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1 Behavioral finance and markets*

Gur Huberman

1.1 Introduction

Economics is interested primarily in prices and aggregate quantities. The study of individual behavior is a building block to derive implications about social outcomes. Until the behavioral approach became fashionable, individuals were usually assumed to make choices so as to optimize a well-defined objective subject to well-defined constraints. This very simple idea is also very powerful, in that it lends the analysis to aggregation, and thereby affords the study of markets and equilibrium.

The main contribution of the behavioral approach has so far been to question the validity of modeling the individual decision maker as optimizing a simple objective. The earlier pioneers are Allais (1953) and Ellsberg (1961). More recently, the profuse work of Kahneman and Tversky (1979) (with various coauthors) has had the strongest impact. Their joint paper on Prospect Theory in *Econometrica* (Kahneman and Tversky 1979) is reputed to be the most cited paper in that highly esteemed journal.

Once scholars acknowledged that the optimizing foundations were not as solid as had been assumed, they ventured to modify them, and felt freer to discover anomalies that would not have existed had economic agents (or at the least, the important agents, the marginal ones) been neoclassical optimizers.

“Is the asset price right?” is the question at the heart of financial economics. To answer it directly, one has to agree on what “right” means in this context. An early commentator was Adam Smith.

The value of a share in a joint stock is always the price which it will bring in the market; and this may be either greater or less, in any proportion, than the sum which its owner stands credited for in the stock of the company.

Adam Smith, *The Wealth of Nations*, 1776

The efficient market hypothesis that “the price is right” is difficult to study directly. A circuitous, but profitable route, calls for the study of implications of

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the “price is right” statement. One of them is that price changes are unpredictable. This implication has stood up to empirical scrutiny very well. There are no obvious and reliable ways to predict which way the prices of securities will go. But price changes can seem unpredictable even if the price is not right, especially when it comes to securities with open-ended payoffs such as common stocks.

One problem for the “the price is right” school is not that price changes are unpredictable; it is that *ex post* they are poorly explained.

A single dramatic day best illustrates how poorly stock price changes are understood. On October 19, 1987, world stock markets crashed; in the United States, the S&P500 index lost 20.47 percent of its value. The *New York Times*’ “explanation” was “worry over dollar decline and trade deficit, fear of US not supporting the dollar.” Motivated by the 1987 crash, Cutler *et al.* (1989) list the top major world news in 1941–87 and the stock market reaction to them, as well as the top fifty market moves, and the *New York Times*, “explanations” to them. Remarkably, although the major news produce some big price movements, they do not produce any of the top five and only seven of the top fifty price movements. Thus, it seems that fundamentals move prices, but major price movements cannot be explained as reaction to changes in major fundamentals.

The Law of One Price states that two securities that represent identical claims to cash flows should trade for the same price. In financial economics the most interesting anomalies are violations of the Law of One Price. They are important because they constitute a direct assault on the efficient market hypothesis that the market price is right, or at least approximately right.

Examples of violations of the Law of One Price include closed-end mutual funds, Siamese twin stocks, and the case of EntreMed. Together they allow the outlines of a coherent story to emerge. The story is about the influence of the demand side of financial markets on asset prices. The demand side may be affected by investor sentiment, whose fluctuations may be independent of fundamentals. Shleifer and Summers (1990) summarize this approach.

Prices are the main focus of financial economics. Trading volume receives much less attention. In fact, the motives of security trading are poorly understood. But it is those who trade who also determine prices. Therefore an acceptable model of trading may herald a better understanding of security prices. The neoclassical approach has not adequately explained the huge trading volume, but the behavioral approach may offer some hope of doing just that.

The balance of this chapter has two main sections. The next section describes various violations of the Law of One Price. The section that follows it considers a related, but very different and fundamental issue: Why do people trade?

1.2 Violations of the Law of One Price

1.2.1 Closed-end funds

Closed-end funds are investment companies that raise equity when they are formed and use it to acquire tradable securities. After the inception period, the fund sells

and buys tradable securities and its shareholders are free to trade its shares. The fund does not redeem outstanding shares unless it liquidates or changes its status to an open-end fund.

The Law of One Price suggests that shares of closed-end funds should trade close to net asset value (NAV). This is not the case, as a quick look at the appropriate table on Monday's *Wall Street Journal* (Or Saturday's *New York Times* or *Barron's*) will attest.

