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Anomalies
The January Effect

Richard H. Thaler

"Discovery commences with the awareness of anomaly, i.e., with the recognition that nature has somehow violated the paradigm-induced expectations that govern normal science."

Thomas Kuhn

Why a Feature on Anomalies?

Consider the following problem. You are presented with four cards lying on the table before you. The cards appear as shown:

A, B, 2, 3

Your task is to turn over as few cards as possible to verify whether the following statement is true: *Every card with a vowel on one side has an even number on the other side.* You must decide in advance which cards you will examine. Try it yourself before reading further.

When I give this problem to my class, the typical ranking of the cards in terms of most to least often turned over is A, 2, 3, B. It is not surprising that nearly everyone correctly decides to turn over the A. Obviously, if that card does not have an even number on the other side the statement is false. However, the second most popular choice (the 2) is futile. While the existence of a vowel on the other side will yield an

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observation consistent with the hypothesis, turning the card over will neither prove the statement correct nor refute it.

Rather, to refute the statement, one must choose to turn over the 3, a far less common choice. As for the least popular choice, the B, that one must be flipped over as well, since a vowel might be lurking on the other side. (The problem, as stated here, did not specify that numbers are always on one side and letters on the other—although that implicit assumption is commonly made by solvers.) Two lessons emerge from this problem (based on Wason, 1968). First, people have a natural tendency to search for confirming rather than disconfirming evidence, as shown by the relative popularity of the 2 over the 3. This tendency is called the confirmation bias. Second, the confirmation bias can be accentuated when unwarranted assumptions make some kinds of disconfirming evidence seem unlikely, as illustrated by the unpopularity of turning over the B.

This feature will report successful searches for disconfirming evidence—economic anomalies. As suggested by Thomas Kuhn, an economic anomaly is a result inconsistent with the present economics paradigm. Economics is distinguished from other social sciences by the belief that most (all?) behavior can be explained by assuming that agents have stable, well-defined preferences and make rational choices consistent with those preferences in markets that (eventually) clear. An empirical result is anomalous if it is difficult to "rationalize," or if implausible assumptions are necessary to explain it within the paradigm. Of course, "difficult" and "implausible" are judgments, and others might disagree with my assessment. Therefore, I invite readers to submit *brief* explanations (within the paradigm or otherwise) for any of the anomalies I report. To be considered for publication, however, proposed explanations must be falsifiable, at least in principle. A reader who claims that an alleged anomaly is actually the rational response to taxes should be willing to make some prediction based on that hypothesis; for example, the anomaly will not be observed in a country with no taxes, or for non-taxed agents, or in time periods before the relevant tax existed. Someone offering an explanation based on transactions costs might suggest an experimental test in which the transactions costs could be eliminated, and should be willing to predict that the effect will disappear in that environment.

The future topics for this feature will come from as many fields of empirical economics as possible. Readers are invited to suggest topics by sending a note with some references to (or better yet, copies of) the relevant research. My address is: Richard Thaler, c/o *Journal of Economic Perspectives*, Johnson Graduate School of Management, Malott Hall, Cornell University, Ithaca, NY 14853.

Seasonal Movements in Security Prices I: The January Effect

Security markets are a good place to look for anomalies for several reasons. First, data on such markets abound: monthly price data for stocks listed on the New York Stock Exchange are available back to the 1920s. Second, security markets are thought

to be the most efficient of all markets. Anomalies here are difficult to blame on transactions costs or other market failures. Third, well-developed theories of security prices, such as the Capital Asset Pricing Model (CAPM), add some structure to potential tests. Nevertheless, anomalies were seldom found until recent years. In the last decade, however, researchers have reported that firms with low price-earnings ratios, small firms, firms that do not pay dividends, and firms that have lost much of their value in the past all earn returns higher than the CAPM predicts. This article focuses on seasonal patterns, an even more puzzling class of anomalies.

The efficient market hypothesis predicts that security prices follow a random walk; it should be impossible to predict future returns based on publicly available information. Specifically, it should be impossible to predict changes in stock prices based on past price behavior. The first attempts to test this hypothesis examined short-term serial correlations in stock prices; when no significant correlations were found, this evidence was judged consistent with a random walk. Recently, however, researchers have conducted a different type of test. In what proved to be a seminal paper, Rozeff and Kinney (1976) found seasonal patterns in an equal-weighted index of New York Stock Exchange prices over the period 1904–74. Specifically, the average monthly return in January was about 3.5 percent, while other months averaged about 0.5 percent. Over one-third of the annual returns occurred in January alone. Interestingly, the high returns in January are not observed in an index that is composed of only large firms, like the Dow Jones Industrial Average (see Lakonishok and Smidt, 1986). Since an equal-weighted index is a simple average of the prices of all firms listed on the NYSE, it gives small firms greater weight than their share of market value. Thus, finding a January effect only in an equal-weighted index suggests that it is primarily a small firm phenomenon. In an investigation of the small firm effect—small firms earn higher than expected returns (see Banz, 1981)—Donald Keim (1983) found that the excess returns to small firms were temporally concentrated. Half of the excess returns came in January, and half of the January returns came in the first five trading days. Marc Reinganum (1983) clarified the situation further by pointing out that the January returns were higher for small firms whose prices had declined the previous year, and the excess returns in the first five days were not observed for small "winners."

