965	
T	Mean	739	891	t=-0.53	970	t=0.43	970	t=-1.56
	Std. Dev.	457	518	z=-0.24	560	z=-0.12	534	z=-1.50
	Median	569	733		775		787	
VOLA	Mean	0.032	0.020	t=-0.98	0.019	t=-0.32	0.022	t=-0.52
	Std. Dev.	0.013	0.004	z=-0.72	0.005	z=-0.18	0.016	z=-0.86
	Median	0.027	0.020		0.019		0.018	
SPR	Mean	0.1230	0.1263	t=0.99	0.1322	t=2.84*	0.1311	t=2.30*
($)	Std. Dev.	0.0270	0.0303	z=1.39	0.0344	z=2.32*	0.0256	z=1.72
	Median	0.1176	0.1203		0.1237		0.1330	
ESPR	Mean	0.0926	0.0967	t=2.88*	0.0989	t=3.51*	0.0993	t=3.26*
($)	Std. Dev.	0.0159	0.0191	z=2.67*	0.0212	z=3.03*	0.0206	z=2.58*
	Median	0.0890	0.0910		0.0913		0.0933	
SPR	Mean	0.25%	0.24%	t=-2.88*	0.23%	t=-2.10*	0.23%	t=-1.88
(%)	Std. Dev.	0.05%	0.06%	z=-2.41*	0.06%	z=-1.62	0.07%	z=-1.80
	Median	0.24%	0.22%		0.22%		0.20%	
ESPR	Mean	0.19%	0.18%	t=-2.50*	0.18%	t=-1.76	0.17%	t=-1.75
(%)	Std. Dev.	0.04%	0.05%	z=-2.23*	0.05%	z=-1.25	0.05%	z=-1.58
	Median	0.18%	0.17%		0.16%		0.16%	

(Continued)

Table 2 continued.

Panel D. Controlling Stocks (223)

		Period I	Period II	Period III	Period IV
P	Mean	38.81	39.18	40.46	41.11
($)	Std. Dev.	20.80	22.14	22.38	23.16
	Median	34.70	36.45	38.81	39.82
MV	Mean	15,421,491	15,463,375	15,632,659	15,705,457
($1000)	Std. Dev.	31,472,029	30,457,286	29,655,730	28,712,937
	Median	6,913,965	6,811,222	6,884,997	6,730,062
V	Mean	1,005,762	1,199,727	1,196,120	1,275,822
	Std. Dev.	1,030,231	1,281,488	1,369,705	1,509,490
	Median	616,821	769,974	723,384	752,264
DV	Mean	42,567,151	52107581	52911854	53785298
($1000)	Std. Dev.	64443866	85379940	87855210	89166637
	Median	20947236	26296694	25575069	27302690
T	Mean	446	533	574	608
	Std. Dev.	369	419	432	434
	Median	333	414	451	481
VOLA	Mean	0.0323	0.0213	0.0203	0.0228
	Std. Dev.	0.0144	0.0078	0.0104	0.0106
	Median	0.0286	0.0194	0.0179	0.0207
SPR	Mean	0.1233	0.1228	0.1250	0.1245
($)	Std. Dev.	0.0310	0.0308	0.0319	0.0308
	Median	0.1182	0.1186	0.1205	0.1210
ESPR	Mean	0.0916	0.0922	0.0920	0.0927
($)	Std. Dev.	0.0186	0.0188	0.0202	0.0182
	Median	0.0880	0.0891	0.0883	0.0903
SPR	Mean	0.40%	0.39%	0.39%	0.39%
(%)	Std. Dev.	0.21%	0.20%	0.21%	0.24%
	Median	0.35%	0.35%	0.34%	0.32%
ESPR	Mean	0.30%	0.30%	0.29%	0.30%
(%)	Std. Dev.	0.18%	0.17%	0.18%	0.20%
	Median	0.26%	0.26%	0.25%	0.24%

Table 3

Response of Stock Returns to Election News. This table reports the abnormal returns for 123 politically sensitive firms surrounding the event days November 7, 2000 and December 13, 2000 under the assumption that beta does not change during the period. The beta is estimated using five years daily return data before 07/01/2000. AR is the abnormal return estimated by CAPM model. CAR is the cumulated average abnormal return. B(·) and G(·) represent the number of firms in favor of Bush and Gore, respectively. * indicates the 5% significance level.

Panel A. Event 1: 11/07/2000

Event day								
Partisan Industries	B(92)		B&G(2)		G(8)		All(102)	
	AR	CAR	AR	CAR	AR	CAR	AR	CAR
-3	0.4418	0.4418	1.4548	1.4548	1.486*	1.4860*	0.5435*	0.5435*
-2	-1.042*	-0.6002	-5.075	-3.6202	0.9726	2.4586*	-0.963*	-0.4195
-1	0.1737	-0.4265	-1.039	-4.6592	0.6824	3.1410*	0.1898	-0.2297
0	0.4257*	-0.0008	1.9585	-2.7007	-0.077	3.0640	0.4163*	0.1866
1	0.1214	0.1206	-2.557	-5.2577	1.3109	4.3749	0.1622	0.3488
2	1.4593*	1.5799*	1.4287	-3.8290	3.3955*	7.7704*	1.6105*	1.9593*
3	-0.467*	1.1129*	4.931	1.1020	0.2396	8.0100	-0.306	1.6533*
Top Donors	B(14)		B&G(2)		G(3)		All(19)	
-3	0.3941	0.3941	1.0041	1.0041	2.1321	2.1321	0.7328	0.7328
-2	-1.403*	-1.0089	-2.334	-1.3299	-0.767	1.3651	-1.4000*	-0.6672
-1	-0.253	-1.2619	-0.907	-2.2369	-0.593	0.7721	-0.376	-1.0432
0	-0.019	-1.2809	1.6407*	-0.5962	-1.395	-0.6229	-0.061	-1.1042
1	-0.283	-1.5639	-2.83	-3.4262	1.2322	0.6093	-0.312	-1.4162
2	2.4498*	0.8859	2.7908	-0.6354	1.3016	1.9109	2.3044*	0.8882
3	-0.758	0.1279	3.0692	2.4338	1.8571	3.7680	0.058	0.9462
Favored Firms	B(21)		B&G(3)		G(8)		All(32)	
-3	0.7783	0.7783	1.0896	1.0896	-0.464	-0.4640	0.497	0.4970
-2	-0.885*	-0.1067	-2.977	-1.8874	-0.698	-1.1620	-1.034*	-0.5370
-1	-0.919	-1.0257	-0.854	-2.7414	-1.111	-2.2730*	-0.961*	-1.4980*
0	0.4673	-0.5584	1.8597*	-0.8817	0.5121	-1.7609	0.6091*	-0.8889
1	-0.264	-0.8224	-2.746*	-3.6277	-0.005	-1.7659	-0.432	-1.3209
2	2.1351*	1.3127	2.1265	-1.5012	1.5192	-0.2467	1.9803*	0.6594
3	0.0121	1.3248	3.8304	2.3292	0.031	-0.2157	0.3748	1.0342
Overlapping Firms	B(20)		B&G(3)		G(2)		All(25)	
-3	0.6396	0.6396	1.0896	1.0896	1.7522	1.7522	0.7826	0.7826
-2	-1.089*	-0.4494	-2.977	-1.8874	0.7693	2.5215	-1.167*	-0.3844
-1	-0.821	-1.2704	-0.854	-2.7414	1.6444	4.1659	-0.628	-1.0124
0	0.6256	-0.6448	1.8597*	-0.8817	-1.163	3.0029	0.6306*	-0.3818
1	-0.257	-0.9018	-2.746*	-3.6277	0.0901	3.0930	-0.528	-0.9098
2	2.3632*	1.4614	2.1265	-1.5012	0.4704	3.5634	2.1834*	1.2736
3	-0.231	1.2304	3.8304	2.3292	-0.269	3.2944	0.253	1.5266

