REVISED EDITION

TIME THE MARKETS

Using Technical Analysis to Interpret Economic Data

Charles D. Kirkpatrick II, CMT

Foreword by Tom McClellan

Time the Markets

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Using Technical Analysis to Interpret Economic Data, Revised Edition

Charles D. Kirkpatrick, II, CMT

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On a project such as this book, two requirements are necessary: contemplative seclusion and the basics of life: sleep, food, and something to pat. My dear wife, Ellie, and our furry animals kept me secure, satisfied, and hidden. For that, I am intensely grateful. Ellie deflected potential disturbances, not to mention providing timely sustenance; our goofy golden retriever, Posie, kept my feet warm during the cold Maine winter nights; and Frisbee, our long-haired, reject cat from the Colorado humane society, slept on my papers and accepted my occasional strokes of her fur. To them I dedicate this book.

Contents

Acknowledgments

In projects like this book, the Internet and one's computer become your best friends. They provide information, complete complicated calculations, and remain alive 24 hours of the day. I am a night owl and prefer the quiet and calm of late nights and early mornings. I have a relatively small office at home that looks over the ocean during the day but could be anywhere at night. To me, this is the perfect work environment.

Working late at night means that email becomes the primary method of communication. Through such give and take over the wires, many people familiar with the work I was doing assisted me. They helped considerably in the book's organization and application. Special thanks I owe to Tom McClellan (www.mcoscillator.com) and Jason Goepfert (www.sentimenttrader.com) for their willingness to provide their historical data. Tom also reviewed the manuscript for me and made numerous helpful suggestions and changes to my fractured prose. Also helpful were Investors Intelligence (www.investorsintelligence.com), the *Economist* magazine (www.economist.com), and the Commodities Research Bureau (www.crbtrader.com). While I didn't use all their data, they were very willing to assist and were especially generous with their knowledge of economic statistics.

The primary methodology used in the book is called "walk-forward optimization." This technique is relatively new to the securities business and technical analysis specifically, and is not widely known or understood. I, too, was a novice when I began. I am especially grateful for help with it from Rob Hanna (quantifiableedges.blogspot.com), Bob Fulks of Pleasant Bay Capital Management, Wouter Oosthuizen of the Grail optimization system (now an integral part of TradeStation analysis software), and Berkhard Eichberger of the Diamond Back Testing with Walk Forward Manager system from Professional Software Solutions.

No book is the sole effort of the author. Many competent people at FT Press, most of whom I have never met, are responsible for the multiple aspects of publishing this book. I thank those with whom I have had direct contact—Jim Boyd, Kristy Hart, Jess DeGabriele, Lori Lyons, and Cheri Clark—and those who are hidden in the corporate structure somewhere for whatever excellent work they do to get this project completed and on the shelves.

Finally, as the dedication explains, I could not have finished this project without the help and encouragement from my dear wife, Ellie, and our furry household creatures.

Charlie Kirkpatrick
Kittery, Maine
October 24, 2011

About the Author

Charles D. Kirkpatrick, II, CMT, is president of Kirkpatrick & Company, Inc., a technical analysis research firm that publishes the *Market Strategist* investment newsletter. During his professional career, he was an institutional salesman, technical analyst, portfolio manager, hedge fund general partner, securities trading firm owner, option trader, floor trader, lecturer at universities, expert witness at security trials, small business owner, charitable foundation organizer and officer, and combat-decorated officer in Vietnam.

A past instructor in finance at the School of Business Administration, Fort Lewis College, Durango, Colorado, and recently Adjunct Professor of Finance at Brandeis University's International Business School, he is the only two-time winner of the Market Technicians Association's prestigious Charles H. Dow Award for research in technical analysis and winner of the Market Technicians Association 2008 Annual Award for "outstanding contributions to the field of technical analysis."

He is a Chartered Market Technician (CMT), a past member of the board of directors of the Market Technicians Association, and past editor of the *Journal of Technical Analysis*. He is a past member and vice president of the board of the Market Technicians Association Educational Foundation and is currently a

member of the American Association of Professional Technicians (AAPTA).

In addition to more than ten published articles on aspects of the stock and bond markets, he coauthored *Technical Analysis: The Complete Resource for Financial Market Technicians*, the primary textbook for the CMT program and for university graduate courses in technical analysis, and he authored *Beat the Market*, a book on relative strength stock selection. A graduate of Phillips Exeter Academy, Harvard College (AB), and the Wharton School of the University of Pennsylvania (MBA), he lives in Maine with his wife of almost 50 years.

