The Basic Principle of Technical Analysis—The Trend


**Learning Objective Statements**

- Define what is meant by a trend in technical analysis
- Explain why determining the trend is important to analysts
- Identify primary, secondary, short-term, and intraday trends
- Describe the basic beliefs behind the art of technical analysis

The art of technical analysis—for it is an art—is to identify trend changes at an early stage and to maintain an investment position until the weight of the evidence indicates that the trend has reversed. (Pring, 2002)

**Technical analysis is based on one major assumption: Freely traded, market prices, in general, travel in trends.**

Based on this assumption, traders and investors hope to buy a security at the beginning of an upward trend at a low price, ride the trend, and sell the security when the trend ends at a higher price. Although this strategy sounds simple, implementing it is exceedingly complex.

For example, what length trend are we discussing? The trend in stock prices since the Great Depression? The trend in gold prices since 1980? The trend in the Dow
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Jones Industrial Average (DJIA) in the past year? The trend in Merck stock during the past week? Trends exist in all lengths, from long-term trends that occur over decades to short-term trends that occur from minute to minute.

Trends of different lengths tend to have the same characteristics. In other words, a trend in annual data will behave the same as a trend in five-minute data. Investors must choose which trend is most important for them based on their investment objectives, their personal preferences, and the amount of time they can devote to watching market prices. One investor might be more concerned about the business cycle trend that occurs over several years. Another investor might be more concerned about the trend over the next six months, and a third investor might be most concerned about the intraday trend. Although individual investors and traders have investment time horizons that vary greatly, they can use the same basic methods of analyzing trends because of the commonalities that exist among trends of different lengths.

Trends are obvious in hindsight, but ideally, we would like to spot a new trend right at its beginning, buy, spot its end, and sell. However, this ideal never happens, except by luck. The technical analyst always runs the risk of spotting the beginning of a trend too late and missing potential profit. The analyst who does not spot the ending of the trend holds the security past the price peak and fails to capture all the profits that were possible. On the other hand, if the analyst thinks the trend has ended before it really has and sells the security prematurely, the analyst has then lost potential profits. The technical analyst thus spends a lot of time and brainpower attempting to spot as early as possible when a trend is beginning and ending. This is the reason for studying charts, moving averages, oscillators, support and resistance, and all the other techniques we explore in this book.

The fact that market prices trend has been known for thousands of years. Academics have disputed that markets tend to trend because if it were true, it would spoil their theoretical models. However, recent academic work has shown that the old financial models have many problems when applied to the behavior of real markets. Academics and others traditionally have scorned technical analysis as if it were a cult; as it turns out, however, the almost religious belief in the Efficient Markets Hypothesis has become a cult itself, with adherents unwilling to accept the enormous amount of evidence against it. In fact, technical analysis is very old, developed through practical experience with the trading markets, and has resulted in some sizable fortunes for those following it.

How Does the Technical Analyst Make Money?

Several requirements are needed to convert pure technical analysis into money. The first and most important, of course, is to determine when a trend is beginning or ending. The money is made by “jumping” on the trend as early as possible. Theoretically, this sounds simple, but profiting consistently is not so easy.
The indicators and measurements that technical analysts use to determine the trend are not crystal balls that perfectly predict the future. Under certain market conditions, these tools might not work. Also, a trend can suddenly change direction without warning. Thus, it is imperative that the technical investor be aware of risks and protect against such occurrences causing losses.

From a tactical standpoint, then, the technical investor must decide two things: First, the investor or trader must choose when to enter a position, and second, he must choose when to exit a position. Choosing when to exit a position is composed of two decisions. The investor must choose when to exit the position to capture a profit when price moves in the expected direction. The investor must also choose when to exit the position at a loss when price moves in the opposite direction from what was expected. The wise investor is aware of the risk that the trend might differ from what he expected. Making the decision of what price level to sell and cut losses before even entering into a position is a way in which the investor protects against large losses.

One of the great advantages in technical analysis, because it studies prices, is that a price point can be established at which the investor knows that something is wrong either with the analysis or the financial asset’s price behavior. Risk of loss can therefore be determined and quantified right at the beginning of the investment. This ability is not available to other methods of investment. Finally, because actual risk can be determined, money management principles can be applied that will lessen the chance of loss and the risk of what is called ruin.

In sum, the basic strategy to make money using technical methods includes

- **“The trend is your friend”**—Play the trend.
- **Don’t lose**—Control risk of capital loss.
- **Manage your money**—Avoid ruin.