All firms	B(103)		B&G(3)		G(17)		ALL(123)	
-3	0.4027	0.4027	1.0896	1.0896	0.6512	0.6512	0.4538	0.4538
-2	-1.032*	-0.6293*	-2.977	-1.8874	-0.097	0.5542	-0.95*	-0.4962
-1	0.1514	-0.4779	-0.854	-2.7414	-0.5	0.0542	0.0369	-0.4593
0	0.3162	-0.1617	1.8597*	-0.8817	0.0956	0.1498	0.3234	-0.1359
1	0.08	-0.0817	-2.746*	-3.6277	0.8215	0.9713	0.1136	-0.0223
2	1.4439*	1.3622*	2.1265	-1.5012	2.4872*	3.4585	1.6047*	1.5824*
3	-0.435*	0.9272*	3.8304	2.3292	0.4866	3.9451	-0.203	1.3794*

Panel B. Event 2: 12/13/2000

Partisan Industries	B(92)		B&G(2)		G(8)		All(102)	
-3	-0.094	-0.0940	-0.347	-0.3470	-1.164	-1.1640	-0.184	-0.1840
-2	0.102	0.0080	0.4386	0.0916	-2.628*	-3.7920	-0.108	-0.2920
-1	0.5386*	0.5466	0.1999	0.2915	1.4401	-2.3519	0.6033*	0.3113
0	0.4245	0.9711*	1.7207	2.0122	-1.292	-3.6439	0.3143	0.6256
1	-0.895*	0.0761	1.3794	3.3916	0.6098	-3.0341	-0.731*	-0.1054
2	0.5126*	0.5887	4.1395	7.5311	0.749	-2.2851	0.6031*	0.4977
3	1.7283*	2.3170*	2.3661	9.8972	-0.132	-2.4171	1.5936*	2.0913*
Top Donors	B(14)		B&G(2)		G(3)		All(20)	
-3	0.1654	0.1654	-1.206	-1.2060	1.8357	1.8357	0.2848	0.2848
-2	-0.155	0.0104	0.9805	-0.2255	-2.379	-0.5433	-0.387	-0.1022
-1	0.4335	0.4439	0.4012	0.1757	-0.723	-1.2663	0.2475	0.1453
0	2.1957*	2.6396*	-0.175	0.0007	-1.571	-2.8373	1.3515	1.4968
1	-0.35	2.2896*	1.2117	1.2124	-0.346	-3.1833	-0.185	1.3118
2	0.6629	2.9525*	2.9855	4.1979	2.0273	-1.1560	1.1228*	2.4346*
3	0.779	3.7315*	3.4654	7.6633	0.5454	-0.6106	1.0249*	3.4595*
Favored Firms	B(21)		B&G(3)		G(8)		All(32)	
-3	-0.849	-0.8490	-0.993	-0.9930	-0.094	-0.0940	-0.674	-0.6740
-2	-0.428	-1.2770*	0.9393	-0.0537	-1.149	-1.2430	-0.48	-1.1540*
-1	0.2566	-1.0204	0.0995	0.0458	0.1066	-1.1364	0.2044	-0.9496
0	1.6557*	0.6353	0.3143	0.3601	-1.371*	-2.5074	0.7734	-0.1762
1	0.6368*	1.2721	1.1485	1.5086	0.2182	-2.2892	0.5801*	0.4039
2	0.8452*	2.1173	3.2606	4.7692	0.8201	-1.4691	1.0654*	1.4693
3	1.4136*	3.5309*	3.2637	8.0329	2.7564*	1.2873	1.9227*	3.3920*
Overlapping Firms	B(20)		B&G(3)		G(2)		All(25)	
-3	-0.175	-0.1750	-0.993	-0.9930	0.4507	0.4507	-0.223	-0.2230
-2	-0.465	-0.6400	0.9393	-0.0537	-1.409	-0.9583	-0.372	-0.5950
-1	0.6052	-0.0348	0.0995	0.0458	-0.365	-1.3233	0.4668	-0.1282
0	1.6723*	1.6375	0.3143	0.3601	-0.656	-1.9793	1.323*	1.1948
1	0.0756	1.7131	1.1485	1.5086	-1.059	-3.0383	0.1136	1.3084
2	0.7629*	2.4760*	3.2606	4.7692	1.3423	-1.6960*	1.109*	2.4174*
3	1.2768*	3.7528*	3.2637	8.0329	1.0706	-0.6254	1.4987*	3.9161*

All firms	B(103)		B&G(3)		G(17)		All(123)	
-3	-0.146	-0.1460	-0.993	-0.9930	-0.321	-0.3210	-0.191	-0.1910
-2	0.1204	-0.0256	0.9393	-0.0537	-2.031*	-2.3520*	-0.159	-0.3500
-1	0.4715*	0.4459	0.0995	0.0458	0.6433	-1.7087	0.4863*	0.1363
0	0.5833*	1.0292*	0.3143	0.3601	-1.453*	-3.1617*	0.293	0.4293
1	-0.786*	0.2432	1.1485	1.5086	0.4531	-2.7086*	-0.565*	-0.1357
2	0.5382*	0.7814	3.2606	4.7692	0.9382*	-1.7704	0.6609*	0.5252
3	1.6839*	2.4653*	3.2637	8.0329	1.2055*	-0.5649	1.6561*	2.1813*

Panel C. Partisan Industries (69 firms)

Event 1: 11/07/2000

	B(59)		B&G(2)		G(8)		All(69)	
Event day	AR	CAR	AR	CAR	AR	CAR	AR	CAR
-3	0.4561	0.4561	1.4548	1.4548	1.486*	1.4860*	0.6045	0.6045
-2	-1.355*	-0.8989*	-5.075	-3.6202	0.9726	2.4586*	-1.193*	-0.5885
-1	0.8706*	-0.0283	-1.039	-4.6592	0.6824	3.1410*	0.7934*	0.2049
0	0.0626	0.0343	1.9585	-2.7007	-0.077	3.0640*	0.1014	0.3063
1	0.4511*	0.4854	-2.557*	-5.2577	1.3109	4.3749*	0.4636*	0.7699
2	1.4997*	1.9851*	1.4287	-3.8290	3.3955*	7.7704*	1.7174*	2.4873*
3	-0.781*	1.2041*	4.931	1.1020	0.2396	8.0100	-0.497	1.9903*

Event 2: 12/13/2000

Event day	B(59)		B&G(2)		G(8)		All(69)	
-3	0.3474	0.3474	-0.347	-0.3470	-1.164	-1.1640	0.1491	0.1491
-2	0.0811	0.4285	0.4386	0.0916	-2.628*	-3.7920	-0.227	-0.0779
-1	0.6708*	1.0993	0.1999	0.2915	1.4401	-2.3519	0.7474*	0.6695
0	-0.034	1.0653	1.7207	2.0122	-1.292	-3.6439	-0.13	0.5395
1	-0.884*	0.1813	1.3794	3.3916	0.6098	-3.0341	-0.641*	-0.1015
2	0.5383	0.7196	4.1395	7.5311	0.749	-2.2851	0.669*	0.5675
3	2.0796*	2.7992*	2.3661	9.8972	-0.132	-2.4171	1.8278*	2.3953*

Table 4

The Impact of Election News on Cash Flows. This table reports the abnormal returns for 123 politically sensitive firms surrounding the event days November 7, 2000 and December 13, 2000, accounting for the changes in betas during the period. AR is the abnormal return estimated by CAPM model. CAR is the cumulated average abnormal return. B(·) and G(·) represent the number of firms in favor of Bush and Gore, respectively. * indicates the 5% significance level.

