Efficient Market Hypothesis And Behavioral Finance – Is A Compromise In Sight?

By Nikolai Chuvakhin

Legend has it that once upon the time two economists were walking together when one of them saw something that struck his mind. "Look," he exclaimed, "here's a great research topic!" "Nonsense," the other one said, "If it were, someone would have written a paper on it by now."

For a long time this attitude governed the view of economists toward the stock market. Economists simply believed that the stock market was not a proper subject for serious study. Indeed, most of the pre-1960 research on security prices was actually done by statisticians.

The Pre-History: Statistical Research

Most of the early statistical research of the stock market concentrated around the same question: are security prices serially correlated? Do security prices follow a random walk? Are prices on any given day as likely to go up as they are to go down?

A number of studies concluded that successive daily changes in stock prices are mostly independent. There seemed to be no pattern that could predict the future direction of price movements.

One of the most interesting (and currently relevant) research projects of that earlier era was undertaken by Harry Roberts, a statistician at the University of Chicago. In his paper, "Stock Market 'Patterns' and Financial Analysis," published in the *Journal of Finance* in 1959, Roberts wrote:

> *If the stock market behaved like a mechanically imperfect roulette wheel, people would notice the imperfections and, by acting on them, remove them. This rationale is appealing, if for no other reason than its value as counterweight to the popular view of stock market "irrationality," but it is obviously incomplete.*

Roberts generated a series of random numbers and plotted the results to see whether any patterns that were known to technical analysts would be visible. Figure 1 provides an example of Roberts' plot:

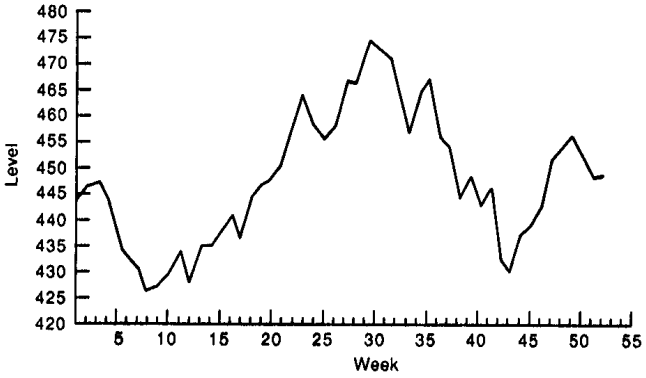

Figure 1. Simulated stock price path

Those somewhat acquainted with technical patterns might recognize a familiar head and shoulders formation, which technical analysts believe to be one of the surest indicators of a trend reversal.

At this point, the reader may take pause. Are these stock price patterns of value or not? If they work even on decidedly random series, isn't there a contradiction?

Maybe not. Consider a hypothetical example of a stock price path in Figure 2. If tomorrow the price of this stock goes down, there will be a clearly visible head and shoulders pattern, which should signal a trend reversal. If, however, the price goes up, the resulting formation will look more like a pennant pattern, which, according to market technicians, signals the renewal of the trend. In other words, technical patterns are easy to see only when it is too late to act on them.

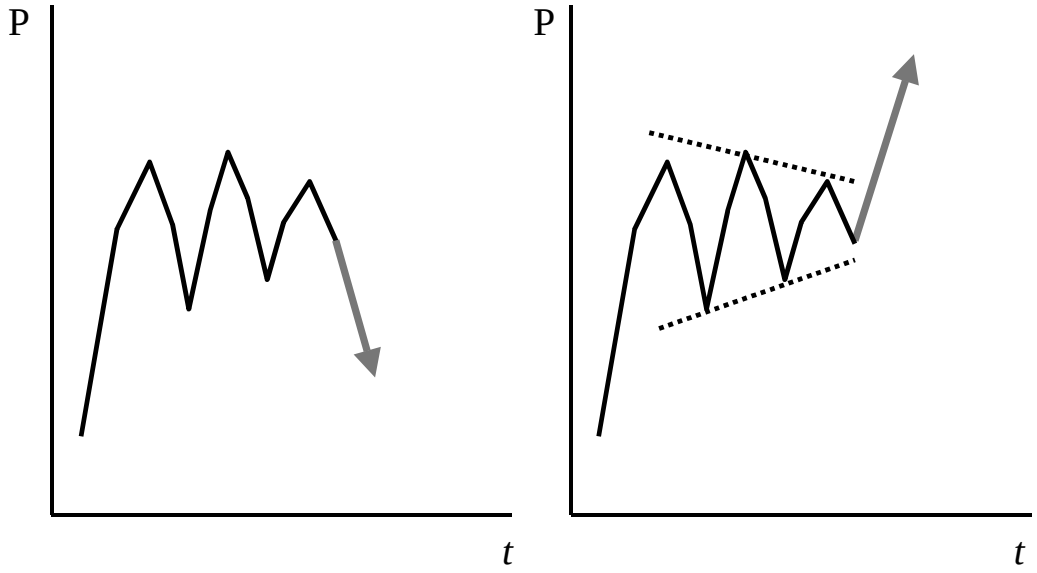

Figure 2. Hypothetical example of technical patterns formation

Today, anyone can replicate Roberts' results using a common spreadsheet program. In his popular textbook, *Financial Modeling*, Simon Benninga of the Wharton Business School devotes an entire chapter to simulating stock price paths using Microsoft Excel.