Technical analysis is used to determine the trend, when it is changing, when it has changed, when to enter a position, when to exit a position, and when the analysis is wrong and the position must be closed. It’s as simple as that.

**What Is a Trend?**

What exactly is this trend that the investor wants to ride to make money? An upward trend, or uptrend, occurs when prices reach higher peaks and higher troughs. An uptrend looks something like Chart A in Figure 1.1. A downward trend, or downtrend, is the opposite: when prices reach lower troughs and lower peaks. Chart B in Figure 1.1 shows this downward trend in price. A sideways or flat trend occurs when prices trade in a range without significant underlying upward or downward movement. Chart C in Figure 1.1 is an example of a sideways trend; prices move up and down but on average remain at the same level.
Figure 1.1 shows a theoretical example of an uptrend, downtrend, and sideways trend. But defining a trend in the price of real-world securities is not quite that simple. Price movement does not follow a continuous, uninterrupted line. Small countertrend movements within a trend can make the true trend difficult to identify at times. Also, remember that there are trends of differing lengths. Shorter-term trends are parts of longer-term trends.

From a technical analyst’s perspective, a trend is a directional movement of prices that remains in effect long enough to be identified and still be profitable. Anything less makes technical analysis useless. If a trend is not identified until it is over, we cannot make money from it. If it is unrecognizable until too late, we cannot make money from it. In retrospect, looking at a graph of prices, for example, many trends can be identified of varying length and magnitude, but such observations are observations of history only. A trend must be recognized early and be long enough for the technician to profit.
How Are Trends Identified?

There are a number of ways to identify trends. One way to determine a trend in a data set is to run a linear least-squares regression. This statistical process will provide information about the trend in security prices. Unfortunately, this particular statistical technique is not of much use to the technical analyst for trend analysis. The regression method depends on a sizable amount of past price data for accurate results. By the time enough historical price data accumulates, the trend is likely changing direction. Despite the tendency for trends to be persistent enough to profit from, they never last forever.

**BOX 1.1 LINEAR LEAST-SQUARES REGRESSION**

Most spreadsheet software includes a formula for calculating a linear regression line. It uses two sets of related variables and calculates the “best fit” between the data and an imaginary straight (linear) line drawn through the data. In standard price analysis, the two variable data sets are time and price—day d1 and price X1, day d2 and price X2, and so forth. By fitting a line that best describes the data series, we can determine a number of things. First, we can measure the amount by which the actual data varies from the line and, thus, the reliability of the line. Second, we can measure the slope of the line to determine the rate of change in prices over time, and third, we can determine when the line began. The line represents the trend in prices over the period of time studied. It has many useful properties that we will look at later, but for now, all we need to know is that the line defines the trend over the period studied. Appendix A, “Basic Statistics,” provides more detailed information about least-squares regression.

Many analysts use moving averages to smooth out and reduce the effect of smaller trends within longer trends. Chapter 5, “Breakouts, Stops, and Retracements,” discusses the use of moving averages.

Another method of identifying trends is to look at a graph of prices for extreme points, tops, and bottoms, separated by reasonable time periods, and to draw lines between these extreme points (see Figure 1.2). These lines are called **trend lines**. This traditional method is an outgrowth of the time before computer graphics software when trend lines were hand drawn. It still works, however. Using this method to define trends, you must define reversal points. Chapter 4, “Trends—The Basics,” covers several methods of determining reversal points, but most such points are obvious on a graph of prices. By drawing lines between them, top to top and bottom to bottom, we get a “feeling” of price direction and limits. We also get a “feeling” of slope, or the rate of change in prices. Trend lines can define limits to price action, which, if broken, can warn that the trend might be changing.
Trends Develop from Supply and Demand

As in all markets, whether used cars, grapefruit, real estate, or industrial products, the economic principle of interaction between supply and demand determines prices in trading markets. Each buyer (demand) bids for a certain quantity at a certain price, and each seller (supply) offers or asks for a certain quantity at a certain price. When the buyer and seller agree and transact, they establish a price for that instant in time. The reasons for buying and selling can be complex—perhaps the seller needs the money, perhaps the seller has learned of unfavorable information, perhaps the buyer heard a rumor in the golf club locker room—whatever the reason, the price is established when all this information is collected, digested, and acted upon through the bid and offer.
Price, therefore, is the end result of all those inexact factors, and it is the result of the supply and demand at that instant in time. When prices change, the change is due to a change in demand or supply or both. The seller might be more anxious; the buyer might have more money to invest—whatever the reason, the price will change and reflect this change in supply or demand. The technical analyst, therefore, watches price and price change and does not particularly worry about the reasons, largely because they are indeterminable.