Panel A. Event 1: 11/07/2000

Event day								
Partisan Industries	B(92)		B&G(2)		G(8)		All(102)	
	AR	CAR	AR	CAR	AR	CAR	AR	CAR
-3	0.1917	0.1917	1.2833	1.2833	1.4861*	1.4861*	0.3146	0.3146
-2	-0.816*	-0.312*	-4.907	-1.812	0.9749	1.2305*	-0.756*	-0.221
-1	0.127	-0.166	-1.065	-1.563	0.6834	1.0481*	0.1473	-0.098
0	0.418	-0.02	1.9484	-0.685	-0.0750	0.7673	0.4093*	0.0288
1	0.1208	0.0083	-2.561*	-1.06	1.3073	0.8753	0.1613	0.0553
2	1.1401*	0.1969*	0.4658	-0.806	2.9455*	1.2203*	1.2685*	0.2575*
3	-0.596*	0.0837	4.5409	-0.042	0.0616	1.0548	-0.444*	0.1574*
Top Donors	B(14)		B&G(2)		G(3)		All(19)	
-3	0.1211	0.1211	1.0166	1.0166	2.3908*	2.3908*	0.5738	0.5738
-2	-1.154*	-0.516	-2.3310	-0.6570	-0.996	0.6975	-1.253*	-0.339
-1	-0.303	-0.445	-0.8990	-0.7380	-0.543	0.284	-0.404	-0.361
0	-0.036	-0.343	1.6298*	-0.1460	-1.375	-0.131	-0.072	-0.289
1	-0.283	-0.331	-2.8420	-0.6850	1.2298	0.1414	-0.314	-0.294
2	2.0565*	0.0669	1.4756	-0.3250	1.2684	0.3293	1.8709*	0.0671
3	-0.916	-0.073	2.5326	0.0832	-3.609	-0.233	-0.115	0.0411
Favored Firms	B(21)		B&G(3)		G(8)		All(32)	
-3	0.4528	0.4528	1.0412	1.0412	-0.376	-0.376	0.3007	0.3007
-2	-0.586	-0.066	-2.92	-0.939	-0.774	-0.575	-0.852*	-0.275
-1	-0.977	-0.37	-0.857	-0.912	-1.093	-0.748	-0.995*	-0.515*
0	0.4511	-0.165	1.8497*	-0.222	0.5115	-0.433	0.5973*	-0.237
1	-0.264	-0.185	-2.755*	-0.728	-0.01	-0.349	-0.434	-0.277
2	1.533*	0.1017	0.9726	-0.445	1.1319	-0.102	1.3802*	-0.0004
3	-0.224	0.0542	3.3605	0.0988	-0.128	-0.106	0.1316	0.0184
Overlapping Firms	B(20)		B&G(3)		G(2)		All(25)	
-3	0.2952	0.2952	1.0412	1.0412	2.0650	2.0650	0.5263	0.5263
-2	-0.7720*	-0.2390	-2.92	-0.939	0.4885	1.2767	-0.9290*	-0.2010
-1	-0.8830	-0.4530	-0.857	-0.912	1.7035	1.4190	-0.6730	-0.3580
0	0.6076	-0.1880	1.8497*	-0.222	-1.1520	0.7761	0.6158*	-0.1150
1	-0.2550	-0.2010	-2.755*	-0.728	0.0875	0.6384	-0.5270	-0.1970
2	1.9039*	0.1495	0.9726	-0.445	0.5731	0.6275	1.6857*	0.1165
3	-0.4150	0.0689	3.3605	0.0988	-0.2040	0.5088	0.0549	0.1077

All firms	B(103)		B&G(3)		G(17)		ALL(123)	
-3	0.1686	0.1686	1.0412	1.0412	0.7012	0.7012	0.2635	0.2635
-2	-0.821*	-0.326*	-2.92	-0.939	-0.139	0.2812	-0.778*	-0.257
-1	0.1076	-0.182	-0.857	-0.912	-0.489	0.0244	0.0016	-0.171
0	0.3088	-0.059	1.8497*	-0.222	0.0982	0.0429	0.3173	-0.049
1	0.0788	-0.031	-2.755*	-0.728	0.8171	0.1977	0.1117	-0.017
2	1.1053*	0.158*	0.9726	-0.445	2.0752*	0.5106	1.2362*	0.192*
3	-0.572*	0.0538	3.3605	0.0988	0.3207	0.4835	-0.352	0.1143

Panel B. Event 2: 12/13/2000

Partisan Industries	B(92)		B&G(2)		G(8)		All(102)	
-3	0.3754	0.3754	0.8717	0.8717	-0.6020	-0.6020	0.3078	0.3078
-2	0.2613	0.3184	0.9123	0.8920	-2.4110*	-1.5070	0.0625	0.1852
-1	0.409*	0.3486*	-0.1930	0.5302	1.2544	-0.5860	0.4641*	0.2781*
0	0.4535	0.3748*	1.7722	0.8407	-1.2780	-0.7590	0.3425	0.2942*
1	-0.786*	0.1426	-0.0170	0.6691	0.9437	-0.4190	-0.634	0.1086
2	0.7783*	0.2486*	1.9952*	0.8901	1.2596	-0.1390	0.8405*	0.2306*
3	1.7599*	0.4645*	3.1857	1.2181	-0.1720	-0.1440	1.6351*	0.4312*
Top Donors	B(14)		B&G(2)		G(3)		All(20)	
-3	0.6669	0.6669	0.4443	0.4443	1.8727	1.8727	0.8339	0.8339
-2	0.0412	0.354	1.6182	1.0312	-2.366	-0.247	-0.173	0.3304
-1	0.2739	0.3273	-0.1400	0.6410	-0.738	-0.41	0.0706	0.2438
0	2.2505*	0.8081*	-0.1300	0.4482	-1.62	-0.713	1.3888	0.5301*
1	-0.04	0.6384*	0.2474	0.4080	-0.504	-0.671	-0.083	0.4074
2	0.221	0.5689*	1.5050	0.5909	1.7862	-0.262*	0.6033	0.4401*
3	0.9529*	0.6237*	4.0316	1.0824	0.6334	-0.134	1.2266*	0.5524*
Favored Firms	B(21)		B&G(3)		G(8)		All(32)	
-3	-0.0820	-0.0820	0.4583	0.4583	0.387	0.387	0.0859	0.0859
-2	-0.1280	-0.1050	1.501	0.9797*	-0.964	-0.288	-0.184	-0.049
-1	0.0120	-0.0660	-0.374	0.5284	-0.054	-0.21	-0.041	-0.046
0	1.7157*	0.3794	0.359	0.4861	-1.369*	-0.5	0.8173	0.1696
1	-0.0720	0.2892	0.0859*	0.406	0.1791	-0.364	0.0058	0.1368
2	0.1741	0.2700	1.6291*	0.6099	0.7601	-0.177	0.457	0.1902
3	2.1722*	0.5417*	3.8877	1.0781*	2.7791*	0.2455	2.4847*	0.518*
Overlapping Firms	B(20)		B&G(3)		G(2)		All(25)	
3	0.4157	0.4157	0.4583	0.4583	0.3138	0.3138	0.4126	0.4126
-2	-0.2330	0.0914	1.501	0.9797*	-1.464	-0.575	-0.1230	0.1447
-1	0.4200	0.2010	-0.374	0.5284	-0.325	-0.492	0.2651	0.1848
0	1.7376*	0.5851*	0.359	0.4861	-0.692	-0.542	1.3778*	0.4831*
1	-0.4680	0.3745	0.0859*	0.406	-1.266	-0.687	-0.4660	0.2934
2	-0.0740	0.2997	1.6291*	0.6099	1.0267	-0.401	0.2181	0.2808
3	1.6037*	0.4859*	3.8877	1.0781*	1.1835	-0.175	1.8442*	0.5042*