Foreword

"Every investor is a market timer. Some people buy when they have money and sell when they need money. Others use methods that are more sophisticated."

—Marian McClellan, 1934–2003

My mother Marian taught me that lesson many years ago, when I was first getting started as a stock market analyst. She had seen and heard a lot of good and bad market "wisdom" over the years since she and my father Sherman McClellan first created the McClellan Oscillator and Summation Index back in 1969. Since that time, hundreds of thousands of people have become aware of the tools that they originated, and a smaller number than that have learned to use them successfully to help in their market timing.

The term "market timing" has taken on a negative connotation over the years, and that is unfortunate. The "buy-and-hold" community has sought to convince all of us that the key to investing success was to stay fully invested for the long run so that you don't miss the big up days that account for a lot of the gains. And you can certainly find periods in history when that was a good idea. But they conceal from you the fact that the biggest down days are larger than the biggest up days and that the big down days tend to arrive in groups. The key to real investing success is to make as much as possible

when the market is going up and to lose as little as possible when it is going down.

Sustained bull markets like the 1980s and 1990s are great when they appear. But there are more periods in history when being a "sheep" investor who just stays with the flock has led to destruction of wealth. We are in such a period now. Baby Boomers are starting to retire and are no longer participating as much in the entrepreneurial economy like they did in the 1980s and 1990s when Boomers were in their peak entrepreneurial years. Now, Boomers are seeking to hold onto what they have rather than maximize their investing and entrepreneurial potential.

Boomers are hoping to sell their stock portfolios and their McMansions to someone else, and in a few years the "echo-boomers" will be in a position to acquire those assets. But the "echo boom" peaked in 1990, and those kids are still in college now. The echo boomers are neither ready nor able to buy your McMansion, let alone your bond portfolio.

We went through a similar period in the 1970s. The United States had just come through more than 20 years of strong economic growth. But the people who were in their peak entrepreneurial years during the 1970s had been born in the 1930s and early 1940s—a time when the country and indeed the whole world was going through the Great Depression. Birth rates dropped in the 1930s because couples were afraid of having one

more mouth to feed. So the kids who did not get born in the 1930s also did not go on to become workers and entrepreneurs in the 1970s, which meant that both the stock market and the economy suffered as a result.

That did not stop the U.S. government from trying to do things to "fix" the economy in the late 1960s and 1970s. President Nixon tried wage and price controls, which were a colossal failure. The Federal Reserve kept interest rates lower than the inflation rate in hopes of stimulating growth, and sometimes that was successful. But it also led to huge inflation and wealth destruction. The ebb and flow of liquidity in the system at different times created big waves up and down in the stock market. It was a great time for market timers and a lousy time for investors, just like the 1930s had been four decades earlier. And just like the 1890s had been four decades before that.

Now we are four decades forward from the 1970s, and once again, we have the Federal Reserve and the federal government trying imaginative ways to fix the economy. So just like in previous periods, we are going to see huge ebbs and flows of investing success and destruction of wealth. The game that worked in the 1980s and 1990s has changed; so if you are going to play this new game, you will have to change your style of play.

Timing Is Key

When you make up your mind what to buy, the only condition that is under your control is when you will pull the trigger. You don't get to set the price; you have to take whatever the market is offering. You can try to buy a stock at a different price than what everyone else thinks is the right price at that moment, but good luck convincing anyone to sell it to you at less than what the market sets.

And when you own an investment, the only question is whether you are going to hold onto it or sell it. If you are selling it, the essential question is "When?" You might say that you want to sell when it reaches a certain price or when it reaches some multiple of earnings, but that is not meaningful information to the market. The market wants you to say, "Sell now," or "Don't sell now." Those are the only messages that the market understands.

The people who say they do not time the market fail to understand this essential reality. Everyone times the market, whether he accepts that notion or not. The timing of your investment decisions will have a huge effect on your success or lack thereof. So to say to yourself (or anyone else) that you are not a market timer is to say that you willingly abandon the one factor that is in your control, and which is the key to your own success.

It is far better for investors to seek to maximize their success through mastering the factors within their control, while also minimizing the effects of factors that are beyond their control. To do otherwise is to be dishonest to oneself or to accept whatever the universe decides to do to you.

I have known Charlie Kirkpatrick for several years, and what I admire most about him is his willingness to share useful information with others. Charlie loves to teach and to elevate the collective wisdom of the community by sharing the great insights he has uncovered over the years. Those of us who have been smart enough to open our ears when Charlie is talking have benefited greatly.