Returning to Harry Roberts, his paper turned out to be almost prophetic in one major respect. He wrote:

> *Perhaps the traditional academic suspicion about the stock market as an object of scholarly research will be overcome.*

As we shall see during the rest of this presentation, Roberts was right.

The Pre-History: CRSP

Another enabling factor for the soon-to-follow boom in stock market research was provided by an initially small outfit based at the University of Chicago, the Center for Research in Securities Prices (CRSP). CRSP was established by James H. Lorie in 1960 and provided comprehensive data on all stocks traded on the New York Stock Exchange since 1926.

From day one, CRSP data were available in machine-readable form, a rare and pleasant occurrence to anyone involved in economic research at the time. Also important is the fact that CRSP data contained a negligibly small number of errors. Overall, CRSP database was one of the richest data sets available.

Everything was ready for a revolution. Indeed, the revolution was soon to begin.

The Origin of the Efficient Market Hypothesis

The introduction of the term "efficient market" is usually attributed to Eugene Fama. In his 1965 paper, "Random Walks in Stock Market Prices," published in the *Financial Analysts Journal*, Fama cites, among other things, his earlier study of serial correlations in daily price changes of 30 stocks that comprise the Dow Jones Industrial Average index ("The Behavior of Stock Market Prices"). He concluded that daily changes had a very small positive correlation, approaching zero for practical purposes.

The stock market seemed to work in a way that allowed all information reflected in past prices to be incorporated into the current price. In other words, the market efficiently processed the information contained in past prices. Fama defined an efficient market as:

> *a market where there are large numbers of rational profit maximizers actively competing, with each trying to predict future market values of individual securities, and where important current information is almost freely available to all participants.*

Note that this description is very similar to that of a perfectly competitive market out of a microeconomics textbook. And in a perfectly competitive market, every seller earns a normal profit, i.e., the amount of profit sufficient to stay in business, but insufficient to attract a competitor. If we assume that this is true of the stock market, it follows that any new information that becomes available to the market will be very quickly reflected in the prices. Otherwise, there will be opportunities for abnormal returns. In Fama's own words,

> *In an efficient market, on the average, competition will cause the full effects of new information on intrinsic values to be reflected "instantaneously" in actual prices.*

The efficient market hypothesis has been formulated. The time has come to test it.

Tests of Market Efficiency in the 1960s

A number of different approaches were used to test the efficient market hypothesis. One of the most obvious ones was to do more studies on serial correlation of security prices. A variation of this approach would be to test various trading strategies recommended by technical analysts to see if they have any investment value. Both have been tried, and invariably came back with mostly negative results.

An interesting area of research dealt with the nature of return distributions. There are some clearly visible asymmetries in stock returns. If we look at the ten biggest one-day movements in S&P 500 index since 1947, nine of them would be declines. The market crash of October 1987 resulted in a negative return that was 20 standard deviations away from the mean.

It turned out that stock returns are not normally distributed. They follow some sort of distribution, but, to our knowledge, no one has figured out what kind of distribution it is. On several occasions, stable Paretian distribution and Student *t*-distribution were found to be better approximations than the normal distribution.

Needless to say, this poses a huge methodological problem for researchers who, for lack of a better assumption, are still assuming normal distributions for drawing statistical inferences.

An important breakthrough in testing market efficiency came with the advent of the "event study" methodology. In an event study, researchers take a sample of similar events that occurred in different companies at different times and determine how, on average, this event impacted the stock price.

And what would a researcher expect to see as the outcome of an event study? Assuming that we are studying favorable events, the outcome would depend on whether or not the event is anticipated by the market and, of course, on whether or not the market is efficient. In all cases, we would expect the stock price to go up. The question is, when?

Consider an unanticipated event first. If the market were efficient, the stock price would adjust upward very quickly. If not efficient, it will drift upward for some time following the event (see Figure 3).