All firms	B(103)		B&G(3)		G(17)		All(123)	
-3	0.3396	0.3396	0.4583	0.4583	0.1922	0.1922	0.322	0.322
-2	0.2883	0.3139	1.501	0.9797*	-1.8340*	-0.821	0.0224	0.1722
-1	0.3336	0.3205*	-0.374	0.5284	0.4731	-0.389	0.3356	0.2267
0	0.6104*	0.393*	0.359	0.4861	-1.4500*	-0.655	0.3171	0.2493*
1	-0.628*	0.1888*	0.0859*	0.406	0.5883	-0.406	-0.441*	0.1113
2	0.8286*	0.2954*	1.6291*	0.6099	1.1449*	-0.148	0.8924*	0.2414*
3	1.794*	0.5095*	3.8877	1.0781*	1.1992*	0.0448	1.7626*	0.4588*

Panel C. Partisan Industries (69 firms)

Event 1: 11/07/2000

Event day	B(59)		B&G(2)		G(8)		All(69)	
	AR	CAR	AR	CAR	AR	CAR	AR	CAR
-3	0.1921	0.1921	1.2833	1.2833	1.4861*	1.4861*	0.3737	0.3737
-2	-1.118*	-0.463*	-4.907	-1.812	0.9749	1.2305*	-0.985*	-0.306
-1	0.821*	-0.035	-1.065	-1.563	0.6834	1.0481*	0.7503*	0.0464
0	0.0555	-0.012	1.9484	-0.685	-0.0750	0.7673	0.0952	0.0586
1	0.451*	0.0804	-2.561*	-1.06	1.3073	0.8753	0.463*	0.1395
2	1.2256*	0.2713*	0.4658	-0.806	2.9455*	1.2203*	1.403*	0.3501*
3	-0.892*	0.1051	4.5409	-0.042	0.0616	1.0548	-0.624*	0.211*

Event 2: 12/13/2000

Event day	B(59)		B&G(2)		G(8)		All(69)	
-3	0.6947*	0.6947*	0.8717	0.8717	-0.6020	-0.6020	0.5473*	0.5473*
-2	0.2169	0.4558	0.9123	0.8920	-2.4110*	-1.5070	-0.072	0.2378
-1	0.5604*	0.4907*	-0.1930	0.5302	1.2544	-0.5860	0.6198*	0.3651*
0	-0.007	0.3662*	1.7722	0.8407	-1.2780	-0.7590	-0.104	0.2478
1	-0.570	0.1789	-0.0170	0.6691	0.9437	-0.4190	-0.376	0.123
2	1.1744*	0.3448*	1.9952*	0.8901	1.2596	-0.1390	1.2086*	0.3039*
3	2.0488*	0.5883*	3.1857	1.2181	-0.1720	-0.1440	1.8209*	0.5207*

Table 5

Estimates of Information Cost and Other Parameters. This table reports estimates of information cost and other parameters for 123 politically sensitive firms under the Bush/Gore political platforms and 223 controlling stocks. The sample period is from 7/1/2000 to 12/31/2000, and it is divided into 4 sub-periods. Period I (the base period) is from 7/1/2000 to 8/31/2000, Period II (the polling period) is from 9/1/2000 to 11/6/2000, Period III (the election & recount period) is from 11/7/2000 to 12/13/2000, and Period IV (the post-recount period) is from 12/14/2000 to 12/31/2000. ρ is the first-order autocorrelation of order flow, θ is the information cost parameter, and ϕ is the liquidity cost parameter. ISPR ($) is the model-implied bid-ask spread in dollars, and it is equal to $2(\theta+\phi)$. $\theta/(\theta+\phi)$ is the proportion of information cost out of ISPR. The t-statistic is on the mean difference between the testing and controlling samples in the log change of a variable from Period I to Period II (III or IV), and the Wilcoxon sign test statistic (z-score) is on the median difference between the two samples in the log change of a variable from Period I to Period II (III or IV). * indicates significance at the five-percent level. * indicates the 5% significance level.

Panel A. All Firms

		ALL 123 stocks							Controlling Stocks			
		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score	Period I	Period II	Period III	Period IV
ρ	Mean	0.2451	0.2650	t=-0.19	0.2753	t=-1.49	0.2700	t=-0.72	0.2424	0.2635	0.2834	0.2717
	Median.	0.2424	0.2651	z=-0.49	0.2802	z=-1.69	0.2688	z=0.02	0.0457	0.0460	0.0543	0.0589
	Std.Dev	0.0631	0.0656		0.0650		0.0733		0.2429	0.2664	0.2879	0.2720
	(Std. Err.)	0.0057	0.0059		0.0058		0.0066		0.0031	0.0031	0.0036	0.0039
θ	Mean	0.0114	0.0125	t=1.84	0.0118	t=2.41*	0.0127	t=3.05*	0.0128	0.0131	0.0122	0.0122
	Median.	0.0093	0.0100	z=1.87	0.0101	z=2.12*	0.0103	z=2.66*	0.0096	0.0098	0.0099	0.0105
	Std.Dev	0.0084	0.0099		0.0089		0.0103		0.0107	0.0110	0.0097	0.0101
	(Std. Err.)	0.0008	0.0009		0.0008		0.0009		0.0006	0.0007	0.0007	0.0007
ϕ	Mean	0.0236	0.0217	t=0.02	0.0226	t=-0.95	0.0224	t=-1.76	0.0224	0.0210	0.0225	0.0229
	Median.	0.0244	0.0222	z=-0.01	0.0238	z=-1.51	0.0241	z=-2.08*	0.0050	0.0056	0.0057	0.0066
	Std.Dev	0.0056	0.0062		0.0057		0.0072		0.0228	0.0216	0.0234	0.0237
	(Std. Err.)	0.0005	0.0006		0.0005		0.0006		0.0003	0.0004	0.0004	0.0004
$\theta/(\theta+\phi)$	Mean	31.02%	34.53%	t=1.65	32.86%	t=2.46*	31.55%	t=2.97*	33.96%	36.10%	32.92%	32.64%
	Median.	28.03%	31.03%	z=1.39	29.21%	z=1.94	31.78%	z=2.44*	18.32%	19.88%	19.80%	21.79%
	Std.Dev	17.86%	20.14%		18.86%		32.58%		32.28%	34.35%	29.75%	30.39%
ISPR ($)	Mean	0.0699	0.0685	t=0.91	0.0689	t=-0.01	0.0702	t=0.69	0.0705	0.0682	0.0696	0.0700
	Median.	0.0672	0.0659	z=1.52	0.0669	z=0.03	0.0671	z=1.48	0.0125	0.0119	0.0122	0.0125
	Std.Dev	0.0110	0.0139		0.0136		0.0175		0.0667	0.0648	0.0667	0.0668

Table 5 continued.

