A Theoretical Analysis of Real Estate Returns: Discussion
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allocations. Moreover, a meaningful role for real estate is not simply a product of recent years experience.

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DISCUSSION

MEIR STATMAN*: Fogler et al. [5] address a puzzle. Returns on real estate in the post-World War II period have been high relative to returns on other assets such as stocks and bonds. Yet the risk of real estate, measured by the variance of its own returns or by the covariance of its returns with those of other assets, has been low.

Fogler et al. discuss two possible solutions for the puzzle. The first is that high unexpected rates of inflation lead to high realized returns on assets which are highly correlated with inflation, such as real estate. The second solution for the puzzle is more intriguing.

Fogler et al. suggest the possibility that the high realized returns on real estate are the result of *changing investor perceptions* about the degree of sensitivity of real estate returns to inflation (i.e., the inflation beta of real estate). If true, it is possible that investors acting on these changed perceptions bid up real estate prices and returns. As noted by Fogler et al., the empirical tests are not strong enough to lead us to favor one explanation over the other. Nevertheless, one finding is that real estate inflation betas during 1978–1983 were relatively high.

While Fogler et al. tests are inconclusive, their hypotheses have considerable merit. The idea that perceptions have something to do with market prices is common among market practitioners, but it is rarely discussed in the academic literature. However, no good grounds exist for excluding the effect of perceptions on prices from financial models.

Why do asset prices change? Do asset prices change only when new information arrives, or is it possible that factors such as cognitive biases, changing perceptions, or changing fashions play a role in determining asset prices? The mere finding that investors cannot "beat the market" does not support the view that prices change only when new information arrives, any more than it supports the view that prices are determined by random movements or changing fashions. Moreover, there is evidence that prices change when no new information arrives.

For example, Roll [9] found that prices of orange juice futures display considerable volatility, yet no information factor (e.g., weather, substitute product prices, export demand) was identified that could explain more than a small part of the daily price movements. Earlier, Shiller [12, 13] found that bond price variability is too great to be explained by rational anticipations of future interest

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rates, and stock price variability is too great to be explained by rational expectations about changes in dividends.[1]

French and Roll [6] investigated the hypothesis that trading itself introduces mispricing into stock prices as investors overreact to one another's trades. They found that, on average, 4 to 12 percent of daily return variance is introduced by mispricing. De Bondt and Thaler [3] found a reversal phenomenon. Stocks that yielded very high returns in one period yielded very low returns in the subsequent period. They attribute this phenomenon to a tendency by investors to overreact to new information. Rosenberg et al. [10] reported a similar return reversal phenomenon. They showed that abnormal returns could be obtained by buying stocks that had negative specific returns in the prior month and selling stocks that had positive specific returns in the prior month.[2]

There are two possible explanations for the cracks in the hypothesis that changes in asset prices occur only when new information arrives. The first is that people use heuristics to form cognitive judgments. Tversky and Kahneman [16, 17] and others have shown that while these heuristics are useful, they can also lead to serious biases in judgment. The second, suggested by Shiller [14] and Statman [13], is that perceptions and fashions affect asset selection in the same way that they affect the selection of food, clothing, health, or politics. For example, Shiller notes that the health benefits of regular excercise were well known decades ago, yet they did not catch on until the later 1970's. It seems that changing fashions made exercise popular, not information about its usefulness. It is well known that regular exercise is one characteristic of the so-called Yuppies [1]. Another characteristic of Yuppies is that "they all have enterprises on the side, typically a little something in real estate." ([1] p. 17). It is possible that the high returns on real estate during 1978–1983, documented by Fogler et al., are explained by these changes in fashions or perceptions?

While one can hardly claim that the evidence proves the conjecture, its mere validity as a hypothesis will be denied by those who claim that changes in demand and supply that are motivated by fashions or irrational reasons would not affect asset prices. Their argument is that the effects of irrational economic agents on prices would be neutralized by actions of rational economic agents. As noted by Arrow [2]:

> Any argument seeking to establish the presence of irrational economic behavior always meets a standard counterargument: if most agents are irrational, then a rational individual can make a lot of money; eventually, therefore, the rational individuals will take over all the wealth. Hence, rational behavior will be the effective norm. There are two rebuttals to the counterargument: (1) Not all arbitrage possibilities exist ... (2) More important, if everyone else is "irrational," it by no means follows that one can make money by being rational, at least in the short run. With discounting, even eventual success may not be worthwhile. (p. 7)

[1] However, the variance bounds tests have been criticized on a number of grounds. See, e.g., Flavin [4], Kleidon [7], and Marsh and Merton [8].

[2] The notion that people overreact to information is widespread. For example, the tendency to overreact is the rationale usually given for the imposition of limits on the allowed price movements of futures contracts.

Finance is full of puzzles and it seems as if one is added every day. It is clear, as stated by Schwert [11], that we need new theory. However, unlike Schwert, I see no reason why this new theory must be consistent with rational maximizing behavior on the part of all actors in the model. We should develop descriptive (positive) theories. If evidence shows that models allowing actors to display cognitive biases and changing perceptions explain the world of finance better than models allowing only rational behavior, so be it.

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