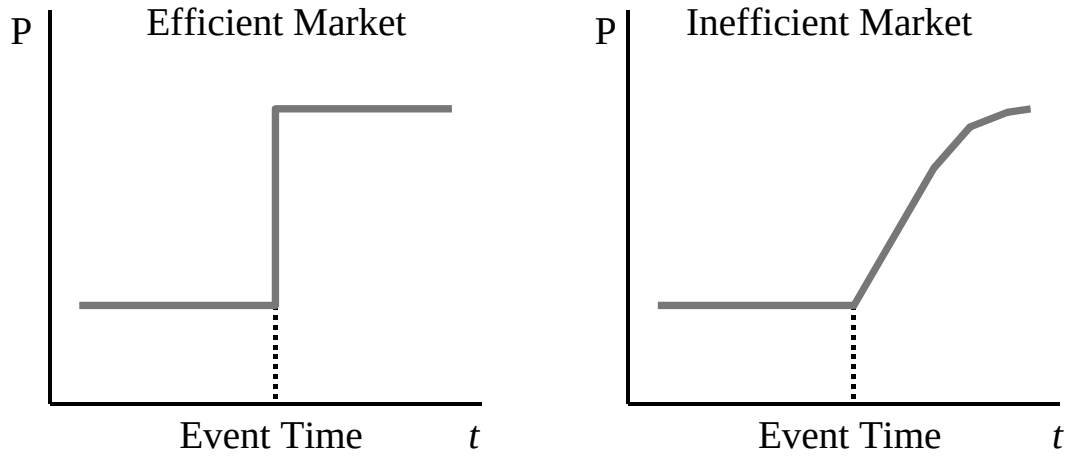

Figure 3. Market reaction to an unanticipated favorable event

If the event were anticipated, the price would drift upward for some time before the event, and, in an efficient market, likely stabilize on the event date (see Figure 4).

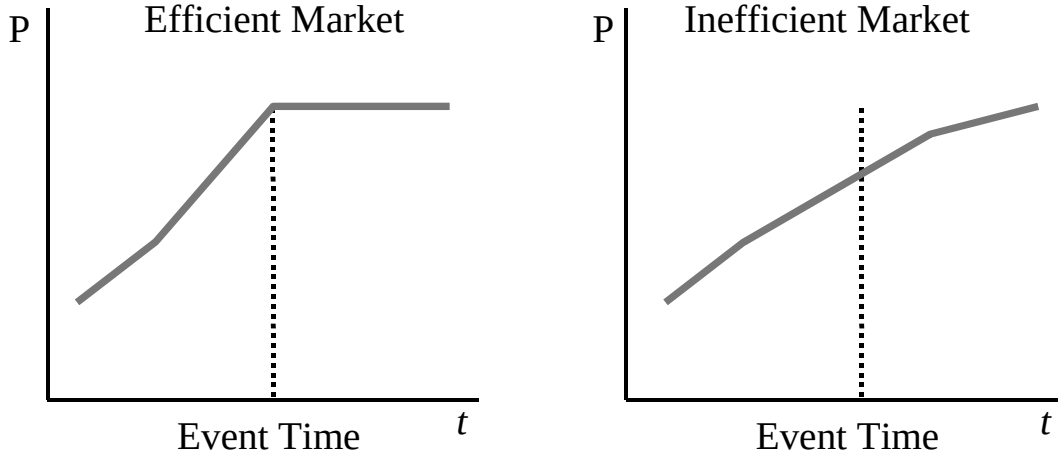

Figure 4. Market reaction to an anticipated favorable event

The first event study was designed and conducted by Eugene Fama, Lawrence Fisher, Michael Jensen, and Richard Roll. Their article, "The Adjustment of Stock Prices to New Information," was published in the *International Economic Review* in 1969 and quickly earned itself a nickname, "the FFJR study."

FFJR studied the stock market reaction to announcements of stock splits. Typically, stock splits are believed to be seemingly inexplicable good news for investors. One possible reason was reported by FFJR themselves: they found that 72% of firms in their sample announced above-average dividend increases in the year after the split. Stock splits seemed to "signal" future dividend increases. (Actually, the term "signaling" was proposed in the early 1970s by Michael Spence, who won the 2001 Nobel prize for, among other things, his research on signaling in labor markets.)

What FFJR found is that, on average, stock prices around the date of the split behaved as shown in Figure 5.

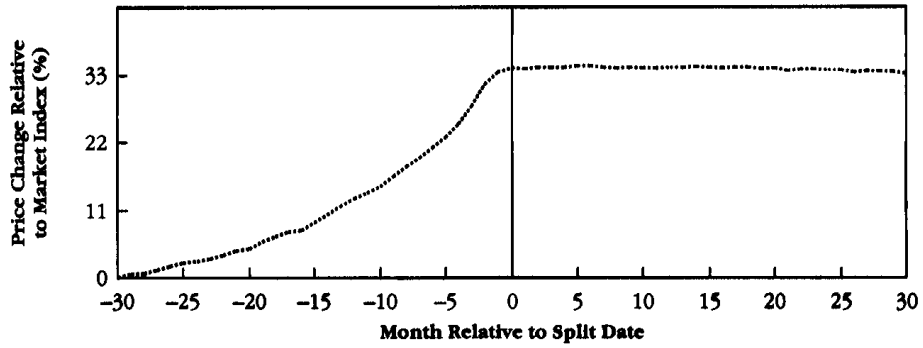

Figure 5. Averaged stock price performance around the split date

According to FFJR findings, the market begins to anticipate a stock split more than two years before it actually happens and figures out the consequences of the split the day it is announced.