Panel B. Partisan Industries: whole sample (102 firms)

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.2467	0.2681	t=0.09	0.2780	t=-1.38	0.2739	t=-0.44
	Median.	0.0670	0.0711	z=-0.26	0.0715	z=-1.45	0.0787	z=0.25
	Std.Dev	0.2418	0.2686		0.2808		0.2707	
	(Std. Err.)	0.0066	0.0070		0.0071		0.0078	
θ	Mean	0.0105	0.0115	t=1.38	0.0107	T=1.79	0.0114	t=2.25*
	Median.	0.0080	0.0092		0.0077		0.0085	
	Std.Dev	0.0085	0.0097	z=1.51	0.0097	z=1.79	0.0098	z=2.19*
	(Std. Err.)	0.0008	0.0009		0.0008		0.0008	
ϕ	Mean	0.0238	0.0221	t=-0.00	0.0232	t=-0.89	0.0228	t=-1.57
	Median.	0.0054	0.0058	z=0.27	0.0053	z=-1.33	0.0070	z=-1.79
	Std.Dev	0.0245	0.0227		0.0241		0.0241	
	(Std. Err.)	0.0005	0.0006		0.0005		0.0007	
θ/(θ+ϕ)	Mean	29.38%	32.36%	t=1.30	30.41%	t=2.07*	28.83%	t=2.41*
	Median.	17.02%	18.91%	z=1.12	16.98%	z=1.71	33.34%	z=2.08*
	Std.Dev	25.40%	29.56%		28.05%		30.23%	
ISPR	Mean	0.0687	0.0671	t=0.43	0.0677	t=-0.42	0.0685	t=0.25
($)	Median.	0.0104	0.0129	z=0.97	0.0117	z=-0.16	0.0152	z=1.21
	Std.Dev	0.0667	0.0650		0.0653		0.0664	

Panel C. Partisan Industries: 69 firms

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.2387	0.2632	t=0.77	0.2721	t=-0.72	0.2673	t=0.11
	Median.	0.0479	0.0468	z=0.52	0.0516	z=-0.86	0.0594	z=0.74
	Std.Dev	0.2387	0.2715		0.2799		0.2635	
	(Std. Err.)	0.0058	0.0056		0.0062		0.0072	
θ	Mean	0.0100	0.0108	t=1.15	0.0095	t=0.04	0.0100	t=1.37
	Median.	0.0052	0.0062	z=0.82	0.0055	z=0.01	0.0056	z=0.93
	Std.Dev	0.0094	0.0103		0.0086		0.0095	
	(Std. Err.)	0.0006	0.0007		0.0007		0.0007	
ϕ	Mean	0.0233	0.0216	t=-0.15	0.0233	t=0.23	0.0232	t=-0.71
	Median.	0.0040	0.0045	z=-0.47	0.0038	z=-0.63	0.0043	z=-1.26
	Std.Dev	0.0237	0.0213		0.0238		0.0235	
	(Std. Err.)	0.0005	0.0005		0.0005		0.0005	
θ/(θ+ϕ)	Mean	29.40%	32.33%	t=1.13	28.20%	t=0.15	29.31%	t=1.42
	Median.	13.83%	15.87%	z=0.78	14.18%	z=0.09	14.44%	z=0.97
	Std.Dev	28.87%	31.91%		27.97%		29.28%	
ISPR	Mean	0.0665	0.0648	t=0.44	0.0656	t=0.00	0.0663	t=0.19
($)	Median.	0.0058	0.0073	z=0.40	0.0062	z=-0.64	0.0073	z=0.18
	Std.Dev	0.0661	0.0638		0.0641		0.0649	

Table 5 continued.

Panel D. Partisan Industries: 33 firms

		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.2632	0.2785	t=-0.74	0.2906	t=-1.51	0.2878	t=-0.95
	Median.	0.0943	0.1056	z=-1.33	0.1012	z=-1.48	0.1085	z=-0.62
	Std.Dev	0.2470	0.2621		0.2850		0.3009	
	(Std. Err.)	0.0164	0.0184		0.0176		0.0189	
θ	Mean	0.0117	0.0129	t=0.93	0.0131	t=3.44*	0.0144	t=2.42*
	Median.	0.0118	0.0134	z=1.65	0.0105	z=3.52*	0.0121	z=2.91*
	Std.Dev	0.0068	0.0087		0.0106		0.0118	
	(Std. Err.)	0.0021	0.0023		0.0018		0.0021	
ϕ	Mean	0.0249	0.0231	t=0.15	0.0229	t=-1.11	0.0221	t=-1.50
	Median.	0.0076	0.0078	z=1.33	0.0076	z=-1.55	0.0107	z=-1.58
	Std.Dev	0.0271	0.0267		0.0257		0.0254	
	(Std. Err.)	0.0013	0.0014		0.0013		0.0019	
θ/(θ+ϕ)	Mean	29.33%	32.42%	t=0.80	35.02%	t=3.28*	27.81%	t=2.35*
	Median.	22.53%	24.35%	z=0.96	21.22%	z=3.20*	55.36%	z=2.62*
	Std.Dev	20.58%	24.42%		29.27%		32.67%	
ISPR	Mean	0.0733	0.0719	t=0.20	0.0719	t=-0.47	0.0730	t=0.20
($)	Median.	0.0154	0.0194	z=1.22	0.0179	z=0.77	0.0243	z=2.14*
	Std.Dev	0.0681	0.0678		0.0706		0.0730	

Panel E. Top Donors (19)

		Top Donors (19)						
		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.1928	0.2159	t=0.20	0.2268	t=-0.06	0.2061	t=-1.16
	Median.	0.0522	0.0627	z=-0.25	0.0705	z=0.06	0.0805	z=-0.80
	Std.Dev	0.2024	0.2136		0.2341		0.1930	
	(Std. Err.)	0.0120	0.0144		0.0162		0.0185	
θ	Mean	0.0082	0.0094	t=1.73	0.0097	t=2.34*	0.0093	t=1.45
	Median.	0.0062	0.0074	z=1.40	0.0065	z=2.12*	0.0075	z=1.39
	Std.Dev	0.0070	0.0069		0.0087		0.0076	
	(Std. Err.)	0.0014	0.0017		0.0015		0.0017	
ϕ	Mean	0.0266	0.0250	t=0.24	0.0249	t=-2.20*	0.0252	t=-1.88
	Median.	0.0037	0.0047	z=-0.41	0.0050	z=-2.38*	0.0045	z=-2.24*
	Std.Dev	0.0267	0.0259		0.0257		0.0254	
	(Std. Err.)	0.0008	0.0011		0.0011		0.0010	
θ/(θ+ϕ)	Mean	22.59%	25.98%	t=1.58	27.16%	t=2.37*	25.12%	t=1.47
	Median.	14.06%	16.43%	z=1.34	16.03%	z=2.30*	18.13%	z=1.58
	Std.Dev	19.50%	21.55%		26.04%		23.52%	
ISPR	Mean	0.0696	0.0687	t=1.40	0.0691	t=0.29	0.0689	t=-0.32
($)	Median.	0.0068	0.0073	z=0.93	0.0067	z=-0.42	0.0088	z=-0.41
	Std.Dev	0.0676	0.0678		0.0671		0.0664	

Table 5 continued.