Reinganum's research was motivated by a possible explanation of the January effect based on tax-loss selling. The argument is that the prices of firms which have previously declined in price will decline further in the latter months of the year as owners sell off the shares to realize capital losses. Then, after the new year, prices bounce up in the absence of selling pressure. Whatever the merits of this argument, it must be stressed that it is not based on rational behavior by all market participants. In fact, Richard Roll (1983, p. 20) calls the argument "patently absurd." He points out that even if some investors were motivated by taxes to trade in this manner, other investors could buy in anticipation of the excess returns in January. While Roll describes the hypothesis with obvious scorn, he (like Reinganum) finds some evidence consistent with it. He reports that stocks with negative returns over the previous year have higher returns in January.

To investigate the tax-loss-selling hypothesis, and also to see whether the January returns might be merely a statistical artifact, several researchers have examined seasonal patterns in other countries. Gultekin and Gultekin (1983) looked at the seasonal pattern in sixteen countries and found that January returns were exceptionally large in 15 of them. In fact, the effect in the United States is smaller than in many other countries. In Belgium, the Netherlands, and Italy, the January return exceeds the average return for the whole year!

The international evidence also suggests that while taxes seem relevant to the January effect, they are not the entire explanation. First, the January effect is observed in Japan where no capital gains tax or loss offsets exist (Kato and Schallheim, 1985).[1] Second, Canada had no capital gains tax before 1972, yet did have a January effect before 1972 (Berges, McConnell, and Schlarbaum, 1984). Third, Great Britain and Australia have January effects, even though their tax years begin on April 1 and July 1, respectively.[2] (Still, returns are high in April in Great Britain, and in July in Australia, so taxes do seem to be part of the story.)

January is special in some other surprising ways. De Bondt and Thaler (1985) have found that the firms which have been the biggest winners or losers over a five-year period subsequently have excess returns in the opposite direction. That is, the previous big winners have negative excess returns, and the losers positive excess returns. The excess returns, especially for the losers, are concentrated in January.

Tinic and West (1984) have reevaluated the CAPM to see whether risk premiums have seasonal patterns, too. They made the startling discovery that the observed return to riskier (higher β) stocks occurs exclusively in January. In all other months, and for the other months together, riskier stocks do not earn higher returns. The CAPM is exclusively a January phenomenon! Another surprising seasonal effect comes in the most recent contribution to a series of articles investigating whether stocks that pay high dividends earn higher returns (to compensate stockholders for having to pay taxes on the dividends). Keim (1986a) reports two anomalous results. Among those firms that pay positive dividends, returns do seem to increase with the dividend yield. However, the highest returns are associated with the firms that pay no dividends. Also, the excess returns in both the high dividend and zero dividend groups are concentrated in January.

A natural question to ask is whether these anomalies imply profitable trading strategies. This question turns out to be difficult to answer. In the case of small firms, small trading volume and large bid-ask spreads militate against big profit opportunities (see, for example, Lakonishok and Smidt, 1984). None of the anomalies seem to offer enormous opportunities for private investors (with normal transactions costs). This fact does not render the anomalies uninteresting. Some traders do face zero transactions costs, and investors who now buy in January could buy in December

[1]It is also intriguing to note that the good months in Japan are December–January and June–July. These periods coincide with the large semiannual bonuses most workers receive.

[2]Some authors have pointed out that the January effects in countries with no capital gains tax or other tax years could be explained by trading by non-citizens who are subject to January based taxes. However, little evidence supports this claim. In the case of Japan, studies have found little correlation between stock prices in Japan and the U.S., a fact which seems to weaken the argument considerably.

instead. Furthermore, even if no one could make money as a result of the seasonal anomalies we should be interested in learning why they occur.

Perhaps a fitting conclusion to this first "Anomalies" is the title Richard Roll used for his article on this subject: "Vas ist das?"[3]

Next issue: Seasonal Movements in Security Prices II: The Weekend Effect, the Holiday Effect, and more.

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[3]I have benefited from reading Donald Keim's recent (1986b) review of empirical research on equity returns. I also would like to thank Robert Haugen and Josef Lakonishok for letting me read a draft of their forthcoming book on the January effect (Haugen and Lakonishok, 1987). It is both informative and entertaining, and would be a good place to start further reading on this topic.

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