This paper rigorously tests the predictions of adverse selection models with discretionary trading. This is achieved by exploiting intra-day discretionary trading surrounding FIFA World Cup Football matches that occur during trading hours. The extraordinary volatility and price discovery dynamics that occur on match days confer unique economic properties on the market. This is because market liquidity during match hours is highly reduced and the volatility of liquidity trading is stochastic. Similar to the findings of Back and Pedersen (1998), the evidence in this study provides support for the hypothesis that discretionary trading is associated with reduced price impacts, increased price volatility, and increased price discovery. In contrast to the findings of Admati and Pfleiderer (1988), Back and Pedersen (1998), and others, this study finds that discretionary trading does not produce any systematic patterns with respect to price impacts.

The variables of interest are as follows:

- \(DVOL_{m,t,w}\): The total dollar trading volume across the continent stock market index \(m\) at time \(t\) in World Cup sub-sample.
- \(ESPREAD_{m,t,w}\): The dollar-weighted average percentage effective spread of all stocks in market \(m\) at time \(t\) in World Cup sub-sample.
- \(PD_{m,t,w}\): A match day indicator variable that takes the value of one if country \(m\) is playing in a football match at time \(t\) in World Cup sub-sample.
- \(NOISE_{m,t,w}\): A market-level temporal price impact measure inspired by Biais and Drin (2006).

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4. Discretionary Trading on Match Days

Figure 1 plots the mean \(DVOL_{m,t,w}\) values on match days. The x-axis indicates the number of minutes from kick-off time, with first-half and second-half time periods shaded in gray.

5. Testable Hypotheses

The discretionary trading models provide contrasting hypotheses with respect to price impacts. Hypothesis H1a states that mandatory trading does not yield any systematic relationship between discretionary trading and transaction costs. On the other hand, Hypothesis H1b states that discretionary trading is negatively associated with discretionary trading. Accordingly, a variable test of testable hypotheses are as follows:

- H1a Discretionary trading is not correlated with transaction costs.
- H1b Discretionary trading is negatively correlated with transaction costs.

Hence, Hypothesis H1a asserts that there should not be any observable intra-day patterns in transaction costs on match days. Under Hypothesis H1b, one should expect reduced transaction costs prior to match time and increased transaction costs during match time. In addition, discretionary trading models predict that price volatility is increased when there is discretionary trading. Price volatility is driven by informed traders increasing their trading demand during periods of heightened liquidity trading. This motivates Hypothesis H2.

H2 Discretionary trading is positively correlated with price volatility.

According to Hypothesis H2, the period of increased discretionary trading prior to match time should be accompanied by increased price volatility, while during match time, markets should exhibit reduced volatility. Hence, increased transaction costs associated with discretionary trading are correlated in the discretionary trading models with constant information asymmetry.

H3 Discretionary trading is positively correlated with temporary and permanent price innovations caused by uninformed traders, which helps to minimize their trading demands during periods of heightened liquidity trading. Therefore, in the current empirical setting, the magnitude of temporary and permanent price innovations should be increased in the pre-match period of increased discretionary and reduced during match time.

6. Market Quality on Match Days

Equation 1 is employed to test hypotheses H1, H2, and H3.

\[
\text{DVOL}_{m,t,w} = \alpha_0 + \beta_1 PD_{m,t,w} + \beta_2 DSM_{m,t,w} + \beta_3 \delta_{m,t,w} + \beta_4 ESPREAD_{m,t,w} + \beta_5 \delta_{t} + \beta_6 NOISE_{m,t,w} + \delta_{m,t,w} + \epsilon_{m,t,w}
\]

where \(\delta_{m,t,w}\) is the dependent variable and the subscripts \(m\) and \(t\) are the relevant market, five-minute time period and World Cup sub-sample, respectively. The first independent variable, \(PD_{m,t,w}\), is a match day indicator variable that takes the value of one if country \(m\) is playing in a football match in the World Cup sub-sample. The second independent variable, \(DSM_{m,t,w}\), takes the value of one if country \(m\) is playing in a football match at time \(t\) in World Cup sub-sample. The independent variable, \(ESPREAD_{m,t,w}\) measures the dollar-weighted average percentage effective spread across all stocks in market \(m\) at time \(t\) in World Cup sub-sample.\(NOISE_{m,t,w}\) is a market-level temporal price impact measure inspired by Biais and Drin (2006).

The remaining independent variables in Equation 1 capture abnormal trading activity outside of match time. The \(\delta_{t}\) and \(\delta_{m,t,w}\) variables are indicator variables for the six consecutive 30-minute periods leading up to and during the match. The \(\delta_{m,t,w}\) variable indicates that the country \(m\) is a participant in the football match and the \(\delta_{t}\) variable indicates that the country \(m\) is playing in a match involving country \(m\) in World Cup sub-sample.

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References