Lee *et al.* (1991) summarize the main empirical regularities associated with closed-end funds as follows:

- Most of the time they trade at a discount relative to NAV.
- The discounts fluctuate.
- The discounts as well as changes in them across funds are positively correlated.
- They are issued at a premium relative to NAV.
- When liquidation or open-ending of a fund is announced, its price quickly converges to the NAV.

Lee *et al.* (1991) also report that the discounts are negatively correlated with the returns on small-company stocks. Presumably, it is individual investors who tend to hold and trade both closed-end funds and small stocks; correlation between the returns on these very different sets of assets suggests that a common sentiment moves their prices.

These observations lead them to argue that noise traders affect the prices of closed-end funds, and, by extension, of securities in general.

Closed-end country funds (often referred to as country funds) are an interesting subset of closed-end funds because their assets trade in a foreign market. A reason for the formation of country funds is the segmentation of international financial markets. Country funds afford the study of the segmentation of investor sentiment internationally and a novel approach to the speed-of-adjustment question: how quickly do prices react to news, and how dependent is the speed on the salience of the news?

Hardouvelis *et al.* (1994) have done an exhaustive study of the sources of temporal variation in country fund discounts. The article's main finding is in its table 8.8 where it estimates a linear regression of the relation between weekly changes in the premiums and the discount itself (positive), the return on the foreign market (negative), the dollar return on the exchange rate (negative), the dollar return on the world stock market index (positive), the return on large US stocks (positive), and the difference in return on small and large US stocks (positive). The direction of all these relations is consistent with the investor sentiment hypothesis: sentiment in the United States is mean-reverting (hence the negative relation between changes in the discount and the discount itself), not sensitive to pricing of foreign stocks (hence a negative relation with the foreign market), related to US (or world) sentiment about the foreign market (hence the negative relation with the changes in the exchange rate), related to world and US stock returns (hence the positive relations with these two variables) and is primarily correlated with

small stock returns (hence the positive relation with the small minus large stock returns).

Country funds (and closed-end funds in general) are important not because they manage a lot of assets, but because they present fairly clean setups in which the examination of standard predictions is clearer than in other contexts. Country funds allow the researcher to entertain a difference in sentiment between the country where the assets are and the country where the funds' shares are traded, and study the extent to which the difference affects temporal variations in the discount of the country fund. Hardouvelis *et al.* (1994) study a cross-country potential difference in investor sentiment. Klibanoff *et al.* (1998) study cross-country difference in the impact of news on asset prices.

Klibanoff *et al.* (1998) examine how fast share prices of country funds adjust to news about the relevant foreign markets. They show that in normal weeks, typically, a country fund's return lags significantly by a few weeks behind the return on its underlying assets, which are traded on the foreign market. Then they consider weeks with salient news about the foreign country, which are weeks in which news about the foreign country appear on the front page of the *New York Times*. In these weeks the prices of country-funds shares (which trade on the New York Stock Exchange) react more robustly to changes in the prices of the funds' underlying assets (which trade on the foreign markets).

1.2.2 Siamese twin stocks

Siamese twin stocks afford a similar trading and sentiment structure. These are two classes of shares of the same firm. Their relative property rights are well specified, and the bulk of the trading of each class of shares takes place in different stock markets. The contractual specification of the relative property rights implies that the shares should trade at the same relative prices. On the other hand, if they trade on different markets which are subject to different sentiments, relative prices may diverge, and the divergence should be correlated with the relative movements in the respective markets.

Following the early work of Rosenthal and Young (1990), Froot and Dabora (1999) revisit the Siamese twin stocks. These companies are: Royal Dutch and Shell, Unilever NV and Unilever plc, and SmithKline Beecham class A and class E shares. All three are large international publicly held firms whose stocks trade at various markets. But in each case, the two stock classes trade primarily on different markets. Calculation of the theoretical relative values of the two types of equity are straightforward, and derived directly from the original agreement which gave rise to the two stock classes in each case. Nonetheless, hardly ever do the two stock classes trade at the theoretically correct relative prices. Figure 1.1 demonstrates the disparity for Royal Dutch and Shell.

