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Information salience, investor sentiment, and stock returns: The case of British soccer betting ☆

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ABSTRACT

Soccer clubs listed on the London Stock Exchange provide a unique way of testing stock price reactions to different types of news. For each firm, two pieces of information are released on a weekly basis: experts' expectations about game outcomes through the betting odds, and the game outcomes themselves. The stock market reacts strongly to news about game results, generating significant abnormal returns and trading volumes. We find evidence that the abnormal returns for the winning teams do not reflect rational expectations but are high due to overreactions induced by investor sentiment. This is not the case for losing teams. There is no market reaction to the release of new betting information although these betting odds are excellent predictors of the game outcomes. The discrepancy between the strong market reaction to game results and the lack of reaction to betting odds may not only be the result from overreaction to game results but also from the lack of informational content or information salience of the betting information. Therefore, we also examine whether betting information can be used to predict short-run stock returns subsequent to the games. We reach mixed results: we conclude that investors ignore some non-salient public information such as betting odds, and betting information predicts a stock price overreaction to game results which is influenced by investors' mood (especially when the teams are strongly expected to win).

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1. Introduction

It is now widely acknowledged that individuals have limited information processing abilities. As Herbert Simon (1978: 13) mentions "many of the central issues of our time are questions of how we use limited information and limited computational ability to deal with enormous problems whose shape we barely grasp". As a consequence of this limited processing ability, investors may concentrate their time and attention to highly visible, easy to process information. In other words, limited processing ability may generate limited attention. One of the consequences is that reactions to public news depend on its relative salience: the higher the information salience (i.e. media coverage), the faster the public information is processed by investors and is reflected in the share prices. In the recent past, several articles have reported empirical evidence about asset price reactions to public news consistent with the salience theory. Studying closed-end country funds, Klibanoff et al. (1998) show that country-

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specific information which does not receive large media coverage is incorporated only gradually into the share prices. In a case study, Huberman and Regev (2001) describe EntreMed's substantial and permanent stock price rise after a 'special report' on new cancer-curing drugs on the front page of the Sunday edition of the *New York Times* (NYT). This is remarkable as the NYT article did not contain any new information: the potential breakthrough had already been reported five months earlier in the scientific press (an article in Nature) and in the popular press (including the NYT itself but then not on a prominent place—in a tiny article on page A-28). Chan (2003) studies market returns following prominent public news, i.e., firm-related information that made the headlines or a lead article, and finds that investors react slowly to bad news. A recent study by Gilbert et al. (2007) shows that investor inattention influences the aggregate stock market.

Investors' constraints in information processing are not only characterized by ignoring relevant news but also by misinterpreting the relevance of news. In particular, studies on behavioral finance argue that investors are subject to sentiment (e.g. De Long et al., 1990).[1] Some recent papers study the impact of exogenous changes in investor emotions on share prices (e.g. Kamstra et al., 2003). When arbitrage against sentiment-prone investors is risky and costly, mispricing may persist in financial markets (Shleifer and Vishny, 1997). An example of investor sentiment is the study by Edmans et al. (2007) who investigate the impact of international soccer results on stock market indices. They find a significant market decline after losses by national soccer teams in international soccer competitions. The authors demonstrate that this loss effect is caused by a change in investor mood.[2] Indeed, soccer results influence investor sentiment but have little direct economic impact. Edmans et al. also show that the stock market effect is stronger for countries with a prominent soccer tradition, for games in the World Cup and for elimination games, and for smaller stocks.

English and Scottish professional soccer teams listed on the London Stock Exchange (LSE) provide a unique way of studying the stock price reaction to different pieces of news while controlling for the informational content. For each of these stocks, betting markets and stock markets co-exist and two pieces of information are released on a weekly basis from August to June: betting odds and game results. Listed soccer teams are also interesting study objects because the performance of the team is greeted with lots of emotion and media coverage. The objective of this paper is not to identify a profitable trading strategy, but to analyse the impact of investor sentiment and information salience on news absorption by the stock market by studying the *difference* in the market reactions to these two types of news.

Soccer betting in the UK occurs via a fixed-odds procedure: the odds are posted several days prior to the game and are very rarely altered in response to betting before the event. This fixed-odds betting system is different from the pari-mutuel system (as often used in betting on horse races) and from the point spread betting system (used for the most popular sports in the US), in which odds respond to betting volumes and thus represent a consensus in investors' opinions. Within a fixed-odds betting system, the odds represent only the bookmakers' (or their experts') opinions.[3] Hence, investors are informed on a weekly basis about the experts' beliefs about the game outcomes (through the odds that the bookmakers publish), and the game results. Both these types of news provide new information about the performance of the teams/firms. However, they differ in four crucial ways. First, betting odds represent experts' opinions about game outcomes while game results represent information about realizations. Second, betting odds offer short-lived information. After two trading days, the game outcome is known and the information value contained by the betting odds has evaporated. As a consequence, if betting odds do contain valuable information, markets must be fast in processing this information. Third, while a victory or a defeat of soccer clubs clearly shifts investor mood, betting odds hardly have any impact on sentiment. Finally, these two types of information also differ in their level of salience. Betting odds are publicly available but are only posted on bookmakers' websites and in 'betting shops'. In contrast, game results are virtually omnipresent: they are extensively discussed in all daily newspapers, on the television news, and in a variety of sports shows on prime time.

Our paper is structured around four questions: (i) Do victories and losses trigger significant stock price and trading volume reactions?, (ii) Do the market reactions reflect rational expectations or overreaction induced by information salience/investor sentiment?, (iii) Does the release of betting information trigger stock price and trading volume reactions?, and (iv) Can betting odds predict stock returns and do investor sentiment or information salience explain the differences in the market reactions to the two correlated sets of news?

Our findings yield a mix of results. Our first question is answered affirmatively: the market reacts strongly to game results, generating abnormal trading volumes and abnormal returns in the days following the games. Over a three-day period subsequent to the game, we observe an average abnormal return of 88 basis points subsequent to a win, of −101 basis points subsequent to a defeat, and of −33 basis points following a draw. We also find that the market processes good news faster than bad news, a result consistent with the literature (see e.g. Hong, Lim and Stein, 2000; Chan, 2003). After a victory, a significant positive average abnormal return is observed on the first trading day subsequent to the games, but not on the following days. Bad news (i.e., defeats) is processed more slowly as we observe significant negative abnormal returns on the first three trading days after a game. These results suggest that information about game results is used extensively by investors. Since the game results represent 'hard' information about future earnings, our study is related to those on stock price (under-)reaction to earning announcements (see e.g.

[1] Investor sentiment can be broadly defined as "a belief about future cash flows or investment risks that is not justified by the facts at hand" (Baker and Wurgler, 2007:129). While one approach to study investor sentiment uses psychological biases of individual investors to explain investor underreaction or overreaction to news (Barberis et al., 1998; Daniel et al., 1998), another approach develops aggregate measures of sentiment in stock markets (Baker and Wurgler, 2006).

[2] The previous literature in psychology shows that (inter)national sports events can significantly affect people's sentiment about their own personal lives and the mood of an entire country (e.g. White, 1989).

[3] See Pope and Peel (1990) for a theoretical model of this system, and Kuypers (2000) and Goddard and Asimakopoulos (2004) for empirical studies. Sauer (1998) wrote a review of the betting literature.

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