Remember that many players for many reasons determine supply and demand. In the trading markets, supply and demand may come from long-term investors accumulating or distributing a large position or from a small, short-term trader trying to scalp a few points. The number of players and the number of different reasons for their participation in supply and demand is close to infinite. Thus, the technical analyst believes it is futile to analyze the components of supply and demand except through the prices it creates. Where economic information, company information, and other information affecting prices is often vague, late, or misplaced, prices are readily available, are extremely accurate, have historic records, and are specific. What better basis is there for study than this important variable? Furthermore, when one invests or trades, the price is what determines profit or loss, not corporate earnings or Federal Reserve policy. The bottom line, to the technical analyst, is that price is what determines success and, fortunately, for whatever reasons, prices tend to trend.

What Trends Are There?

The number of trend lengths is unlimited. Investors and traders need to determine which length they are most interested in, but the methods of determining when a trend begins and ends are the same regardless of length. This ability for trends to act similarly over different periods is called their fractal nature. Fractal patterns or trends exist in nature along shorelines, in snowflakes, and elsewhere. For example, a snowflake is always six-sided—having six branches, if you will. Each branch has a particular, unique pattern made of smaller branches. Using a microscope to look closely at the snowflake, we see that the smaller branches off each larger branch have the same form as the larger branch. This same shape carries to even smaller and smaller branches, each of which has the same pattern as the next larger. This is the fractal nature of snowflakes. The branches, regardless of size, maintain the same pattern. Figure 1.3 shows a computer-generated fractal with each subangle an exact replica of the next larger angle.

The trading markets are similar in that any period we look at—long, medium, or very short—produces trends with the same characteristics and patterns as each other. Thus, for analysis purposes, the length of the trend is irrelevant because the technical principles are applicable to all of them. The trend length of interest is determined solely by the investor’s or trader’s period of interest.
This is not to say that different trend lengths should be ignored. Because shorter trends make up longer trends, any analysis of a period of interest must include analysis of the longer and shorter trends around it. For example, the trader interested in ten-week trends should also analyze trends longer than ten weeks because a longer trend will affect the shorter trend. Likewise, a trend shorter than ten weeks should be analyzed because it will often give early signals of a change in direction in the larger, ten-week trend. Thus, whatever trend the trader or investor selects as the trend of interest, the trends of the next longer and next shorter periods should also be analyzed.

For identification purposes, technical analysts have divided trends into several broad, arbitrary categories. These are the primary trend (measured in months or years), the secondary or intermediate trend (measured in weeks or months), the short-term trend (measured in days), and the intraday trend (measured in minutes or hours). Except for the intraday trend, Charles H. Dow, founder of the Dow Jones Company and the Wall Street Journal, first advanced this division in the nineteenth century. Charles Dow also was one of the first to identify technical means of determining when the primary trend had reversed direction. Because of his major contributions to the field, Dow is known as the “father” of technical analysis. We study the history of technical analysis, and in Chapter 2, “Dow Theory.”
What Other Assumptions Do Technical Analysts Make?

That markets trend is the basic principle underlying the theory of technical analysis. Of course, the price of the securities that are being monitored form the trend. Supporting this notion of trending prices, technical analysts have made several other assumptions that we cover briefly.

First, technical analysts assume that price is determined by the interaction of supply and demand. As basic economic theory teaches, when demand increases, price goes up, and when demand decreases, price goes down. One of the factors that determine supply and demand is buyer and seller expectations. (You do not buy a stock unless you expect it to rise in price.) Expectations result from human decisions, and decisions are based on information (perceived, accurate, or otherwise), emotions (greed, fear, and hope), and cognitive limitations such as behavioral biases, emotions, and feelings that originate from the chemistry and electrical connections within our brains. A new field of study called neurofinance, an interdisciplinary study of the application of neuroscience to investment activity, is finding remarkable connections between how our brain functions, how we make decisions, and how we invest.

Second, technical analysts assume that price discounts everything. Price discounts all information, related to the security or otherwise, as well the interpretation of expectations derived from that information. This concept was first articulated by Charles H. Dow, later reemphasized by William Peter Hamilton in his Wall Street Journal editorials, and succinctly described by Robert Rhea (1932), a prominent Dow Theorist, when writing about stock market averages:

The Averages discount everything: The fluctuations of the daily closing prices of the Dow-Jones rail and industrial averages afford a composition index of all the hopes, disappointments, and knowledge of everyone who knows anything of financial matters, and for that reason the effects of coming events (excluding acts of God) are always properly anticipated in their movement. The averages quickly appraise such calamities as fires and earthquakes.