The event study techniques were further refined by other researchers. Some of the research designs are quite clever. A bizarre example appeared in a 1985 article in the *Journal of Accounting and Economics* by Johnson, Magee, Nagarajan, and Newman. The title of the article, "An Analysis of the Stock Price Reaction to Sudden Executive Deaths," is self-explaining. The authors found that unexpected CEO deaths are associated with stock price decreases. However, in cases when the CEO was the company founder, the stock market tends to react by a price increase, begging the inference that the ability to create a business is different from the ability to run one.

The efficacy of professional investors is another enduring question. Can they, on average, provide better investment performance? The research here was focused primarily on mutual funds. Regrettably, most professional money managers are not able to provide superior returns.

By 1975, the preponderance of evidence argued that markets were efficient. Statistical studies showed that technical analysis did not add value (consistent with the weak form of market efficiency). Event studies found that the market quickly reacts to new information (consistent with the semi-strong form of market efficiency). And studies of professional investors' performance made a strong case for the strong form market efficiency.

Tests of Market Efficiency after 1975

As more and more researchers tested the efficient market hypothesis, some rather controversial evidence began to appear.

In 1976, Rozeff and Kinney published their article on stock market seasonality. They found that January stock returns were higher than in any other month. In 1981, Gibbons and Hess reported "the Monday effect" – stock prices tended to go down on Mondays. Both of these findings were clearly inconsistent with the weak-form market efficiency.

Interestingly enough, Gibbons and Hess noticed that the Monday effect seemed to decrease over time (see Figure 6).

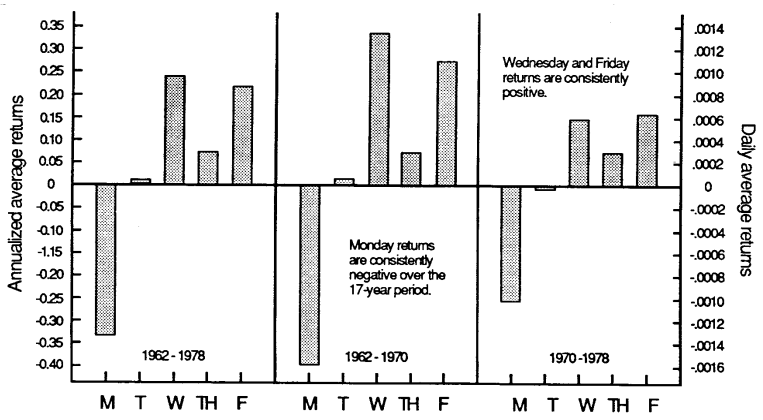

Figure 6. The Monday effect

In the nine-year period of 1962-1970, the S&P 500 returned about -0.16% on an average Monday. In the following nine-year period, 1970-1978, the S&P 500 would only drop by 0.10% on average. It appears that the effect has been known to some market participants for a while, and they were taking advantage of this private information, which, in turn, caused their gains to decrease over time.

A growing body of research indicated that profitable selection rules could be based on publicly available information. In particular, stocks with low price-earnings ratio and high dividend yield outperformed the market. And, while small capitalization stocks have a greater risk than large-cap stocks, the return premium seemed to be too large for the degree of additional risk taken.

The discovery of these and other "market anomalies" prompted the editorial board of the *Journal of Financial Economics* to publish a special issue in June 1978 on a dozen of those market anomalies.

An unexpected blow to the efficient market hypothesis came from academic economists. In 1980, Sanford Grossman and Joseph Stiglitz published their article "On the Impossibility of Informationally Efficient Markets" in the *American Economic Review*. They argued that if all relevant information were reflected in market prices, market agents would have no incentive to acquire the information on which prices are based. This line of reasoning came to be known as Grossman-Stiglitz paradox and, along with his other contributions, earned Joseph Stiglitz his Nobel prize in 2001.

The empirical research, of course, did not stop there.

In 1981, Henry Oppenheimer tested stock selection criteria developed by Benjamin Graham. Most of us probably know Ben Graham as the author of the classic, *Security Analysis*, but he also wrote another, somewhat less technical, book, called *The Intelligent Investor*. In each new edition of the book, Graham updated his investment advice to his readers, whom he called "defensive investors". Oppenheimer back-tested this advice as if he purchased every edition of *The Intelligent Investor* and acted on it after reading it. It turned out that Graham's advice did have significant value. Moreover, it actually had more value than Graham himself claimed.