In *Time the Markets*, Charlie leads us through proven ways to time our investment decisions using data and facts that most of us can understand. You won't have to learn to interpret tea leaves or pig entrails, to map star and planet positions, or program mathematically complex formulas into a "black box." Just take the important data that are freely available from government and other sources and learn how to read and understand what the changes in those data mean for the future of stock price movements.

Our country and our economy need the services of investors who can appropriately add liquidity at the right time and take it away from the market at the right

time as well. To those who can perform this great service, the market will give rewards in the form of a larger amount of money so that they can do those services again in the future. But people who buy at tops and sell at bottoms are a hindrance to an efficient market, and the market will punish them by diminishing their ability to engage in such harmful behavior in the future.

You can choose to be in the "useful and thereby enriched" group and be a help to the market. For instructions in how to do that, read on and enjoy. Or you can be a sheep. Sheep should close the book now.

Tom McClellan
Editor, *The McClellan Market Report*
www.mcoscillator.com

Preface

The reasons for this revised edition of *Time the Market* are twofold: First, the original edition had some compromised data that slipped through the editing process. Second, and more importantly, the means of calculating walk-forward optimization became easier and more comprehensive shortly after the original edition was published. This ease and increased accuracy, as well as greater confidence in the outcomes, caused me to completely revise all the indicator system calculations. The results are more accurate and have more credibility than those in the original edition. Indeed, you can be certain that the system formulas and their outcomes are as up-to-date as possible. Those of you who wish to duplicate the calculations should have little difficulty. I use TradeStation's newly integrated walk-forward optimization programs. Using other programs may produce different results, but I have great confidence in the systems that passed successfully through the TradeStation method.

If you have serious problems with duplicating the results, please let me know. My email address is kirkco@capecod.net.

Charlie Kirkpatrick
October 27, 2011

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Technical Analysis

This chapter covers the technical analysis techniques that are used later in determining the success or failure of market timing systems based on economic data. They do not include the standard chart pattern analysis, but instead they include the analysis of trends using moving averages and other methods.

Trends

As any chart of market prices will show you, prices have a predilection toward traveling in trends. The trend, of course, can be upward or downward at various slopes or sideways. Most investors in trading markets make money following the trend of an investment price. The fact that prices trend makes it possible to make money. If prices were purely random in their movement, no one would profit. But people do profit, and very handsomely, because prices travel in trends. From a technical perspective, a trend is a directional movement in prices that remains in effect long enough to be identified and still be playable. Not all trends last long enough to be recognized and then acted on. Profiting also depends on the investment horizon of the person analyzing trends. If his outlook is for long-term trends, day-to-day price motion is irrelevant. If his outlook is to swing trade over a few days, the long-term trend is unimportant.

Regardless of the trend length, prices do not follow a straight line. Around the trend, prices tend to fluctuate. When that trend changes direction, it is first evident in one of the fluctuations. However, not all fluctuations are changes in trend. They may be just countertrend oscillations about the trend that will return to the direction of the trend.

The small vacillations around a trend sometimes make the trend difficult to identify. Shorter trends are parts of longer trends. Though trends may be obvious in hindsight, ideally, we would like to spot a new trend right at its beginning and spot when the trend has ended. This ideal, however, never happens, except by luck. No magic indicator exists to spot precisely the beginning and end of a trend. Looking at a graph of prices, an analyst can spot many trends of varying length and magnitude, but such observations are observations of history only. A trend must be recognized early and last long enough to profit. If you spot it too early, your chances of failure are greater; perhaps it was just an aberration or a smaller, countertrend move, or perhaps it was a new trend but not long enough or large enough to profit. If you allow more time to prove that the trend exists, the chances of failure are less but potential profit is lost when the price continues in the new direction without your position. There is always a trade-off between potential risk and potential reward. This is why so much effort goes into accurately recognizing the beginnings and ends of trends.

Momentum

In the trading markets "momentum" is a word that is commonly used to describe the rate at which price trends are changing. Classically, a price "trend" is a series of prices that generally head in the same direction (up, down, or sideways). However, we know that prices do not trend in one direction forever. When any change in direction occurs, we say the prices changed momentum. The directional change need not be a reversal in direction. A trend change can just be a different slope or rate of change.

Imagine a car traveling at 60 miles per hour. The 60 miles per hour is its speed, or its travel "trend." Should the car slow down, we say it is "decelerating." It is still traveling in the same forward direction but at a slower speed, and to get to that speed, it had to decelerate. In markets, when the price trend is not rising as fast as it was at an earlier point, we say it is losing momentum, or decelerating. In prices, losing momentum can eventually result in a trend reversal. The car can stop and go backward. Changes in momentum thus occur before changes in direction, just as changes in the car acceleration or deceleration precede changes in direction. For this reason, we want to study momentum. It leads trends' directional changes.