Froot and Dabora (1999) go further, and estimate the relation between relative prices in the stock markets in which the two stocks trade and the relative prices of the stocks themselves. It turns out that indeed, when the London Stock Exchange (where Shell trades) rallies relative to the Amsterdam or New York Stock Exchange

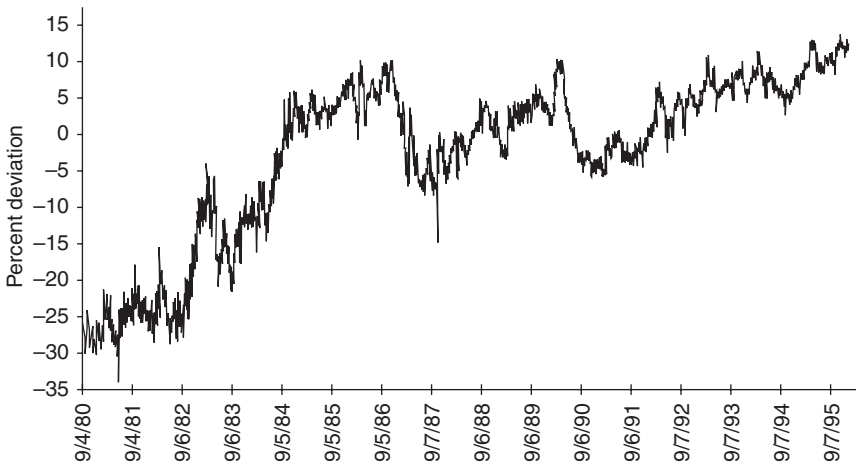


Figure 1.1 Stock price of Royal Dutch relative to Shell (deviation from 60/40 value).

Source: Froot and Dabora (1999).

(where Royal Dutch trades), so does Shell relative to Royal Dutch stock. The other two Siamese twin stocks display similar patterns.

The upshot of the Siamese twin study is that not only is the Law of One Price violated but also investor sentiment models suggest that the violations are correlated with local stock market behavior, and this indeed seems to be the case.

1.2.3 *EntreMed*

Can stories that appear in the *New York Times* cause stock price movements even when they don't report any new information?

Huberman and Regev (2001) narrowly focus on implications of the Law of One Price for a biotech firm, *EntreMed* (ENMD), and related firms. Their work is prompted by a front page story in the Sunday, May 3, 1998, edition of the *New York Times* which reported on a recent breakthrough in cancer research, and mentioned ENMD, a company with licensing rights to the breakthrough. The story's impact on the stock prices was immediate, huge, and to a large extent permanent.

The new-news content of the *Times* story was nil, though: the substance of the story had been published as a scientific piece in *Nature* and in the popular press (including the *Times* itself) more than five months earlier, in November 1997.

The cover of the November 27, 1997, issue of *Nature* prominently features the lead headline, "Resistance-free cancer therapy" as well as a related image. In that issue, Boehm *et al.* (1997) report on a breakthrough in cancer research achieved by a team led by Dr Judah Folkman, a well-known Harvard scientist.

In a “News and Views” piece in the same issue, Kerbel (1997) explains and comments on the findings, suggesting that, “[T]he results of Boehm *et al.* are unprecedented and could herald a new era of cancer treatment. But that era could be years away.” Reports on the discovery of Dr Folkman’s team appeared also in the popular press, such as the *Times* and *Newsday* on November 27, 1997 as well as in the electronic media, such as CNN’s MoneyLine and CNBC’s Street Signs. It seems that an effort was made to bring the news to the attention of circles wider than the scientific community.

The November 27 *Times* article appeared on page A28. It, as well as CNN and CNBC, mentioned ENMD. On November 28, ENMD itself issued a press release that covered the news and the company’s licensing rights to the proteins developed by the team of Dr Folkman. The closing price of ENMD was 11.875 on November 26, and on November 28 it was 15.25; thus, the news caused a price appreciation of 28.4 percent, an observation made in the Business Section of the November 29 edition of the *Times*. The unusually high trading volume on November 28 and December 1 indicates that the market paid attention to the news. On the whole, an adherent of the efficient market hypothesis would argue that the market digested the news in a timely and robust fashion.

In the months between November 27, 1997 and May 3, 1998, ENMD’s stock traded between 9.875 and 15.25.