In 1982, Rendelman, Jones, and Latané published their article, "Empirical Anomalies Based on Unexpected Earnings and the Importance of the Risk Adjustments," in the *Journal of Financial Economics*. They studied earnings surprises and their effect on the stock price. They divided their sample into ten categories (deciles in statistical parlance) according to how positive or negative the earnings surprise was. Then they calculated averaged price paths for stocks in each decile. Figure 7 presents a summary of their findings.

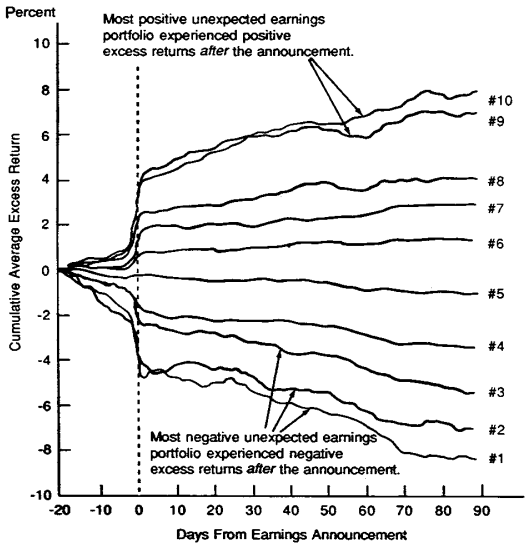

Figure 7. Stock price paths around earnings announcement by decile

While the market did react to earnings surprises quickly, the prices also drifted in the direction of the earnings surprise following the announcement. In other words, the market commonly underreacts to the quarterly earnings announcements. This suggests the validity of an "earnings momentum" strategy (buying stocks that just had a positive earnings surprise). A number of later studies produced results consistent with this thinking.

However, in a somewhat puzzling twist, there were studies which suggested that the stock market actually overreacts to certain announcements. In 1981, Robert Shiller published his article, "Do Stock Prices Move Too Much to Be Justified by Subsequent Changes in Dividends?" in the *American Economic Review* and concluded that they do. This phenomenon came to be known as "excess volatility".

In 1985, Werner De Bondt and Richard Thaler published their article, "Does the Stock Market Overreact?" in the *Journal of Finance*. Their conclusion was that the stock market tends to overreact to long series of bad news.

So by 1985, there were enough anomalies discovered to seriously doubt the validity of the efficient market hypothesis.

Reconciling the Theory and the Reality

This is a good point at which to consider the efficient market hypothesis and identify those assumptions that may be inconsistent with reality as we know it.

First of all, as ironic as it sounds, there is no way to test market efficiency per se. We can only test a joint hypothesis stating that, first, the market is efficient in equating asset prices with their intrinsic values, and, second, we know what the intrinsic values are; i.e., we have a perfect asset pricing model. Whenever an anomaly is found, we don't know (and have no way of knowing) which part of this joint hypothesis did not work.

Returning to Fama's definition of an efficient market, he assumes that important current information is almost freely available to all participants. This appears to be an accurate assumption; however, both the processing of this information and the subsequent action have associated costs. An institutional investor must hire security analysts and portfolio managers. Even an individual investor faces an opportunity cost with every portfolio evaluation. Both face transactional costs; large portfolios, in addition, may be subject to additional costs caused by market impact.

The transactional cost considerations prompted Michael Jensen to argue that an efficient market should adjust prices within limits imposed by the cost of trading. In his 1978 paper, "Some Anomalous Evidence Regarding Market Efficiency," published in the *Journal of Financial Economics*, he insisted that if, for example, transactional costs are 1%, an abnormal return of 1% must be considered within the bounds of efficiency. Indeed, if inefficiency cannot be exploited for profit net of costs, is the market really inefficient? This, of course, begs a question: what is the level of transactional costs at which we can no longer call a market efficient in spite of its being within the bounds of efficiency?

There may also be some effects caused by the way security prices are reported (market microstructure effects, in the financial economics lingo). A typical research assumption has been that trades can be executed at the closing price as recorded by a data provider such as CRSP. However, the average NYSE-AMEX stock has a quoted bid-ask spread of about 3%. For NYSE-AMEX stocks priced under $5, the average spread is about 6%. In addition, sometimes it is impossible to execute at quoted spreads because of illiquidity or market impact.

In fact, Donald Keim used precisely this argument to explain "the January effect." In his 1989 paper, "Trading Patterns, Bid-Ask Spreads, and Estimated Security Returns," published in the *Journal of Financial Economics*, he reported that stocks tend to close near the bid in late December, but close prices move toward the ask in early January (although we still have to come up with the explanation of why it happens).

