

## 12.3: Market Behavior

### Learning Objectives

1. Define the role of arbitrage in market efficiency.
2. Describe the limits of arbitrage that may perpetuate market inefficiency.
3. Identify the economic and cultural factors that can allow market inefficiencies to persist.
4. Explain the role of feedback as reinforcement of market inefficiencies.

Your economic behaviors affect economic markets. Market results reflect the collective yet independent decisions of millions of individuals. There have been years, even decades, when some markets have not produced expected or "rational" prices because of the collective behavior of their participants. In inefficient markets, prices may go way above or below actual value.

The **efficient market theory** relies on the idea that investors behave rationally and that even when they don't, their numbers are so great and their behavioral biases are so diverse that their irrational behaviors will have little overall effect on the market. In effect, investors' anomalous behaviors will cancel each other out. Thus, diversification (of participants) lowers risk (to the market).

Another protection of market efficiency is the tendency for most participants to behave rationally. If an asset is mispriced so that its market price deviates from its intrinsic value, knowledgeable investors will see that and take advantage of the opportunity. If a stock seems underpriced they will buy, driving prices back up. If a stock seems overpriced, they will sell, driving prices back down. These strategies are called **arbitrage**, or the process of creating investment gains from market mispricings (**arbitrage opportunities**). The knowledgeable investors who carry out market corrections through their investment decisions are called **arbitrageurs**.

In the 1600s in Holland, speculators and investors drove up the price of tulip bulbs far beyond their value. This inefficient market, called "tulip mania," led to a "boom" or "bubble," followed by a "bust" or "crash" when the market price was corrected.<sup>[1]</sup>

There are limits to arbitrage, however. There are times when the stock markets seem to rise or fall much more or for much longer than the dynamics of market correction would predict.

### Limits of Arbitrage

Arbitrage may not work when the costs outweigh the benefits. Investment costs include transaction costs, such as brokers' fees, and risk, especially market risk.

An investor who sees an arbitrage opportunity would have to act quickly to take advantage of it, because chances are good that someone else will and the advantage will disappear along with the arbitrage opportunity. Acting quickly may involve borrowing if liquid funds are not available to invest. For this reason, transaction costs for arbitrage trades are likely to be higher (because they are likely to include interest), and if the costs are higher than the benefits, the market will not be corrected.

The risk of arbitrage is that the investor rather than the market is mispricing stocks. In other words, arbitrageurs assume that the current valuation for an asset will reverse—will go down if the valuation has gone too high, or will go up if the valuation has gone too low. If their analysis of fundamental value is incorrect, the market correction may not occur as predicted, and neither will their gains.

Most arbitrageurs are professional wealth managers. They invest for very wealthy clients with a large asset base and very high tolerance for risk. Arbitrage is usually not a sound practice for individual investors.

### Causes of Market Inefficiency

Market inefficiencies can persist when they go undiscovered or when they seem rational. Economic historians point out that while every asset "bubble" is in some ways unique, there are common economic factors at work. Charles P. Kindleberger and Robert Aliber, *Manias, Panics, and Crashes*, 5th ed. (Hoboken, NJ: John Wiley & Sons, Inc., 2005). Bubbles are accompanied by lower interest rates, increased use of debt financing, new technology, and a decrease in government regulation or oversight. Those factors encourage economic expansion, leading to growth of earnings potential and thus of investment return, which would make assets genuinely more valuable.

A key study of the U.S. stock market points out that there are cultural as well as economic factors that can encourage or validate market inefficiency. Robert J. Shiller, *Irrational Exuberance*, 2nd ed. (New York: Random House, Inc., 2005). Examples include

- demographic factors of the population,
- attitudes reflected in the popular culture,
- the availability of information and analyses,
- the lowering of transaction costs.

These factors all lead to increased participation in the market and a tendency to "rationalize irrationality," that is, to think that real economic or cultural changes, rather than mispricings, are changing the markets.