Kolata’s *Times* article of Sunday, May 3, 1998, presented virtually the same information that the newspaper had reported in November, but much more prominently; namely, the article appeared in the upper left corner of the front page, accompanied by the label “A special report.” The article featured comments from various experts, some very hopeful and others quite restrained (of the “this is interesting, but let’s wait and see” variety). The article’s most enthusiastic paragraph was “... ‘Judah is going to cure cancer in two years,’ said Dr James D. Watson, a Nobel Laureate... Dr Watson said Dr Folkman would be remembered along with scientists like Charles Darwin as someone who permanently altered civilization.” (Watson, of *The Double Helix* fame, was later reported to have denied the quotes.) ENMD’s stock, which had closed at 12.063 on the Friday before the article appeared, opened at 85 and closed at 51.81 on Monday, May 4. The Friday-close-to-Monday-close return of 330 percent was truly exceptional: bigger than all but two of the over 28 million daily returns of stocks priced at \$3 or more between January 1, 1963 and December 31, 1997. Not surprisingly, the *Times* story, and ENMD, received tremendous attention in the national media (print and electronic) in subsequent weeks.

In the May 10 issue of the *Times*, Abelson (1998) essentially acknowledged that its May 3 article contained no new-news, noting that “[p]rofessional investors have long been familiar with [ENMD’s] cancer-therapy research and had reflected it in the pre-runup price of about \$12 a share.” (The *Times* did not question its own editorial choice of essentially re-reporting the November 27 article, by a different reporter, with the label, “A special report,” on the upper left corner of the front page. Gawande (1998) did that in the *New Yorker*’s May 18 issue, which hit the newsstands on May 11.)

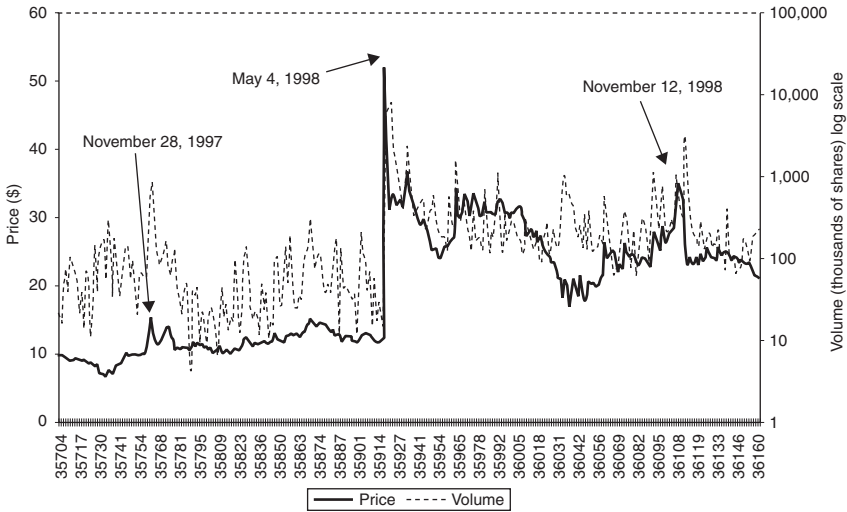


Figure 1.2 ENMD closing prices and trading volume 10/1/97–12/30/98.

Source: Huberman and Regev (2001).

Figure 1.2 gives the distinct impression that while some of the May 4 price run-up was temporary, a substantial portion of it was permanent. ENMD's stock price fell in the days following May 4, to close the week at 33.25 – still, almost three times higher than its price a week earlier. Moreover, ENMD's closing price did not fall below 20 until late August 1998, and by late fall it had not closed below 16.94, which was 40 percent higher than its May 1 price. (Between mid-July and late August 1998, the S&P500 lost almost 20 percent and the NASDAQ Combined Biotechnology Index lost almost 24 percent of its value.)

By early November 1998 ENMD was trading at the upper 20s and lower 30s. On November 12, 1998, another piece of new-news came to light: on its front page, the *Wall Street Journal* reported that other laboratories failed to replicate the results described earlier in the *Times*. ENMD stock price fell from 32.625 on November 11 to close at 24.875 on November 12 – still more than twice ENMD price on May 1!

Contagion: Can old news reported in the *New York Times* cause prices of related stocks to increase?

A look at the stock prices of other biotechnology stocks magnifies the puzzle. On average, the number of members of the NASDAQ Biotechnology Combined Index, excluding ENMD, went up by 7.5 percent on Monday, May 4, 1998. The returns of seven of the stocks in the index (other than ENMD) exceeded 25 percent on a trading volume that was fifty times the average daily volume.