Also, there is a short-selling issue. In an efficient market, short sales are unrestricted. In reality, 70% of mutual funds state in their prospectus that they will never engage in a short sale. Interestingly enough, recent empirical evidence seems to suggest that, while undervalued investments are hard to come by, overvalued ones are much more common. For example, a 1999 article by Mark Finn, Russell Fuller, and John Kling, "Equity Mispricing: It's Mostly on the Short Side," in the *Financial Analysts Journal* concludes that in 1983-1998 overvalued large-cap U.S. stocks tended to be overpriced by as much as four times the amount of underpricing observed in undervalued large-cap U.S. stocks.

Finally, there is the unavoidable issue of investor heterogeneity. Investors are not identical. Even if they have precisely the same information available to them, they are likely to interpret it differently. More importantly, they tend to act on it differently. One obvious example is tax status. Tax-exempt, tax-deferred, and taxable investors acting rationally will often choose different courses of action when presented with the same problem. Liquidity needs can also play a role.

Speaking more broadly, is Fama-style rational profit maximizing the only possible model of investor behavior? Are there other models? This, of course, leads us straight into the brave new world of behavioral finance.

An Alternative Behavioral Model?

Since the early 1980s, there has been a movement toward incorporating more behavioral science into finance. The proponents of behavioral finance cite several key areas where the reality seems to be most at odds with the efficient market hypothesis.

One is the excess volatility problem that we discussed above. Price movements seem to be much greater than an efficient market would allow. A related puzzle is that of trading volume. If everyone knows that everyone (including themself) is rational, then every trader might wonder what information the seller has that the buyer doesn't, and vice versa. Figuring out exactly how little trading should be occurring under the efficient market hypothesis is difficult, because people have liquidity and rebalancing needs, but the proponents of behavioral finance believe it is safe to say that a billion or so shares a day on NYSE alone is a little more than one should expect in an efficient market.

Next is the great dividend puzzle. In a perfect world according to Modigliani and Miller, investors should be indifferent between dividends and capital gains. In the real world, because of the structure of the U.S. tax system, investors should prefer capital gains to dividends, and companies should prefer share repurchases to dividends. At the same time, most large companies do pay dividends. In addition, stock prices tend to rise when dividends are increased or initiated. The current literature treats dividends as yet another instance of signaling—companies that increase or initiate dividends send a signal of their financial health to the investors.

Another puzzle is that of the equity premium. Historically, this benefit has been much greater than can be explained by risk alone. (To the defense of the efficient market hypothesis, the equity premium implied in dividend yields tends to be significantly lower.)

Finally, it seems that future returns can, at least partially, be predicted on the basis of various historic measures such as price-earnings and price-to-book ratios, earnings surprises, dividend changes, or share repurchases.

However, in spite of all these irregularities, real-world portfolio managers are still having a hard time trying to beat the market. Most of the studies of mutual funds and pension fund performance still show that, on average, active managers do no better than the market. Moreover, good performance this year consistently fails to predict good performance next year. With this in mind, let's examine the case for behavioral finance.

First of all, what is behavioral finance? In short, it postulates that investors have cognitive biases. What is a cognitive bias? Simply put, it is an imperfection in human perception of reality. (Have you ever noticed how much bigger the moon looks when it is just above the horizon compared to when it is high?) Here are a few of the most common cognitive biases in finance.

Mental accounting. It seems that the majority of people perceive a dividend dollar differently from a capital gains dollar. Dividends are perceived as an addition to disposable income; capital gains usually are not.

Biased expectations. People tend to be overconfident in their predictions of the future. If security analysts believe with an 80% confidence that a certain stock will go up, they are right about 40% of the time. Between 1973 and 1990, earnings forecast errors have been anywhere between 25% and 65% of actual earnings.

Reference dependence. Investment decisions seem to be affected by an investor's reference point. If a certain stock was once trading for $20, then dropped to $5 and finally recovered to $10, the investor's propensity to increase holdings of this stock will depend on whether the previous purchase was made at $20 or $5.

Representativeness heuristic. In cognitive psychology this term means simply that people tend to judge "Event A" to be more probable than "Event B" when A appears more representative than B. In finance, the most common instance of representativeness heuristic is that investors mistake good companies for good stocks. Good companies are well-known and in most cases fairly valued. Their stocks, therefore, may not have a significant upside potential.

One of the most peculiar manifestations of cognitive biases in finance is the reluctance to realize losses. Investors seem to have a problem admitting to themselves that they have made a mistake and avoid selling securities at a loss, even though such sale has some tax incentives.

