In the paper *Hedge Funds and the Technology Bubble*, Brunnermeier and Nagal study the behavior of sophisticated investors during the 1998 – 2000 technology bubble. Under the efficient market hypothesis, security prices during the tech bubble should have, on average, correctly reflected their underlying value. Further, rational speculative activity should have eliminated most risk-less arbitrage opportunities and corrected for any miss-pricing. Notably, this was not the case. Asset prices diverged widely from their presumed fundamental value and over-valuation was so large that the average future earnings growth rate across all firms exceeded the fastest growth rate of individual firms from previous years by several orders of magnitude. As defined by Richard Thaler, prices exceeded a rational valuation of the securities being traded[[1]](#footnote-1). As such, Brunnermeier and Nagal propose the following question: why would presumably sophisticated rational investors hold market positions in ostensibly overpriced securities?

To address the problem, the authors form a working hypothesis and propose that various factors such as noise trader risk, agency problems, and synchronization risk may have constrained investors. These limitations may have allowed the mispricing to persist. Further, if actors accepted that prices indeed exceeded a rational valuation, it may have been optimal to ride the bubble for a prolonged period of time before exiting upon indications of collapse. While such activity may have destabilizing and likely exacerbated the bubble, these sophisticated investors would be acting as rational arbitrageurs.

In order to test their hypothesis, the authors examined SEC 13F holdings data. First, monthly returns from candidate firms with high price-to-sales ratios where selected between 1998 and 2000; a high price-to-sales ratio indicating over-valuation. The authors found that not only did hedge funds ride the technology bubble, but they titled heavily towards tech stocks so as to be over weighted by more than 31% by March of 2000. Further, hedge funds kept persistent long positions and did not attack the technology bubble; indeed, until late 1999 most trading supported and exacerbated the bubble. However, whereas individual and perhaps unsophisticated investors where driven by *irrational exuberance*[[2]](#footnote-2) sophisticated investors—hedge funds in particular, were able to anticipate individual security price peaks and skillfully capture return upturn while avoiding much price downturn.

It would conclude that hedge fund managers were able to reliably predict sentiment: anticipation of continuous bubble growth and predictable feedback trader demand.[[3]](#footnote-3) Further, after forming a market return portfolio and a technology stock portfolio, the authors found that during the 1998 – 2000 bubble period, hedge fund managers performed better than average investors—finding highly significant and large regression coefficients. The authors note that this rather unusual nature of the out-performance is underscored by the fact that none of the abnormal returns for other NASDAQ stocks come close to the out performance figures in the technology segment.3 Therefore, the authors surmise, riding bubbles under the expectation that one can robustly forecast their eventual collapse and devaluation is a favorable investment opportunity. That is, to a certain extent, the sentiment of unsophisticated and/or *irrationally euphoric* investors predicts the formation of a bubble. It follows that although it may appear irrational, the potential gains from riding a bubble can be a rational trading strategy.

By the authors own admission, the size of the dataset limits the analysis to mainly descriptive statistics. That is, the authors know ex ante that (A) the technology bubble existed during 1998 – 2000 and (B) that the bubble eventually pops in the late 1990s. From a statistical perspective, Fama and others note that such a large deviation in prices could, and would, be expected given a great enough time period—a time frame of which we currently don’t have enough data to either prove or disprove the assertion. During the time of the tech bubble, no-one really knew whether or not a bubble existed; the risk of over or under betting the market price of securities was highly speculative in either direction. To add, while it’s easy to look back at historical data and proclaim an evident pattern in price levels, at the time of the bubble it would have been incredibly difficult to assess when the bubble either started and/or ended. Fama notes, “For bubbles, I want a systematic way of identifying them. It’s a simple proposition. You have to be able to predict there is some end to it. All the tests people have done trying to do that don’t work. Statistically, people have not come up with any ways of identifying bubbles.” Additionally, further work[[4]](#footnote-4) by Veronesi and Pastor show that, under certain assumptions, security prices were correctly priced given the uncertainty of future returns.

It would appear that Fama, Veronesi and Pastor’s viewpoints are diametrically opposed to Brunnermeier and Nagal’s—who argue that their findings cast doubt on the presumption that it is always optimal for rational speculators to attack bubbles. Indeed, in order for the assumption to hold, one must know at that present time that one is in a bubble.

It’s certainty plausible that hedge fund managers were simply employing a glorified momentum strategy—buy high and sell higher. To the extent to which their intuition or technical models indicated that prices were falling too rapidly, managers could have ostensibly been selling their positions without veritably knowing that they were in a bubble—let alone riding and exiting one.

1. Are Markets Efficient? Interview Eugene Fama and Richard Thaler http://review.chicagobooth.edu/economics/2016/video/are-markets-efficient [↑](#footnote-ref-1)
2. Irrational Exuberance: Robert J. Shiller [↑](#footnote-ref-2)
3. Hedge Funds and the Technology Bubble: Marcus K. Brunnermeier and Stefan Nagel [↑](#footnote-ref-3)
4. Was There a NASDAQ Bubble in the Late 1990s? Pastor and Veronesi [↑](#footnote-ref-4)