Panel F. Favored Firms (32)

		Favored Firms (32)						
		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.2262	0.2440	t=-0.57	0.2641	t=-0.16	0.2542	t=-0.43
	Median.	0.2382	0.2573	z=-0.85	0.2695	z=-0.17	0.2703	z=0.47
	Std.Dev	0.0554	0.0631		0.0687		0.0765	
	(Std. Err.)	0.0098	0.0112		0.0121		0.0135	
θ	Mean	0.0121	0.0134	t=1.85	0.0152	t=3.65*	0.0160	t=3.43*
	Median.	0.0098	0.0103	z=1.80	0.0122	z=3.15*	0.0139	z=3.37*
	Std.Dev	0.0088	0.0103		0.0123		0.0136	
	(Std. Err.)	0.0016	0.0018		0.0022		0.0024	
ϕ	Mean	0.0233	0.0224	t=0.96	0.0228	t=-0.15	0.0232	t=-0.47
	Median.	0.0237	0.0224	z=0.56	0.0234	z=-0.96	0.0247	z=-1.26
	Std.Dev	0.0064	0.0065		0.0056		0.0059	
	(Std. Err.)	0.0011	0.0012		0.0010		0.0010	
θ/(θ+ϕ)	Mean	32.80%	35.31%	t=1.28	36.99%	t=2.87*	37.44%	t=2.66*
	Median.	29.85%	30.24%	z=0.95	33.86%	z=2.39*	37.63%	z=2.64*
	Std.Dev	19.94%	20.57%		18.80%		19.27%	
ISPR	Mean	0.0707	0.0715	t=2.95*	0.0761	t=3.35*	0.0783	t=3.61*
($)	Median.	0.0689	0.0693	z=2.67*	0.0719	z=2.85*	0.0739	z=3.58*
	Std.Dev	0.0073	0.0097		0.0171		0.0192	

Panel G. Overlapping Firms (25)

		Overlapping Firms(25)						
		Period I	Period II	t-value z-score	Period III	t-value z-score	Period IV	t-value z-score
ρ	Mean	0.2030	0.2270	t=0.38	0.2447	t=0.49	0.2246	t=-0.28
	Median.	0.2047	0.2324	z=-0.19	0.2460	z=0.80	0.2123	z=0.74
	Std.Dev	0.0575	0.0624		0.0782		0.0880	
	(Std. Err.)	0.0115	0.0125		0.0156		0.0176	
θ	Mean	0.0090	0.0100	t=2.20*	0.0115	t=3.13*	0.0111	t=2.21*
	Median.	0.0079	0.0082	z=1.76	0.0102	z=3.02*	0.0092	z=2.51*
	Std.Dev	0.0069	0.0080		0.0104		0.0080	
	(Std. Err.)	0.0014	0.0016		0.0021		0.0016	
ϕ	Mean	0.0254	0.0245	t=1.38	0.0247	t=-0.77	0.0253	t=-0.15
	Median.	0.0259	0.0255	z=0.96	0.0257	z=-1.52	0.0251	z=-1.28
	Std.Dev	0.0049	0.0050		0.0048		0.0041	
	(Std. Err.)	0.0010	0.0010		0.0010		0.0008	
θ/(θ+ϕ)	Mean	25.19%	27.68%	t=1.55	29.46%	t=2.62 *	28.95%	T=1.81
	Median.	23.34%	24.59%	z=1.11	28.09%	z=2.60*	24.84%	z=2.11*
	Std.Dev	15.74%	16.34%		15.96%		15.36%	
ISPR	Mean	0.0686	0.0690	t=2.57*	0.0723	t=2.73*	0.0729	t=3.13*
($)	Median.	0.0670	0.0684	z=2.00*	0.0701	z=1.93	0.0695	z=2.34*
	Std.Dev	0.0061	0.0079		0.0138		0.0119	

Table 6

Correlation of Changes in Variables. This table reports the correlation of changes in variables for a combination of 123 politically sensitive firms under the Bush/Gore political platforms and 223 controlling firms. The sample period is from 7/1/2000 to 12/31/2000, and it is divided into 4 sub-periods. Period I (the base period) is from 7/1/2000 to 8/31/2000, Period II (the polling period) is from 9/1/2000 to 11/6/2000, Period III (the election & recount period) is from 11/7/2000 to 12/13/2000, and Period IV (the post-recount period) is from 12/14/2000 to 12/31/2000. P is the average close price, VOLA is the absolute daily change in the log of close price, DV is the daily dollar volume, θ is the information cost parameter, ϕ is the liquidity cost parameter, SPR is the quoted bid-ask spread, and ESPR is the effective bid-ask spread. Δ represents the log change in a variable. For example, from the base period to the polling period, ΔP is equal to the log price of the polling period minus the log price of the base period.

Panel A. From the base period to the polling period

	ΔP	ΔVOLA	ΔDV	Δθ	Δϕ	ΔSPR($)	ΔESPR($)
ΔP	1.00	-0.02	0.50	0.43	-0.15	0.53	0.53
ΔVOLA		1.00	0.39	0.16	-0.09	0.15	0.21
DV			1.00	0.19	-0.07	0.24	0.34
Δθ				1.00	-0.36	0.49	0.48
Δϕ					1.00	0.00	0.01
ΔSPR($)						1.00	0.83
ΔESPR($)							1.00

Panel B. From the base period to the election & recount period

	ΔP	ΔVOLA	ΔDV	Δθ	Δϕ	ΔSPR($)	ΔESPR($)
ΔP	1.00	-0.26	0.56	0.37	-0.08	0.48	0.46
ΔVOLA		1.00	0.21	0.09	-0.07	0.04	0.14
ΔDV			1.00	0.11	0.15	0.20	0.28
Δθ				1.00	-0.46	0.49	0.48
Δϕ					1.00	-0.03	-0.08
ΔSPR($)						1.00	0.80
ΔESPR($)							1.00

Panel C. From the base period to the post-recount period

	ΔP	ΔVOLA	ΔDV	Δθ	Δϕ	ΔSPR($)	ΔESPR($)
ΔP	1.00	-0.18	0.51	0.38	-0.09	0.43	0.53
ΔVOLA		1.00	0.20	0.10	-0.03	0.11	0.16
ΔDV			1.00	0.12	0.15	0.16	0.32
Δθ				1.00	-0.37	0.46	0.50
Δϕ					1.00	-0.03	-0.08
ΔSPR($)						1.00	0.80
ΔESPR($)							1.00

Table 7

GMM Tests of Changes in Bid-Ask Spreads. This table reports the GMM tests of the changes in bid-ask spreads for 123 politically sensitive firms under the Bush/Gore political platforms and 223 controlling firms. The sample period is from 7/1/2000 to 12/31/2000, and it is divided into 4 sub-periods. Period I (the base period) is from 7/1/2000 to 8/31/2000, Period II (the polling period) is from 9/1/2000 to 11/6/2000, Period III (the election & recount period) is from 11/7/2000 to 12/13/2000, and Period IV (the post-recount period) is from 12/14/2000 to 12/31/2000. The testing model is

$$\Delta Y = n_0 + n_1*\Delta P + n_2*\Delta VOLA + n_3*\Delta DV + n_4*\Delta\theta + n_5*\Delta\phi + D*(s_0 + s_1*\Delta P + s_2*\Delta VOLA + s_3*\Delta DV + s_4*\Delta\theta + s_5*\Delta\phi),$$

where Y is SPR ($) in Panel A and ESPR ($) in Panel B, P is the average close price, VOLA is the absolute daily change in the log of close price, DV is the daily dollar volume, θ is the information cost parameter, ϕ is the liquidity cost parameter, SPR ($) is the average bid-ask spread in dollars, and ESPR is the effective bid-ask spread in dollars. Δ represents the log change in a variable. For example, from the base period to the polling period, ΔP is equal to the log price of the polling period minus the log price of the base period. D is a dummy variable, where D=1 for the 123 politically sensitive firms and 0 for the 231 controlling firms. Parameter s_0 represents the difference in the change of bid-ask spread between the favored firms and controlling firms, with the control of changes in P, VOLA, DV, θ, and ϕ. * indicates the 5% significance level.