Now, what are the implications of behavioral finance for the markets? In his 1999 article, "The End of Behavioral Finance," published in the *Financial Analysts Journal*, Richard Thaler offers this simple model:

> *Suppose a market has two kinds of investors: rational investors (rationals), who behave like agents in economics textbooks, and quasi-rational investors (quasi's), people who are trying to make good investment decisions but make predictable mistakes. Suppose also that two assets in this market, X and Y, are objectively worth the same amount but cannot be transformed from one into the other. Finally, assume that the quasi's think X is worth more than Y, an opinion that could change (quasi's often change their minds) while rationals know that X and Y are worth the same. What conditions are necessary to assure that the prices of X and Y will be the same, as they would be in a world with only rational investors?*
>
> *This question is complex, but some of the essential conditions are the following. First, in dollar-weighted terms, such a market cannot have too many quasi's (in order for the rational investor to be marginal). Second, the market must allow costless short selling (so that if prices get too high, the rationals can drive them down). Third, only rational investors can sell short; otherwise, the quasi's will short Y when the two prices are the same because they believe X is worth more than Y. Fourth, at some date T, the true relationship between X and Y must become clear to all investors. Fifth, the rationals must have long horizons, long enough to include date T. These conditions are tough to meet.*

Thaler seems to suggest that the belief by quasi-rational investors that certain assets are undervalued may lead to an asset bubble, which will burst as soon as quasi-rational investors sentiment changes. (Did somebody say Internet?)

Why is behavioral finance important?

As most marketers know, any product has its unique set of utilitarian and value-expressive characteristics. The value-expressive characteristics are the most visible in jewelry and almost absent in laundry detergents. An interesting question to ask, then, is, do investments have value-expressive characteristics? If they do, we should not be surprised that pricing differences exist between otherwise identical investments, based entirely on their value-expressive characteristics.

A casual look at stock exchange advertisements suggests a positive answer to this question. The NYSE promotes itself as solid, while NASDAQ claims it is innovative. A review of mutual funds marketing can also give us a few insights.

In 1983, Fidelity Investments put Charles Jarvie in charge of marketing its mutual funds. Prior to joining Fidelity, Jarvie marketed Tide and Pringles at Procter & Gamble. Jarvie immediately noticed two deficiencies in Fidelity's marketing. Fidelity's flagship product, the Magellan fund, was not advertised as Fidelity Magellan; the company was underemphasizing its brand name. Also, almost no attention was paid to cross-selling. Under Jarvie's leadership, Fidelity redefined itself as a "family of funds" and built itself one of the strongest brands in the financial services industry. Other mutual fund companies followed quickly.

Even more interesting are the studies of investment clubs. Over 35,000 of these clubs exist in the United States. An investment club usually includes 10-15 members (friends, co-workers, or relatives) who, on average, contribute $25 a month to the club's account.

In 1998, Brad Barber and Terrance Odean of the University of California at Davis studied performance of 166 investment clubs that had accounts with a large brokerage firm and found that 60% of the clubs lagged the market. The average underperformance was 3.8% a year. So it seems that investment clubs lack utilitarian characteristics. What about value-expressive ones?

Also in 1998, Brooke Harrington of Harvard University studied the identity formation in investment clubs. Her sample included three clubs: an all-men's club where all members were sports car hobbyists, an all-women's club where all members belonged to the American Association of University Women, and a mixed-gender club where all members met each other through a church singles group. She concluded that investment clubs are also social clubs. In terms of our marketing approach, they do have strong value-expressive characteristics.

The importance of behavioral finance and its role in the professional's decision making process appears self-evident. While it may fail to enhance our capacity to beat the market, it can help us understand the beliefs and motivations of our clients and improve the service provided.

Is a Compromise in Sight?

Are the differences between traditional finance and behavioral finance irreconcilable? Recent literature suggest a negative answer to this question.

One the one hand, the sensible proponents of behavioral finance recognize the limitations of this approach. Meir Statman of Santa Clara University said it best:

> *Market efficiency has two meanings. To some, market efficiency means that there is no systematic way to beat the market. To others, it means that security prices are rational – that is, reflect only "fundamental" or "utilitarian" characteristics, such as risk, but not "psychological" or "value-expressive" characteristics, such as sentiment... I argue that finance scholars and professionals would do well to accept market efficiency in the beat-the-market sense, but reject it in the rational-pricing sense.*

On the other hand, the standard finance begins to produce some research that models effects of opinion differences. Earlier, we talked about the seemingly excessive trading volumes. It appears that trading volume varies directly with the difference in investors' opinions. Figure 8 provides a simple Marshallian cross analysis of a widening difference in opinions. Both supply and demand for a particular security shift to the right as both number of buyers and number of sellers increase. While the effect on price cannot be determined without additional information such as relative magnitude of shifts in supply and demand, the volume is bound to increase.

