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REDUCED DAYLIGHT AND INVESTORS

Seasonal Affective Disorder (SAD) impacts Markets

Approximately 10% of Canadians along with people worldwide suffer mild or severe depression associated with

reduced daylight in autumn. This condition is termed seasonal affective disorder (SAD) and is classified as a major depressive disorder observed as close to the equator as India. The annual onset of SAD is felt by some SAD-sufferers as early as September, with fully two-thirds affected by the end of October. Symptoms include anxiety, periods of sadness, chronic fatigue, difficulty concentrating, lethargy, sleep disturbance, sugar and carbohydrate craving and associated weight gain, loss of interest in sex, and of course, clinical depression.

Studies in financial and non-financial settings document that depression leads to risk avoidance, or what psychologists call low tendency for “sensation seeking.” This literature finds that individuals who exhibit low risk tolerance in tests of sensation seeking show greater risk aversion in financial decisions, including the purchase of stocks and bonds. Together with two co-authors, Lisa Kramer (University of Toronto) and Maurice Levi (University of British Columbia), I have hypothesized that SAD influences financial markets through the impact of SAD-induced depression on the willingness of individuals to bear risk.

As the daylight diminishes in autumn, SAD-affected investors are expected to require higher returns on risky assets, and accept lower returns on risk-free assets. These investors are therefore expected to sell risky stocks, lowering equity prices, and to buy safe assets like government bonds, raising bond prices. Investors not suffering from SAD will be induced by these price movements to buy the risky stock and sell the safe assets. Since clinical evidence indicates that the onset of SAD is most common in late September/early October in the Northern Hemisphere, the greatest effect of declining stock prices relative to the normal trend should be occurring

in the early autumn. Conversely, safe assets like Canadian and U.S. government debt should see rising prices in the early autumn. Also, the pattern of returns in the Southern Hemisphere should be the opposite of that in the Northern Hemisphere, as are the seasons.

Lisa Kramer, Maurice Levi and I have documented exactly these effects on risky asset prices, studying stock market indices for the U.S., Sweden, Britain, Germany, Canada, New Zealand, Japan, Australia and South Africa in our 2003 *American Economic Review* article. In follow-up work we have documented the reverse cycle in U.S. Treasuries. In both studies we show that these impacts are economically large, amounting to hundreds of basis point returns to strategies such as moving money in September from equity holdings in Australia to equity holdings in Sweden and back to Australia in March.

We have also looked at the flow of funds between equity and bond mutual funds, finding a consistent seasonal pattern of in-flows to bond funds and out-flows from equity funds in autumn, reversing in the winter as days lengthen and SAD-affected individuals recover. The SAD-induced flows on mutual funds amount to billions of dollars a month over autumn and winter on North American markets. With co-authors Lisa Kramer and Ramon DeGennaro (University of Tennessee) I have shown evidence consistent with SAD impacting even inside spreads on Nasdaq-traded equities, remarkable because market specialists who are presumably more professional than the typical individual investor set these spreads.

Altogether, there is a striking empirical regularity across a broad collection of financial markets and assets (international equities, bonds, mutual fund flows, and bid-ask spreads) that suggests that SAD-influenced investors are impacting financial markets in an economically meaningful fashion. A careful money manager can expect to see annual cycles in the reward to take on risk, and it is hard to imagine that such a manager would ignore these regularities. ■