Panel A. Test of Change in SPR ($)

		From the base period to the polling period		From the base period to the election & recount period		From the base period to the post-recount period	
Variable	Parameter	Parameter	t-value	Parameter	t-value	Parameter	t-value
Intercept	n_0	-0.0056	-1.12	0.0156	3.27*	0.0053	0.67
ΔP	n_1	0.2647	7.88*	0.2179	5.68*	0.1884	6.63*
ΔVOLA	n_2	0.0614	3.29*	0.0511	2.86*	0.0641	3.60*
ΔDV	n_3	-0.0416	-2.59*	-0.0409	-2.60*	-0.0364	-2.25*
$\Delta\theta$	n_4	0.0982	6.38*	0.0899	6.54*	0.0545	4.41*
$\Delta\phi$	n_5	0.1005	2.58*	0.0716	3.47*	0.0248	1.30
D	s_0	-0.0013	-0.16	-0.0040	-0.39	0.0031	0.24
D*ΔP	s_1	-0.0802	-1.12	-0.0283	-0.33	-0.0924	-1.42
D*ΔVOLA	s_2	-0.0346	-1.1	0.0158	0.50	-0.0339	-1.13
D*ΔDV	s_3	0.0460	1.59	-0.0034	-0.09	0.0158	0.49
D*$\Delta\theta$	s_4	-0.0415	-1.87	-0.0201	-0.88	0.0082	0.41
D*$\Delta\phi$	s_5	0.0090	0.18	0.0119	0.31	0.0438	1.16
Adj. R^2		43.43%		40.18%		33.39%	

Panel B. Test of Change in ESPR ($)

Intercept	n_0	0.0010	0.23	0.0037	0.76	-0.0005	-0.07
ΔP	n_1	0.2067	6.59*	0.1640	5.07*	0.1660	6.67*
ΔVOLA	n_2	0.0471	2.49*	0.0695	3.58*	0.0567	3.01*
ΔDV	n_3	-0.0055	-0.38	-0.0067	-0.47	0.0006	0.05
$\Delta\theta$	n_4	0.0804	5.69*	0.0769	5.99*	0.0476	4.68*
$\Delta\phi$	n_5	0.0875	2.93*	0.0433	1.42	0.0137	0.76
D	s_0	0.0060	0.86	0.0078	0.74	0.0027	0.29
D*ΔP	s_1	-0.0512	-0.88	-0.0270	-0.35	-0.0313	-0.52
D*ΔVOLA	s_2	0.0078	0.25	-0.0100	-0.31	-0.0114	-0.38
D*ΔDV	s_3	0.0192	0.71	-0.0213	-0.68	0.0028	0.11
D*$\Delta\theta$	s_4	-0.0343	-1.7	-0.0369	-1.78	0.0111	0.7
D*$\Delta\phi$	s_5	0.0030	0.06	-0.0630	-1.13	0.0221	0.81
Adj. R^2		44.12%		34.27%		43.32%	

Table 8

GMM Tests of Changes in Bid-Ask Spreads Using the Portfolio θ. This table reports the results of GMM tests using the following cross-sectional regression model:

$$\Delta Y = n_0 + n_1*\Delta P + n_2*\Delta VOLA + n_3*\Delta DV + n_4*\Delta Ptheta + n_5*\Delta\phi + D*(s_0 + s_1*\Delta P + s_2*\Delta VOLA + s_3*\Delta DV + s_4*\Delta Ptheta + s_5*\Delta\phi),$$

where Ptheta is the portfolio θ which is an average of θ values for all stocks in each portfolio. We rank the firms in both the testing (123 firms) and controlling (223 firms) samples by θ and divided them into 10 portfolios in each sample. The remaining variables are as defined in Table 7. * indicates the 5% significance level.

Panel A. Test of Change in SPR ($)

		From the base period to the polling period		From the base period to the election & recount period		From the base period to the post-recount period	
Variable	Parameter	Parameter	t-value	Parameter	t-value	Parameter	t-value
Intercept	n_0	-0.0005	-0.07	0.0124	2.32*	0.0017	0.21
ΔP	n_1	0.1660	6.67*	0.2690	7.48*	0.2031	7.28*
ΔVOLA	n_2	0.0567	3.01*	0.0689	3.59*	0.0680	3.68*
ΔDV	n_3	0.0006	0.05	-0.0495	-2.98*	-0.0269	-1.58
ΔPtheta	n_4	0.0476	4.68*	0.0679	4.92*	0.0547	4.78*
Δϕ	n_5	0.0137	0.76	0.0363	1.59	0.0140	0.73
D	s_0	0.0027	0.29	0.0001	0.01	0.0121	0.94
D*ΔP	s_1	-0.0313	-0.52	-0.0515	-0.6	-0.0927	-1.46
D*ΔVOLA	s_2	-0.0114	-0.38	0.0118	0.37	-0.0307	-1.01
D*ΔDV	s_3	0.0028	0.11	0.0080	0.22	-0.0014	-0.05
D*ΔPtheta	s_4	0.0111	0.7	-0.0213	-0.91	0.0019	0.11
D*Δϕ	s_5	0.0221	0.81	0.0163	0.39	0.0482	1.48
Adj. R^2		39.51%		34.13%		30.76%	

Panel B. Test of Change in ESPR ($)

Intercept	n_0	-0.0021	-0.49	0.0008	0.16	-0.0053	-0.8
ΔP	n_1	0.2462	7.22*	0.1943	6.38*	0.1901	7.71*
ΔVOLA	n_2	0.0508	2.58*	0.0764	4.06*	0.0637	3.40*
ΔDV	n_3	-0.0085	-0.54	-0.0129	-0.88	0.0049	0.34
ΔPtheta	n_4	0.0654	3.75*	0.0622	4.80*	0.0341	3.41*
Δϕ	n_5	0.0504	1.71	0.0416	1.79	-0.0021	-0.12
D	s_0	0.0103	1.48	0.0063	0.66	0.0123	1.35
D*ΔP	s_1	-0.0797	-1.3	-0.0059	-0.09	-0.0412	-0.68
D*ΔVOLA	s_2	0.0116	0.35	0.0018	0.06	-0.0116	-0.38
D*ΔDV	s_3	0.0195	0.69	-0.0118	-0.39	-0.0087	-0.31
D*ΔPtheta	s_4	-0.0295	-1.19	-0.0326	-1.41	0.0174	1.11
D*Δϕ	s_5	0.0289	0.58	-0.0394	-0.96	0.0313	1.10
Adj. R^2		40.08%		32.34%		39.09%	

Table 9

GMM Tests of the Effects of Error-in-Variable on Spread Regressions. This table provides the GMM tests for the effects of error-in-variable caused by the two-step regression. We test the following model:

$$\Delta Y = n_0 + n_1*\Delta P + n_2*\Delta VOLA + n_3*\Delta DV + n_4*\Delta\theta + n_5*\Delta\phi + n_6*\Delta Ptheta + D*(s_0 + s_1*\Delta P + s_2*\Delta VOLA + s_3*\Delta DV + s_4*\Delta\theta + s_5*\Delta\phi + s_6*\Delta Ptheta),$$

where all the variables are as defined in Tables 5 and 6. * indicates significance at the five-percent level.