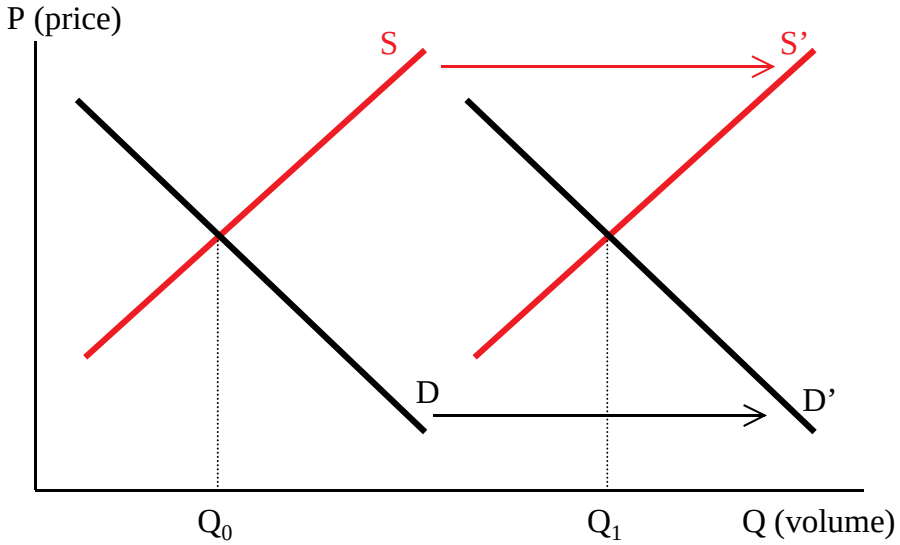

Figure 8. Opinion difference and trading volume

An interesting thing to discuss here would be the work of Joseph Chen and Harrison Hong of Stanford University and Jeremy Stein of Harvard Business School. In their 1999 paper, "Differences of Opinion, Rational Arbitrage and Market Crashes," Hong and Stein propose the following model.

There are two investors, A and B, and a class of fully rational, risk-neutral arbitrageurs. A and B each receive a different private signal affecting their rational perception of the value of the same stock. Both signals are useful, but A only pays attention to his signal, even if that of B is revealed to him, and vice versa. Arbitrageurs, on the other hand, recognize that the best estimate of the stock's value is to be found by averaging both signals. However, if A and B face short sale constraints and the signals they receive are negative, the arbitrageurs simply will not see those signals. In other words, the negative private information will not have any effect on market price. This is consistent with the empirical research findings of equity mispricing being mostly on the short side.

So if the arbitrageurs only hear the good news, the stock price may well be trending up, until some of the arbitrageurs begin to suspect overvaluation and take short positions in the stock. As a result, the trading volume would increase, reflecting the increasing difference of opinion among the arbitrageurs. If the stream of good news consequently ceases or private signals of A and/or B become public information, the stock price would collapse.

In a later paper, "Forecasting Crashes," Chen, Hong and Stein found that the probability of a crash is positively correlated with an increase in trading volume relative to trend over prior six months and positive returns over the prior thirty-six months.

Overall, it appears that many stock market anomalies can be explained through either behavioral biases or institutional imperfections. In fact, Richard Thaler suggests applying the behavioral model to institutional investing and corporate finance. What immediately comes to mind here is a Nobel-winning economist Herbert Simon and his 1947 book, *Administrative Behavior*. Here is how the outcome of Simon's research was summarized by the Nobel committee:

> *He rejects the assumption made in the classic theory of the firm as an omniscient, rational, profit-maximizing entrepreneur. He replaces this entrepreneur by a number of cooperating decision makers, whose capacities for rational action are limited, both by a lack of knowledge about the total consequences of their decisions, and by personal and social ties.*

A classic example of this approach is a 1956 paper by John Lintner, "Distribution of Incomes of Corporations among Dividends, Retained Earnings, and Taxes," published in the *American Economic Review*. Lintner started by interviewing the corporate executives about their dividend policy decisions. These interviews led him to a very simple model. Companies move the dividend toward a desired payout ratio, but try to avoid having to cut the dividend. This model remains an accurate description of dividend policy to this day.

Conclusion

We conclude this presentation by quoting Meir Statman:

People are "rational" in standard finance; they are "normal" in behavioral finance. Rational people care about utilitarian characteristics, but not value-expressive ones, are never confused by cognitive errors, have perfect self-control, are always averse to risk, and are never averse to regret. Normal people do not obediently follow that pattern.

Standard finance asks for too much when it asks for market efficiency in the rational sense, and investment professionals ask for too much when they insist that the primary contribution of behavioral finance is its potential help in beating the market.

Accepting market efficiency in the sense of beating the markets and rejecting it in the sense of rationality would allow finance researchers to ask questions about the roles of investment professionals that go beyond the role of beating the market. Investment professionals belong to many groups, and we need to understand the benefits, both utilitarian and value expressive, they provide.

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