This is why price analysts so thoroughly study momentum in markets. If they can detect a change in

momentum, they might receive a clue as to how the price trend will change direction in the future. Momentum is an early warning device in markets.

The traditional manner of measuring momentum is to calculate the change in prices from one period to another. If the change is constant, the momentum is neither increasing nor decreasing. If the change declines, we receive a momentum warning that a price decline may be ahead. Conversely, when momentum increases, we receive a warning that an advance may be ahead. You should be somewhat careful in interpreting momentum change, however. A change in momentum does not always bring a change in price direction. A momentum change can occur when the price trend slope is increasing or decreasing but not necessarily reversing.

Because prices are never rising or falling steadily but have intermittent oscillations back and forth, you must use a method that can measure momentum yet reduce the effects of the minor oscillations. Technical analysts do this by using moving averages.

Moving Averages and Moving Average Crossovers

Moving averages are one of the most useful methods of identifying and profiting from trends in prices or in any other economic data. They are one of the oldest tools

used by technical analysts, dating back to 1901 with the work of mathematician R. H. Hooker [1]. Moving averages dampen out most of the fluctuations shorter than the length of the moving average. A 40-day moving average will reduce the effect of any fluctuations of 40 days or less, for example. One-day fluctuations are almost completely erased. The moving average reflects what occurred over the entire 40 days rather than just 1 day. When a moving average changes direction, we know that the trend represented by that moving average has changed direction.

An average is the sum of a number of specific data, such as prices, divided by the number. A 20-day price average is the sum of 20 days of prices divided by 20, the number of days. (A "moving average" is the average calculation performed over successive periods and usually plotted on a chart for clarity.) A 20-day moving average, as shown in Figure 3.1, is a calculation of the 20-day average over some succession of days. When plotted on a price chart, the moving average is usually a smooth line that dampens the effects of the minor, sometimes erratic oscillations in the data. It thus represents the trend through that data over the period of the moving average and disregards the clutter around it. It is a measure of the trend and is useful for determining when the trend is changing. A rising moving average indicates a rising trend over the period of the moving average. A declining moving average indicates a declining trend. If we calculate a rate of change in a moving

average, we can see changes in the trend and thus the trend momentum.

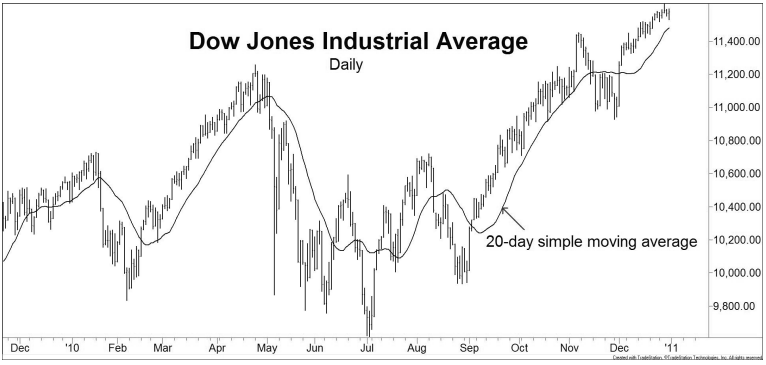

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FIGURE 3.1 Dow Jones Industrial Average with 20-day simple moving average (September 14–December 31, 2010)

The easiest type of moving average to understand is called a simple moving average, or SMA. Analysts also use other types of moving averages, such as the exponential, the linearly weighted, the Wilder, the geometric, and the triangular. There are even methods that will vary the moving average length based on the historic volatility of the prices known as "adaptive" moving averages. For our purposes, the results of these esoteric calculations provide no extra advantage. The simple moving average is easy to construct and suffices for all your calculations.

The use of moving averages in investing has been widely documented. It is the reason for the success of many commodity traders, and academics have shown that methods using moving averages demonstrate statistical significance. Early studies of moving averages as a timing method for stocks discounted their value. These studies used crossovers of prices and moving averages, not crossovers of moving averages to moving averages, and were statistically primitive. Brock, Lakonishok, and LeBaron (1992) [2] conducted the first study to show the validity of using moving average crossover rules, as well as trading range break rules. They found that moving average crossover signals generate statistically significant stock market directional signals. Since then, using market data in other markets and in other countries, additional studies have confirmed much of their original academic work. We use similar methods ourselves when we analyze the data for signals in later chapters.