That news about a breakthrough in cancer research affects not only the stock of a firm that has direct commercialization rights to the development is not

surprising; the market may recognize potential spillover effects and surmise that other firms may benefit from the innovation. Moreover, the market may interpret the news as good for other firms because it may suggest that the research and development conducted by these other firms is closer to commercial fruition. However, the news did not break on May 4, 1998, but on November 27, 1997. And the people with the expertise to evaluate the spillover effects closely follow the news within the scientific community, probably read *Nature*, and pay attention to the coverage of biotechnology in the *Times* even when the relevant material appears well inside the newspaper.

On November 28, 1997, the average return of the seven firms was a respectable, but not extraordinary 4.89 percent. The trading volume of these stocks on that day was below the average daily volume, perhaps because it was the Friday after Thanksgiving. The returns and trading volume in the following days were quite ordinary. Thus, it seems that in the week or two after the November 27 news broke, prices of the seven stocks did not react strongly to the news.

The motivation and identity of the people who traded the seven stocks so aggressively on May 4 is puzzling. If they are experts on the fundamental aspects of biotechnology, they could, and should have traded five months earlier. If they are stock market experts, with no special understanding of biotechnology, it is unclear how they picked these particular seven stocks. Perhaps they speculated on noise trader behavior, but why with these stocks? And it is difficult to imagine people who can competently follow highly technical news on biotechnology research and be good at guessing, and speculating on the contagion effect of the no-new-news article in the *Times*.

It is possible, however, that those who knew were not necessarily those who traded. Brokers could have had theories on the relation between ENMD's future and that of other biotechnology firms, and the May 3 *Times* article and the tremendous interest in ENMD may have created an opportunity for them to encourage trading based on those theories. Under this interpretation the information contained in these theories was not impounded in stock prices when the hard information about ENMD came out in late November, but in early May, when the brokers perceived the publicity surrounding ENMD as an opportunity to profit from these theories. And the clients traded on the brokers' suggestions.

An adherent of the efficient markets hypothesis would have expected a severe price drop for the seven biotechnology stocks on November 11, 1998, when the *Wall Street Journal* reported on the failures to replicate Dr Folkman's results. Nonetheless, their average return was -0.81 percent – quite an ordinary return, on quite an ordinary volume. A reasonable explanation is that the brokers who took advantage of the unusual, and unusually favorable publicity surrounding ENMD on May 4, fell silent when the news turned bad for ENMD.

1.2.4 What happened to Bristol-Myers Squibb?

Both the November 27, 1997 and the May 3, 1998, *Times* articles mention Bristol-Myers Squibb (BMY), a major pharmaceutical firm with a market

capitalization of over \$100 billion in early May 1998, as working with ENMD to develop Angiostatin, one of the proteins at the core of the scientific breakthrough. According to ENMD's press release of November 28, 1997, it and BMY had forged a strategic partnership in December 1995. Therefore BMY was a likely beneficiary of ENMD's success if it materializes.

BMY is a large and widely followed company, and the behavior of its stock price is more important than that of a small and fairly obscure firm. But, since BMY is involved in numerous businesses, its stock price is subject to numerous influences, which renders deviations from the Law of One Price difficult to detect. Its movements can be rationalized more easily than those of a small firm with a narrowly defined business. Nonetheless, the evidence suggests that even BMY's stock price moved on the *Times*' May 3, 1998 article.

Table 1.1 focuses on four important days, and reports BMY's returns, excess returns, trading volume, relative trading volume, and the frequency of observing such numbers or larger in 1996 and 1997. February 10, 1999, is included because on the previous evening both ENMD and BMY announced a modification (i.e. something close to a breakup) of the research agreement between the two companies regarding Angiostatin, and on that day ENMD's stock price dropped from 24.5 to 12.875.

Table 1.1 suggests that only May 4 was unusual for BMY's stock. Its trading volume soared, and its return was 3.12 percent, much higher than the NYSE's 0.14 percent return on that day. While that return is marginally unusual compared with BMY's daily excess returns in 1996–97, it amounts to a \$3.3 billion appreciation in the company's market capitalization – more than four times the dollar appreciation in ENMD and the seven biotech stocks with the highest return on that day combined. A search in the ABI Inform database suggests the absence of

Table 1.1 Returns, excess returns, trading volume, relative trading volume, and corresponding *p*-values for BMY

<i>Date</i>	<i>Return (%)</i>	<i>Excess return^a (%)</i>	<i>Fraction of 1996–'97 excess returns higher^b</i>	<i>Volume (thousands of shares)</i>	<i>(BMY volume)/(NYSE volume) (%)</i>	<i>Fraction of 1996–'97 volume ratios higher^c</i>
11/28/97	0.40	0.04	0.774	1,607	0.85	0.502
05/04/98	3.12	2.98	0.044	8,671	1.57	0.024
11/12/98	-1.29	-1.14	0.367	1,805	0.27	1.000
02/10/99	-0.20	-0.55	0.680	5,825	0.81	0.559

Source: Huberman and Regev (2001).

