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Weather, biorhythms, beliefs and stock returns—Some preliminary Irish evidence

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Abstract

We investigate whether there exists a relationship between eight proxy variables for investor mood (based on the weather, biorhythms, and beliefs) and daily Irish stock returns over the period 1988 to 2001. Our study is motivated by recent research that argues that people's decisions are influenced by their feelings, especially when the decision involves risk and uncertainty [e.g., *Psychol. Bull.* 127 (2001) 267–286]. We find that some of the variables proposed in the literature (rain and time changes around daylight savings) are minor but significant influences. We also find preliminary evidence for the relationship between mood proxy variables and equity returns being more pronounced in times of positive recent market performance. This finding is consistent with psychological research showing that people in a good mood (in this case, because of presumed gains in their investment portfolios) are more likely to allow irrelevant mood factors to influence their decision making [e.g., Mackie, D. M., & Worth, L. T. (1991). Feeling good, but not thinking straight: The impact of positive mood on persuasion. In: Forgas, J. P. (Ed.), *Emotion and Social Judgments* (pp. 201–219). Oxford: Pergamon Press].

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> In estimating the prospects of investment, we must have regard ... to the nerves and hysteria and even the digestions and reactions to the weather of those upon whose spontaneous activity it largely depends. John Maynard Keynes (1936, p. 162)

1. Introduction

Variables based on the weather and the body's natural biorhythms can safely be described as noneconomic variables in the context of traditional models of equity pricing. However, from a psychological perspective, weather and biorhythms are not neutral variables. Variations in these variables have been shown to have a significant impact on people's moods (e.g., Howarth & Hoffman, 1984). This is important because Loewenstein (2000, p. 426) argues that the feelings experienced at the time of making a decision "often propel behaviour in directions that are different from that dictated by a weighing of the long-term costs and benefits of disparate actions".

As equity pricing involves the weighing of long-term costs (the riskiness of future cash flows due to an equity) and benefits (the right to a share in the future net cash flows due to an equity), an increasing number of researchers in behavioural finance have investigated whether mood fluctuations, such as those induced by weather and biorhythm variations, can influence investor's valuations of equities.

Prior investigations in this area have found a relationship between equity returns and a wide variety of variables that are known to cause mood fluctuations. These variables, termed *mood proxy* variables, include the weather (e.g., Hirshleifer & Shumway, 2003), biorhythms (e.g., Kamstra, Kramer, & Levi, 2003), and belief-based factors (e.g., Dichev & Janes, 2001).

This paper investigates whether there is a relationship between Irish equity returns and eight of the mood proxy variables identified in previous studies: cloud cover, rain, humidity, geomagnetic storms, Seasonal Affective Disorder (SAD), daylight savings time changes (DSTC), lunar phases, and Friday 13th. All these variables are argued to be economically neutral but psychologically important.

This paper contributes to the investor mood literature by (1) testing for linear, as well as nonlinear, specifications of a number of the mood proxy variables; (2) testing for interactions between the variables; and (3) testing whether the performance of the equity market affects the influence of the mood proxy variables on investor decision making. The paper also contributes to our knowledge of the Irish equity market, as most of these mood variables have not been previously tested in the Irish context.

The remainder of this paper is organised as follows. Section 2 reviews the relevant literature on mood influences on decision making and, specifically, how mood is believed to influence investor decision making. Section 3 outlines the data approach of the study. Section 4 presents and analyses the empirical findings. Section 5 concludes.