We know that the markets have many different trends going at one time. There is the long, secular trend, and then the intermediate-term trend, the short-term trend, and other trends above, below, and in between. We can construct a moving average of any length, provided that the price information is available. Generally, shorter-period moving averages represent shorter price trends, and longer moving averages represent longer price trends.

If we calculate more than one moving average over different periods, we see the changes in the shorter trend versus the longer trend. Eventually the shorter moving average will cross over and under the longer moving average. These "crossovers" can be signals of impending change in price trend direction. Any system developed to use these crossovers is called a "moving average crossover system." The unknown variables in such a system are the lengths of the two moving averages. We can prejudge what those lengths should be, or we can optimize the data to see what lengths give the most reliable signals.

A longer-period length includes more data and more information. Each specific data point becomes less important. A large change in specific data thus has less influence on the longer moving average. However, if this large change in data is the beginning of a significant change in trend, it takes longer for the trend change to be recognized. The longer moving average is slower to pick up trend changes but less likely to indicate a trend change incorrectly from a short-term blip in the data.

Figure 3.2 shows two moving averages in the daily chart of the Dow Jones Industrial Average (DJIA). The shorter-length moving average, 9 days, oscillates around the 18-day average and has a wider range. The 9-day is the "faster" moving average, and the 18-day is the "slower" moving average. The shorter-length

moving average is always the faster average because it turns more quickly when a trend change occurs. It is less reliable as an indicator of trend changes, however. In Figure 3.2, notice how the 9-day moving average (dashed line) makes its troughs after the actual price bottoms, and the 18-day moving average (solid line) makes its troughs even farther after the actual price bottoms.

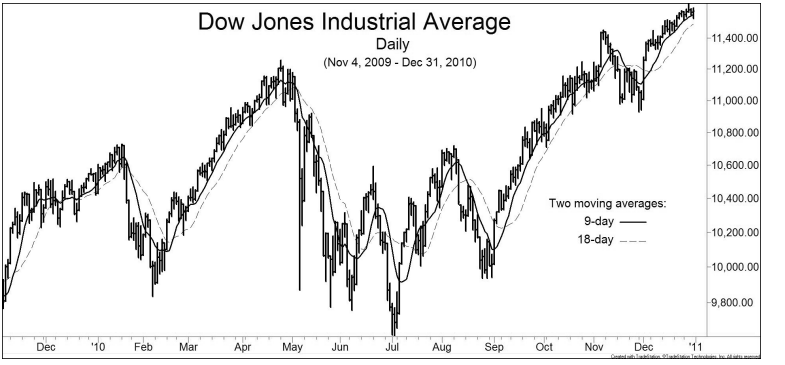

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FIGURE 3.2 Two moving averages: 9-day and 18-day (Dow Jones Industrial: November 4, 2009–December 31, 2010)

The lag in turning, however, has an advantage. That is the advantage of surety of the signal. A change in direction of a moving average is more accurate the longer the moving average period. A crossover of a fast moving average and a slow moving average will tend to occur near the turning point of the slow moving average, and thus, while occurring long after the actual turn

in prices, it is more reliable as a signal. The conflict between accuracy and reliability is a recurring theme in any technical signal. Reliability reduces loss and is thus a preferable characteristic of any signaling system. For this reason, moving average crossover systems are more commonly used for their reliability, even with their late signals.

A flat trend results in moving averages oscillating horizontally and crossovers not followed by directional change in prices. This causes "whipsaws" in signals whereby a buy signal is followed by a sell signal at or below the buy signal price, and vice versa. This major signal fault with moving average crossover systems occurs only when the trends are flat and the trader loses money chasing fluctuating signals.

Figure 3.3 shows a flat period in Core Laboratories' share price, when the moving average crossovers gave false signals called whipsaws. It is thus important that the moving average period lengths be long enough to bypass any flat trends in the price. Because this is not always possible, moving average crossover systems have a high rate of false signals. Fortunately, the losses are quickly recovered by reverse signals. We can reduce these whipsaws with filters and other methods but never can eliminate them. On the other hand, the advantage of a moving average crossover system is that it will catch every major trend change and "ride" that new trend to its termination.

As long as markets trend, the moving average crossover method, when properly applied, will catch the major trends.