Notes

a BMY return in excess of that of the NYSE.

b The fraction of the 507 1996–97 daily excess returns that were higher than BMY on that day.

c The fraction of the 507 1996–97 daily (BMY volume)/(NYSE volume) ratio that was higher than the similar ratio on that day.

other significant news directly relevant to BMY on May 2, 3, or 4. Therefore one could attribute at least part of BMY's price rise on May 4 to the *Times* article of the previous day. On the whole, then, we can rule out BMY's price reaction on days when new-news about ENMD came out – November 28, 1997, November 12, 1998, and February 10, 1999 – and argue that both the high return and high volume of May 4 suggest some stock market reaction to the *Times*' no new-news article. While BMY's return on that day is miniscule compared with that of ENMD and a few other biotech stocks, it translates to an increase in market capitalization that dwarfs that of the biotech stocks.

1.2.5 Discussion of EntreMed

The circumstances surrounding ENMD are unusually clean, affording a crisp examination of the relevance of the efficient market hypothesis to the pricing of ENMD stock. A convenient point of departure is Fama's (1970) statement, "An efficient capital market is a market that is efficient in processing information. The prices of securities at any time are based on correct evaluation of all information available at that time. In an efficient capital market, prices fully reflect available information."

The big difference between ENMD stock price in the months before May 3 (between 12 and 15) and the months following May 3 (around 30) must puzzle believers in the efficient markets orthodoxy. An interpretation charitable to the efficient market hypothesis is that the May 3 article was good news relevant to the pricing of ENMD, in that it demonstrated the *Times*' and James Watson's stamp of approval of Dr Folkman's scientific discovery. Perhaps these are valuable to the valuation of ENMD. Yet, the magnitude of ENMD's price appreciation, especially in comparison with the reaction to the initial publication of the news in the previous November, seems to exceed what the efficient market hypothesis would suggest is acceptable.

The market delivered two very different prices when the available information was virtually the same. Thus, both prices cannot be "based on correct evaluation of all information available at that time." Which price is correct is unclear. In fact, it is unclear what a "correct price" is. It seems that ENMD's stock price underreacted to the November 27 news, and overreacted to the May 3 publicity. The early May contagion to other biotechnology stocks can also be interpreted as late reaction to the November 27 news, and their subsequent price decline may well be evidence of overreaction.

The cleanliness of the circumstances exploited here is rare. But the evidence is suggestive for the general understanding of the determinants of security prices. Prices probably move on no new-news, and the movements may be concentrated in stocks that have some things in common, but these need not be economic fundamentals. The serious investor in search of excess returns will be wise to look for such seemingly extraneous price-moving factors.

The possible arbitrariness of stock prices implies that capital markets may allocate funds in a somewhat arbitrary fashion. For instance, ENMD would have raised

money on very different terms before and after the publication of the *Times* article of May 3, 1998.

The skeptical reader should reflect on the following hypothetical question: what would have been the price of ENMD in late May 1998 if the editor of the *Times* had chosen to kill the May 3 story?

1.2.6 Discussion of violations of the Law of One Price

Violations of the Law of One Price imply that stock prices need not reflect fundamentals. Moreover, various correlation patterns seem consistent with the noise trading approach; they are broadly consistent with the presence of market participants whose trades are at times motivated by stimuli which are inconsistent with fundamental information. Moreover, these trades are sufficiently similar to move prices away from their fundamental values. This speculation about speculative prices seems attractive but has to be examined empirically. Indeed, Lakonishok *et al.* (1992) do exactly that, and come up virtually empty-handed: they find scant evidence that members of a large group of money managers buy (or sell) the same stocks at the same time. Remarkably, in his book titled *Inefficient Markets*, Shleifer (2000) fails to cite this paper.