Sometimes mispricings occur when real economic and cultural changes are happening, however, so that what used to be seen a mispricing is actually seen as justifiable, fundamental value because the market itself has changed profoundly. An example is the dotcom bubble of 1990–2000, when stock prices of Internet start-up companies rose far higher than their value or earning capacity. Yet investors irrationally kept investing until the first wave of start-ups failed, bursting the market bubble.

Economic and cultural factors can prolong market inefficiency by reinforcing the behaviors that created it, in a kind of feedback loop. For example, financial news coverage in the media increased during the 1990s with the global saturation of cable and satellite television and radio, as well as the growth of the Internet<sup>[2]</sup>. More information availability can lead to more availability bias. Stereotyping can develop as a result of repeated "news," resulting in representation bias, which encourages overconfidence or too little questioning or analysis of the situation. Misinterpreting market inefficiency as real changes can cause framing problems and other biases as well.

In this way, market inefficiencies can become self-fulfilling prophecies. Investing in an inefficient market causes asset values to rise, leading to gains and to more investments. The rise in asset values becomes self-reinforcing as it encourages anchoring, the expectation that asset values will continue to rise. Inefficiency becomes the norm. Those who do not invest in this market thus incur an opportunity cost. Participating in perpetuating market inefficiency, rather than correcting it, becomes the rational choice.

Reliance on media experts and informal communication or "word of mouth" reinforces this behavior to the point where it can become epidemic. It may not be mere coincidence, for example, that the stock market bubble of the 1920s happened as radio and telephone access became universal in the United States<sup>[3]</sup>, or that the stock boom of the 1990s coincided with the proliferation of mobile phones and e-mail, or that the real estate bubble of the 2000s coincided with our creation of the blogosphere.

Market efficiency requires that investors act independently so that the market reflects the consensus opinion of their independent judgments. Instead, the market may be reflecting the opinions of a few to whom others defer. Although the volume of market participation would seem to show lots of participation, few are actually participating. Most are simply following. The market then reflects the consensus of the few rather than the many; hence, the probability of mispricing rises.

It is difficult to know what is happening while you are in the middle of an inefficient market situation. It is easier to look back through market history and point out obvious panics or bubbles, but they were not so obvious to participants while they were happening. Hindsight allows a different perspective—it changes the frame—but as events happen, you can only work with the frame you have at the time.

#### Summary

- The diversification of market participants should increase market efficiency.
- Arbitrage corrects market mispricing.
- Arbitrage is not always possible, due to
  - transaction costs,
  - the risk of misinterpreting market mispricing.
- Market inefficiencies can persist due to economic and cultural factors such as
  - lowered interest rates and increased use of debt financing,
  - new technology,
  - a decrease in government regulation or oversight,
  - demographic factors,
  - attitudes as reflected in popular culture,
  - the availability of information and its analysts,
  - the lowering of transaction costs,
  - increased participation in inefficient markets.
- Market mispricings can be reinforced by feedback mechanisms, perpetuating inefficiencies.

## ? Exercises

1. Find out more about the tulip mania at [http://www.businessweek.com/2000/00\\_17/b3678084.htm](http://www.businessweek.com/2000/00_17/b3678084.htm) and at [http://en.Wikipedia.org/wiki/Tulip\\_mania](http://en.Wikipedia.org/wiki/Tulip_mania), or <http://www.investopedia.com/features/crashes/crashes2.asp>. What caused mispricing in the market for tulip bulbs? What factors perpetuated the market inefficiency? What happened to burst the tulip bubble? What are some other examples from history of similar bubbles and crashes caused by inefficient markets?
2. Reflect on your impact on the economy and the financial markets as an individual, whether or not you are an investor. How does your financial behavior affect the capital markets, for example? Record your thoughts in your personal finance journal. Share your ideas with classmates.

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[1] Barbara Schulman, "Tulips," James Ford Bell Library, University of Minnesota, 1999, <http://bell.lib.umn.edu/Products/tulips.html> (accessed May 28, 2009).

[2] Robert J. Shiller, *Irrational Exuberance*, 2nd ed. (New York: Random House, Inc., 2005).

[3] *ibid* p. 163.

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