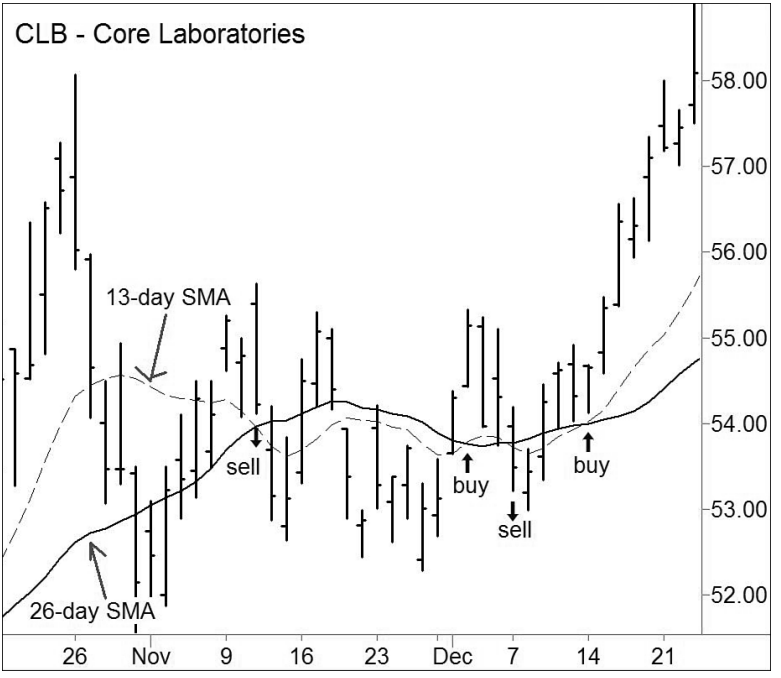

FIGURE 3.3 Simple moving average (SMA) crossovers causing whipsaws in a flat trend (Core Laboratory common stock, daily: October 19–December 23, 2009) from *Technical Analysis*, page 281

Ratio of Price to a Moving Average

We can also detrend the data by subtracting it from, or dividing it by, the moving average. The resulting data is a portrayal of the fluctuations about the trend as it is represented by the moving average. Figure 3.4 shows the DJIA with a 20-day moving average again. Following the price chart is another chart showing the ratio of the closing price to that 20-day moving average. You can see the oscillations around the trend more clearly in this lower chart. The peaks and valleys in the ratio chart show the periodicity of price oscillations. Sometimes these are regular, as in a harmonic cycle, and sometimes they are irregular and of little predictive use. In this instance, they are regular. The lows, for example, occur roughly every 68 days.

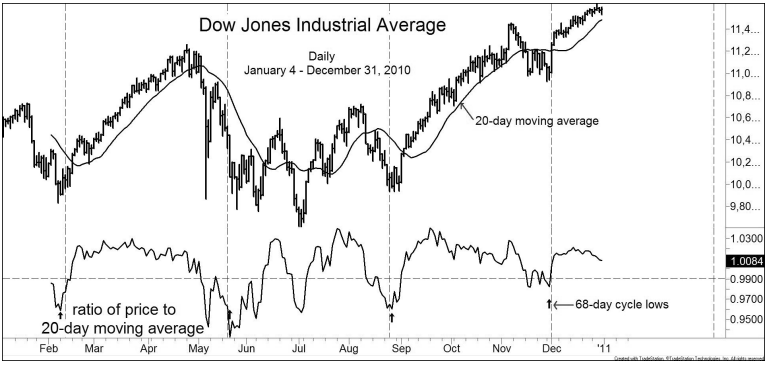

FIGURE 3.4 Dow Jones Industrial Average, 20-day moving average, and ratio of current price to the 20-day moving average, showing 68-day cycle period of lows (January 4–December 31, 2010)

Cycles

The stock market, and most other markets, has distinct cycles. Prices oscillate up and down around a trend. Sometimes these oscillations show regularity in their occurrence beyond pure chance. We call them "cycles," but they are not cycles in the harmonic sense. They are constant intervals between successive price tops or bottoms. They are also controversial. Some think cycles are imaginary, visions in the eyes of technical analysts; others discount them because their behavior is unexplained. Whereas cycles such as the 68-day are obviously difficult to justify, others are obvious and as regular as the sunrise each day.

The most obvious and easily explained are the seasonal cycles in agricultural commodities. The most predominant cycle in the stock market is the four-year cycle. This stock market cycle makes an important low roughly every four years. Wesley Mitchell (1874–1948), economics professor and founder of the National Bureau of Economic Research (NBER), discovered it. He observed that the U.S. economy from 1796 to 1923 suffered a recession approximately every four years. The stock market over the past 200 years has shown the same periodicity. Table 3.1 shows the cycle lows over the past 100 years and the average interval between lows.