1.3 Why do people trade?

Economic theory provides two reasons for trading risky securities. One, savings and dissavings, and two, risk sharing. A portion of one's savings should go to the stock market, but toward the purchase of a portfolio, not individual stocks. Similarly, when the time comes to liquidate some of the savings, whole portfolios should be sold, not individual stocks. Risk sharing refers to the recommendation to tilt one's stock portfolio away from other systematic risks in one's life, especially those associated with labor income. Thus, a person who takes up employment in the technology sector should reduce his stock portfolio's exposure to that sector. If anything, the opposite behavior is observed: overinvestment in the employer's stock and in familiar stocks in general (Huberman 2001).

Much stock trading is of the form: a person (or an institution) funds the purchase of stock A with the proceeds of the sale of stock B. Such a double transaction suggests that the trader believes that stock A will appreciate more than B. On what basis?

The standard answer is that people who have superior information trade profitably on it. But then, who is on the other side of the trade? Moreover, how can one be certain that his information is superior to that of the counterparty?

The seminal paper of Milgrom and Stokey (1982) argues that no speculative trade will take place if all market participants are rational and rationality is common knowledge. But of course lots of security trading takes place and financial markets are characterized by a high degree of liquidity, that is, by the ease of trading in them. In fact, liquidity is considered socially desirable, and its drying up is associated with financial crises.

The study of trading is important not only because trading itself is an important and puzzling empirical regularity, but also because traders determine asset prices, which in turn affect resource allocation.

Neoclassical economics has not provided much guidance regarding why there is so much speculative trading, so it seems that the question is ripe for the behavioral approach to make a constructive and important contribution. But it will not be easy.

In fact, two related behavioral results, the status quo bias and the endowment effect both suggest under-, not overtrading. The status quo bias refers to the lethargy of decision makers whose preferred course of action is inaction. Examples include staying with a medical insurance plan chosen years earlier and not re-balancing one's portfolio of defined contribution pension plan (Samuelson and Zeckhauser 1988; Ameriks and Zeldes 2001). The endowment effect refers to subjects' tendency to demand a higher price for an object which they had just been given than other subjects' willingness to pay for the same object (Thaler 1980).

The status quo bias then predicts that market participants are inactive, and do not churn their portfolios. The endowment effect predicts that even if a potential seller and a buyer meet in the market place, they will fail to transact because the former will demand a higher price than the latter is willing to pay.

But the status quo bias and endowment effect do not apply to all people all the time. And trading is done by some people some of the time. Enough people and money are involved in financial markets to render them very liquid most of the time.

Trading entails strategic and tactical choices. The strategic decision is whether to be a market participant at all. Most people do not trade, either professionally or for their personal accounts. A minority makes the exceptional choice to become market participants, and these people are responsible for the vast amount of trading observed. Actual trading entails tactical decisions in response to fast-moving information market participants buy and sell.

Although there is a lot of trading, it is done by very few individuals who are in the market to make money for themselves, and stay there as long as they think that they are doing so successfully. It will help to characterize them and understand their motives. But characterizing a small subset of individuals is somewhat outside the behavioral tradition which focuses on studying the typical person, and shies away from studying individual differences.

A very important group of market participants work for institutions. Their motives are quite different from those of individuals who trade for their own accounts. Institutional traders make money by marketing their ostensible money-making skills within the organization and by letting their organizations market these skills to outside clients. Thus their motives and probably trading behavior differ from those of individual market participants.

In fact, even an exit decision is different for an individual and institutional traders. If the individual realizes that he loses money in trading, it is in his self-interest to quit. Moreover, he is probably employed in another business to which he can devote his full energy. Not so the institutional trader. Even the acknowledgement that he is bad at trading will be harder for him to make, because

he had chosen trading as his profession. Furthermore, even if he acknowledges to himself that he is a bad trader, he is likely to hide this insight from his employer, because its implications are quite grim for him.

1.4 Concluding remarks

Behavioral finance covers many more issues than are covered in this chapter, and it means different things to different people. The focus here is on the strongest embarrassments to the efficient market hypothesis – violations of the Law of One Price – and on a question that has been mostly unexplored, namely why do people trade.

Violations of the Law of One Price are difficult to document. They are unlikely to arise when market participants can safely exploit them, because then they would be profitably exploited and thereby disappear. So, to be documented, a deviation from the Law of One Price must be of a special kind, that is observable on the one hand, but difficult to exploit on the other. The first part of this chapter reports on some of these.

Once the researcher entertains the possibility that the “price is right” may be a false statement, perhaps even most of the time, the question is where to look for an alternative theory of prices. Within this pursuit it seems natural to try to address a question that has been mostly ignored by economists, namely why the volume of financial markets transaction is so big.

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