Panel A. Test of Changes in SPR ($)

		From the base period to the polling period		From the base period to the election & recount period		From the base period to the post-recount period	
Variable	Parameter	Parameter	t-value	Parameter	t-value	Parameter	t-value
Intercept	n_0	-0.0057	-1.16	0.0161	3.26*	0.0063	0.80
ΔP	n_1	0.2560	7.73*	0.2171	5.60*	0.1794	6.23*
ΔVOLA	n_2	0.0584	3.13*	0.0512	2.88*	0.0611	3.34*
ΔDV	n_3	-0.0401	-2.44*	-0.0405	-2.55*	-0.0299	-1.87
Δθ	n_4	0.0789	5.23*	0.0782	4.16*	0.0420	2.84*
Δϕ	n_5	0.1013	2.56*	0.0718	3.51*	0.0293	1.55
ΔPtheta	n_6	0.0351	1.94	0.0196	1.04	0.0275	1.76
D	s_0	-0.0011	-0.13	-0.0044	-0.42	0.0044	0.35
D*ΔP	s_1	-0.0748	-1.03	-0.0283	-0.33	-0.0855	-1.32
D*ΔVOLA	s_2	-0.0327	-1.03	0.0156	0.50	-0.0303	-1.01
D*ΔDV	s_3	0.0453	1.55	-0.0035	-0.09	0.0071	0.22
D*Δθ	s_4	-0.0264	-1.30	-0.0091	-0.3	0.0078	0.3
D*Δϕ	s_5	0.0093	0.18	0.0115	0.3	0.0430	1.17
D*ΔPtheta	s_6	-0.0274	-0.97	-0.0178	-0.56	-0.0041	-0.16
Adj. R^2		43.73%		40.05%		33.88%	

Panel B. Test of Change in ESPR ($)

Intercept	n_0	0.0071	1.21	0.0044	0.89	-0.0003	-0.05
ΔP	n_1	0.1532	3.08*	0.1446	4.68*	0.1645	6.52*
ΔVOLA	n_2	0.0542	2.18*	0.0594	3.29*	0.0562	2.96*
ΔDV	n_3	0.0142	0.63	-0.0043	-0.30	0.0017	0.13
Δθ	n_4	0.0432	2.93*	0.0748	4.75*	0.0455	3.57*
Δϕ	n_5	0.0912	2.18*	0.0755	3.91*	0.0144	0.80
ΔPtheta	n_6	0.0054	0.28	0.0159	1.00	0.0046	0.37
D	s_0	-0.0061	-0.88	0.0023	0.24	0.0044	0.48
D*ΔP	s_1	0.0481	0.79	0.0266	0.38	-0.0315	-0.52
D*ΔVOLA	s_2	-0.0089	-0.28	0.0104	0.36	-0.0103	-0.35
D*ΔDV	s_3	-0.0188	-0.69	-0.0219	-0.71	-0.0002	-0.01
D*Δθ	s_4	0.0252	1.29	-0.0336	-1.42	0.0025	0.13
D*Δϕ	s_5	-0.0032	-0.06	-0.0550	-1.43	0.0245	0.88
D*ΔPtheta	s_6	0.0165	0.65	-0.0131	-0.47	0.0149	0.76
Adj. R^2		44.10%		37.39%		43.21%	

Table 10
Bivariate Portfolio Analysis.
Panel A
This panel reports log spread changes of bivariate portfolios of the 123 politically sensitive firms sorted independently by $\Delta\theta$ and $\Delta\phi$ where θ is the information cost parameter and ϕ is the liquidity cost parameter, SPR ($) is the average bid-ask spread in dollars, and ESPR is the effective bid-ask spread in dollars. We sort the politically sensitive firms independently into three $\Delta\theta$ portfolios and two $\Delta\phi$ portfolios where Δ represents the log change in a variable between two subperiods in the 2000 election.

$\Delta\theta/\Delta\phi$	Low	High	$\Delta\theta/\Delta\phi$	Low	High
ΔSPR($)			ΔESPR($)		
From period I to Period II					
Low	-0.0565	-0.0229	Low	-0.0348	0.0019
Middle	-0.0067	-0.0006	Middle	0.0063	0.0152
High	0.0144	0.0403	High	0.0388	0.0527
From period I to Period III					
Low	-0.0582	-0.0345	Low	-0.0367	-0.0271
Middle	0.0221	0.0619	Middle	0.0038	0.0538
High	0.0470	0.0370	High	0.0487	0.0297
From period I to Period IV					
Low	-0.0756	-0.0123	Low	-0.0823	-0.0212
Middle	0.0280	0.0434	Middle	0.0318	0.0580
High	0.0556	0.0302	High	0.0709	0.0463

Panel B
This panel reports log spread changes of bivariate portfolios of the 223 controlling firms sorted independently by $\Delta\theta$ and $\Delta\phi$.

ΔSPR($)			ΔESPR($)		
From period I to Period II					
Low	-0.0896	-0.0462	Low	-0.0714	-0.0261
Middle	-0.0245	-0.0040	Middle	-0.0100	0.0085
High	0.0498	0.0704	High	0.0505	0.0624
From period I to Period III					
Low	-0.0821	-0.0411	Low	-0.0927	-0.0387
Middle	0.0201	0.0397	Middle	0.0235	0.0427
High	0.0556	0.0855	High	0.0387	0.0473
From period I to Period IV					
Low	-0.0434	-0.0583	Low	-0.0511	-0.0410
Middle	0.0091	0.0371	Middle	0.0146	0.0339
High	0.0592	0.1286	High	0.0593	0.0961

Panel C
This panel reports the difference between log spread changes of testing and controlling firms. These spread change differences are sorted independently by $(\Delta\theta^T - \Delta\theta^C)$ and $(\Delta\phi^T - \Delta\phi^C)$ where the superscripts *T* and *C* represent the testing and controlling firms, respectively. * indicates significance at least at the 5% level and † represents significance at the 10% level.

$(\Delta\theta^T - \Delta\theta^C)$ / $(\Delta\phi^T - \Delta\phi^C)$	Low	High	High-low diff.	$(\Delta\theta^T - \Delta\theta^C)$ / $(\Delta\phi^T - \Delta\phi^C)$	Low	High	High-low diff.
ΔSPR($)				ΔESPR($)			
From period I to Period II							
Low	-0.0379	-0.0080	0.0300	Low	-0.0161	-0.0090	0.0072
Middle	-0.0081	0.0261	0.0343*	Middle	0.0041	0.0264	0.0224†
High	0.0142	0.0283	0.0141	High	0.0195	0.0157	-0.0040
High-low diff.	0.0521*	0.0363*		High-low diff.	0.0356*	0.0247*	
From period I to Period III							
Low	-0.0531	-0.0008	0.0523*	Low	-0.0475	0.0006	0.0482*
Middle	-0.0048	0.0237	0.0285	Middle	-0.0005	0.0224	0.0230
High	0.0001	0.0335	0.0334†	High	0.0254	0.0355	0.0101
High-low diff.	0.0532*	0.0343*		High-low diff.	0.0729*	0.0349*	
From period I to Period IV							
Low	-0.0258	0.0044	0.0302†	Low	-0.0091	0.0117	0.0208
Middle	0.0064	0.0075	0.0012	Middle	0.0083	0.0093	0.0010
High	-0.0138	0.0328	0.0467*	High	-0.0048	0.0175	0.0222
High-low diff.	0.0120	0.0284†		Dif	0.0043	0.0058	