There are other cycles in the stock market, but the most important, and the one we are concerned with here, is the four-year cycle. It is often associated with the business cycle, and because it bottoms every four years, it is also called the "Presidential" cycle for the interval between Presidential elections. I believe it has nothing to do with the Presidential election because it also occurs in most other countries and especially in those whose elections occur at intervals other than four years. It has also occurred for well over 150 years and began long before the U.S. became an economic superpower. It is likely due to a combination of business cycle and investor memory, but both thoughts are unproven. Nevertheless, it exists and is a very important factor when analyzing the probability of imminent market declines.

Of course, the business cycle is not a cycle in the harmonic sense either. Instead, it is a wide fluctuation in business activity with an irregular periodicity that averages four to five years. However, it does affect stock market prices and bond interest rates.

TABLE 3.1 Four-Year Cycle in the Dow Jones Industrial, 1896–2010 (Adapted from Bressert, 1991)[3]

Date of Low	Low Close	% Decline from High to Next Low	Date of High Close	High Close	% Advance to High	Months Low to Low	Months Low to High	Months High to Next Low
August 8, 1896	28	–31.2%	April 25, 1899	77	175.0%	49.0	32.0	17.0
September 24, 1900	53	–46.2%	June 17, 1901	78	47.2%	38.0	8.9	29.2
November 9, 1903	42	–48.5%	January 19, 1906	103	145.2%	48.9	26.7	22.2
November 15, 1907	53	–27.7%	November 19, 1909	101	90.6%	47.0	24.5	22.5
September 25, 1911	73	–43.6%	September 30, 1912	94	28.8%	39.5	12.4	27.2
December 24, 1914	53	–40.0%	November 21, 1916	110	107.5%	36.4	23.3	13.1
December 19, 1917	66	–46.7%	November 3, 1919	120	81.8%	44.8	22.8	22.0
August 24, 1921	64	–16.7%	February 11, 1926	162	153.1%	56.0	54.4	1.6
March 30, 1926	135	–47.8%	September 3, 1929	381	182.2%	44.1	41.8	2.4
November 13, 1929	199	–86.1%	April 17, 1930	294	47.7%	32.3	5.2	27.1
July 8, 1932	41	–49.0%	March 10, 1937	194	373.2%	69.7	56.9	12.9
March 31, 1938	99	–40.4%	September 12, 1939	156	57.6%	49.6	17.7	32.0
April 28, 1942	93	–23.5%	May 26, 1946	213	129.0%	54.2	49.6	4.5
October 9, 1946	163	–16.1%	June 15, 1948	193	18.4%	32.6	20.5	12.1
June 13, 1949	162	–12.9%	January 5, 1953	294	81.5%	51.8	43.4	8.4
September 14, 1953	256	–19.5%	April 6, 1956	522	103.9%	50.0	31.2	18.8
October 22, 1957	420	–27.1%	December 13, 1961	735	75.0%	56.9	50.4	6.5
June 26, 1962	536	–25.2%	February 9, 1966	995	85.6%	52.1	44.1	8.0
October 7, 1966	744	–35.9%	December 3, 1968	985	32.4%	44.2	26.3	18.0

Date of Low	Low Close	% Decline from High to Next Low	Date of High Close	High Close	% Advance to High	Months Low to Low	Months Low to High	Months High to Next Low
May 26, 1970	631	–45.1%	January 11, 1973	1052	66.7%	55.2	32.0	23.1
December 6, 1974	578	–26.9%	September 12, 1976	1015	75.6%	39.3	21.5	17.8
February 28, 1978	742	–24.1%	April 27, 1981	1024	38.0%	54.2	38.5	15.7
August 12, 1982	777	–36.1%	August 25, 1987	2722	250.3%	63.1	61.3	1.8
October 19, 1987	1739	–21.2%	July 17, 1990	3000	72.5%	36.3	33.4	2.9
October 11, 1990	2365	–9.7%	January 31, 1994	3978	68.2%	42.4	40.3	2.1
April 4, 1994	3593	–18.5%	July 17, 1998	9338	159.9%	54.0	52.2	1.8
September 10, 1998	7615	–37.8%	January 14, 2000	11723	53.9%	61.9	16.4	45.5
October 10, 2003	7286	–6.6%	March 4, 2005	10941	50.2%	24.5	17.0	7.4
October 13, 2005	10217	–53.8%	October 9, 2007	14165	38.6%	41.3	24.2	17.1
March 5, 2009	6547							
Averages		**–33.3%**			**99.6%**	**47.2**	**32.0**	**15.2**

Cycle Terminology

Harmonic cycles are composed of three measures: period, amplitude, and phase. Because market cycles are not true cycles in the harmonic sense—otherwise they would have been identified more precisely long ago and would be easily recognized through standard harmonic mathematics such as Fourier analysis—we find that the only consistent measure is that of "period." This refers to the time it takes to progress through one complete cycle from bottom to top to bottom again. Amplitude in markets, the amount by which prices rise from bottom to top, is not easily analyzed because it varies with the volatility of the market, which in turn is based on the emotions of the market players. It is quantifiable but is not predictable. Phase is the position of the cycle in relation to other cycles and is not considered in markets. The only measure we are interested in then is the period—how long the cycle is and thus when is it due to bottom in the future.