This sounds a little like Eugene Fama’s (1970) famous statement related to the Efficient Markets Hypothesis (EMH) that “prices fully reflect all available information.” However, Fama was referring more to information on the specific security and was presuming that all interpretation of that information was immediately and rationally determined. Although technical assumptions include the price discount assumption of EMH adherents, they go far beyond that simplicity. They include not only information, both about the security and about all other outside factors that might influence that security price, but also the interpretation of that information, which might or might not be rational or directly related, and the expectations derived from that information. Interpretation, according to technical analysis, is subject to “irrational exuberance” and will “drive men to excess” as well as to a “corresponding depression” (Hamilton, 1922).
Third, an important corollary to the notion that markets trend is the technical analyst’s belief that **prices are nonrandom**.

Fourth, technical analysis assumes that history, in principle, will repeat itself (or as Mark Twain said, “History rhymes: It does not repeat”) and that **humans will behave similarly to the way they have in the past in similar circumstances**. This similar behavior tends to form into patterns that have predictable results. These patterns are almost never identical and are, thus, subject to interpretation, with all its own bias problems, by the technical analyst. This is the most controversial aspect of technical analysis as well as its most long standing, and it is only recently being investigated with sophisticated statistical methods.

Fifth, technical analysts also believe that, like trend lines, these **patterns are fractal** (see Figure 1.4). Each investor or trader has a specific period of interest in which she operates. Interestingly, regardless of period, patterns occur with similar, although not identical, shapes and characteristics. Thus, an analyst who is watching five-minute bar charts will observe the same patterns that an analyst watching monthly bar charts will see. These patterns suggest that the behavior that produces them is dependent also on the participants’ period of interest. A pattern in a five-minute bar chart, for example, is the result of other traders with a five-minute bar chart time horizon. Monthly investors would have very little effect on the five-minute bar chart, as five-minute traders would have almost no effect on the monthly bar chart. Thus, each group of participants, as defined by their investment horizon, has its own world of patterns that might or might not affect each other but will be similar in shape. Pattern analysis is, therefore, universal and independent of time.

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**BOX 1.2 PROFESSOR ANDREW LO’S ADAPTIVE MARKETS HYPOTHESIS**

In an attempt to reconcile the existing but different finance ideas of efficient markets and behavioral finance, Dr. Lo (Charles E. and Susan T. Professor at the Sloan School of Management, MIT) has proposed the “Adaptive Markets Hypothesis” (2004). Lo proposes a framework based on the principles of evolution, competition, adaptation, and natural selection in which markets and players change over time. The risk-reward relationship is not constant, but changes with market conditions. Thus, investors do not seek to optimize their returns because to do so is too costly. Decisions instead are made based on experience and “best guesses,” leaving them subject to interpretative and behavioral bias—namely emotions. As long as the markets are stable, these methods provide satisfactory results. When the economic environment changes, however, and the methods fail, the investors then have to adapt to survive. The size and strength of the different interacting player groups can cause this environmental change. An example is when the bondholders, during the 1998 Russian government debt default, sought liquidity and upset the investors in previously stable interest rate spreads, leaving them with failing and illiquid positions. Those who could rapidly adapt survived. Those who could not failed. In sum, investment strategies change and evolve; innovation is the secret of survival; and survival is the goal rather than maximizing the utility of risk versus return.
Sixth, technical analysis is also based on the notion that emotions are affected by earlier emotions through emotional feedback. If I buy a stock today and its price rises, I am happy and tell others to buy the stock, or others see its price rising and also buy it, thus causing the price to rise further. Action in the markets, therefore, is not independent but is related instead to how the market itself is behaving. Excessive feedback can cause “bubbles” when price behavior rises far out of proportion to value and can cause panics when price behavior declines sharply. Technical analysis presumes that prices will expand beyond equilibrium for emotional reasons, eventually will revert to the mean, and then expand beyond the mean in the opposite direction, constantly oscillating back and forth with excessive investor sentiment.

**Conclusion**

The focus of this chapter has been on the importance of understanding price trends to the practice of technical analysis. We have introduced some of the basic assumptions and beliefs of technical analysts. Some of the basic beliefs that technical analysis is built on and that we build upon throughout this book are as follows:

- The interaction of supply and demand determine price.
- Supply and demand are affected by investors’ emotions and biases, particularly fear and greed.
- Price discounts everything.
- Prices trend.
- Recognizable patterns form within trends.
- Patterns are fractal.

References