It is best to measure stock market cycles from bottom to bottom because tops are generally rounded and bottoms are usually sharp Vs. This difference in configuration seems to be due to their different psychological backgrounds. Panic often accompanies bottoms, and panic can come very quickly to the mass psyche. Thus, market bottoms tend to be sharp and completed quickly. On the other hand, greed is the most prevalent

emotion at tops, but greed takes more time to develop. Thus, tops are rarely sharp spikes but more often are rounded and at times difficult to identify even in retrospect. In economic data series, the differences in shape between tops and bottoms are less obvious. Although we might use different length moving averages to catch the tops and bottoms, in economic data it does not seem to make much difference. We therefore use the same length moving averages to hunt for tops and bottoms in economic data.

There are various ways to measure cycle periods. The easiest is to look at a ratio chart like that shown in Figure 3.4. This chart shows the ratio of the current price to its 20-day moving average. As the price oscillates around the moving average, we see definite peaks and valleys in the ratio. If these peaks and valleys appear to occur at relatively equal intervals, we likely have a cycle period in the data. In Figure 3.5, the price chart is of the DJIA on a monthly basis with a 24-month moving average, and the lower graph shows the ratio of the current price with its moving average. The four-year market cycle is readily apparent and marked with vertical dashed lines. This is the major market cycle in the stock market and the one that we should concentrate on for market timing of investments.

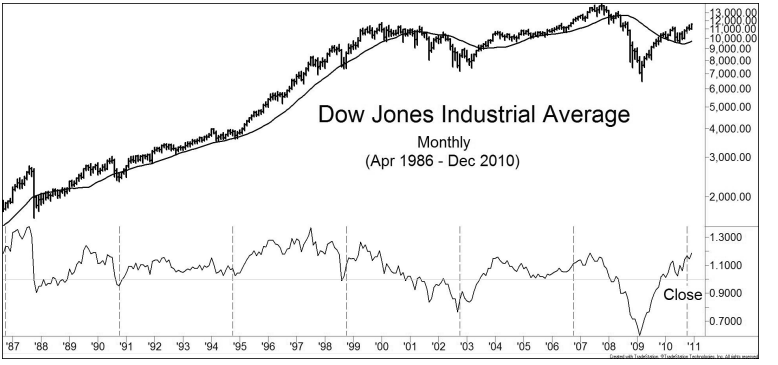

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FIGURE 3.5 Ratio of monthly close to a 24-month moving average showing 4-year cycle lows (April 1986–December 2010)

Notice in Figure 3.5 that the cycle is not perfect. Nothing is. The major declines in 1987 and 2008 did not occur at the normal four-year interval. It turns out they are part of a longer speculative cycle, but for our purposes, the four-year cycle assumption is not perfectly accurate. For this reason, as you will see in the next chapter, we use filters and stops to prevent our being hurt by unexpected events. These methods will signal us to leave the stock market despite what the fundamental and technical analysis suggests.

Conclusion

The principal difference between this book and other technical analysis books is that we are looking at measures of momentum in economic data with the intent to discover technical signals of long-term market price changes. In other words, when an economic series system gives a sell signal, it will apply not necessarily to the economic data itself but to stock market prices. It may also signal an economic recession, but we are now concerned with profiting from the market direction, not the economy's direction. The systems we create are from moving average crossovers of economic data. These crossovers will give us specific buy and sell signals that we test using sophisticated walk-forward optimizing methods for reliability and predictability. The final market-timing model includes the best of these systems.

Endnotes

[1] www.mcoscillator.com/learning_center/kb/market_history_and_background/who_first_came_up_with_moving_averages/.

[2] Brock, William, Josef Lakonishok, and Blake LeBaron. 1992. "Simple Technical Trading Rules and the Stochastic Properties of Stock Returns." *Journal of Finance* 47:5, 1731–64.

[3] Bressert, Walter. 1991. *The Power of Oscillators/Cycle Combinations*. Tucson, AZ: Walter Bressert and Associates.

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