CHAPTER 7

Using Cycles for Price Projections

PETER ELIADES

The theory of stock market cycles contends that stock prices and stock indices move as a result of a combination of cyclical forces. Fundamental factors also influence stock prices, but their effect is generally smooth and, barring major fundamental developments, unrelated to market timing. The influence of fundamental factors is theoretically sideways or up or down at varying angles of ascent or descent. The cycles fluctuate around the smooth fundamental line and are responsible for a great part of a stock's fluctuations.

Figure 7.1 looks very much like a typical stock chart. Most analysts would consider the movements in the chart to be random, with little if any predictability to the pattern. The fact is that this chart is an exact representation of a combination of four sine waves and a straight line. It is perfectly predictable. For those who are mathematically inclined, it represents the equation: $y = 12 \sin$

FIGURE 7.1

Typical Stock Chart

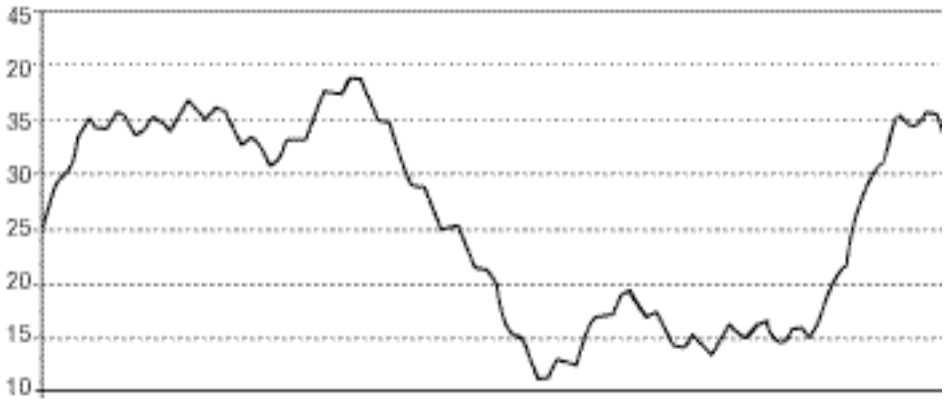
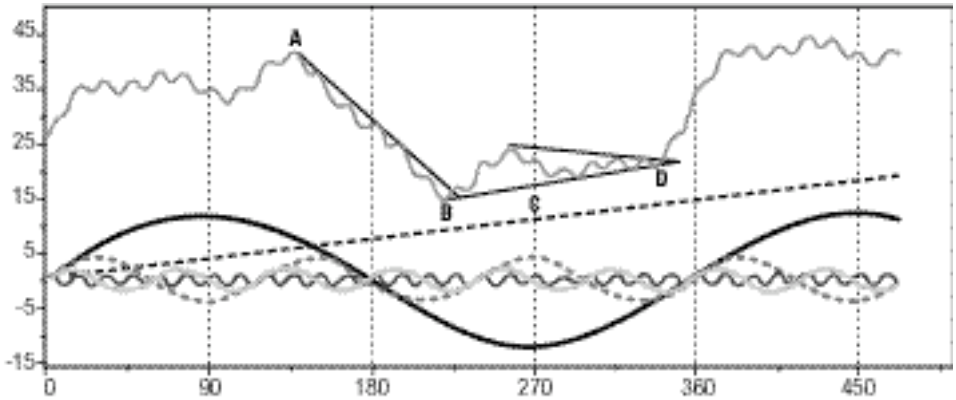


FIGURE 7.2

Components of the Typical Stock Chart



$x + 4 \sin 3x + 2 \sin 6x + \sin 24x + .04x$, where y represents price or the vertical axis and x represents time or the horizontal axis. The concept for the chart is from *The Art of Independent Investing* by Claud Cleeton (New Jersey: Prentice Hall, 1976).

Figure 7.2 is a repeat of Figure 7.1, this time accompanied by the four sine waves and the straight line that determine the exact shape of the chart. The simple combination of four sine waves and a straight line produces some common technical patterns. The decline from point A to point B is delineated by what technicians would call a descending tops line. A move above the line is generally viewed as positive. The price pattern from point B to point D forms a triangle bordered by a rising bottoms line and a declining tops line. Note that when the price breaks out of the triangle formation to the upside, the subsequent move is strongly up, as a technical textbook might suggest. No real-life stock chart is, of course, a strict mathematical formula, but the principles of general predictability apply.

This interpretation of how cycles combine to determine the movement of stocks and stock indices and averages does not imply that only four cycles determine the fluctuations of stocks. There are probably scores of cycles acting simultaneously on the market, making analysis a more difficult procedure than a simple breakdown of mathematical formulas. But the cycle techniques discussed in

this chapter require no mathematical skills and can be used to project price objectives for stock indices and, in some cases, individual stocks.

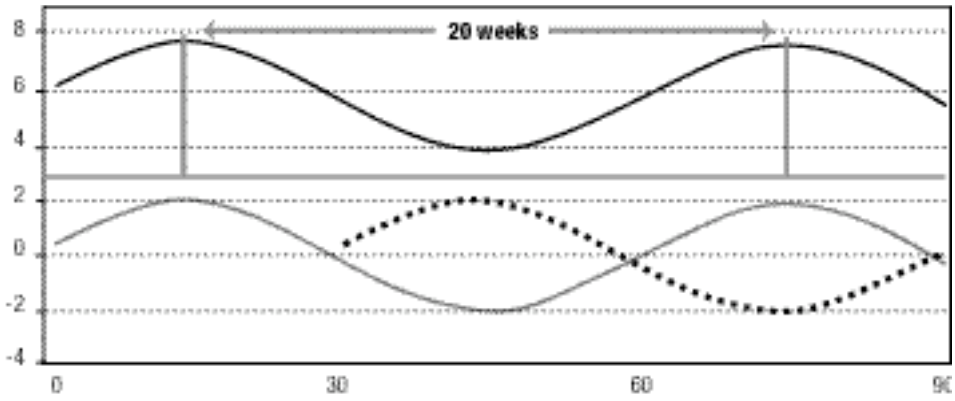
Basic Steps in Generating Price Projections Using Offset Lines

Although analysts have refined the art of cycle projections over the past twenty-five years, it is necessary to acknowledge the foundation built by J. M. Hurst, the man who first kindled the spark of intellectual curiosity within so many analysts with his book entitled *The Profit Magic of Stock Transaction Timing* (New Jersey: Prentice Hall, 1970). Hurst described a technique for deriving price projections in that book, and later improved on that technique to make the analysis more objective.

Figure 7.3 depicts two waves of a theoretical 20-week cycle. In the lower half of the chart, the cycle has been moved forward in time exactly one-half cycle or, in this case, 10 weeks. The dashed line that represents the cycle moved forward intersects the solid, original cycle wave exactly halfway between the bottom and the top of the cycle. Each time the solid line intersects the dashed or offset line, the solid line continues until the advance or decline equals the distance it has already traveled to the point of intersection. In other words, the point of inter-

FIGURE 7.3

20-Week Cycle with 10-Week Offset



section marks the halfway point for that particular cycle.

Before the advent of computers sophisticated enough to do the graphics involved, the best way to derive the projections was to use tracing paper. By tracing the chart you wish to analyze, then moving the tracing paper forward in time by varying periods, you can make price projections for the item being analyzed. If we have a bar chart showing the range for the day (or week if it is a weekly chart) marked by the top and bottom of the bar, the most accurate projections are usually derived by preparing the chart as follows. Before tracing the chart, draw a line from the midpoint or median of each bar to the median of the following bar. With a commercially prepared or a computer generated chart, you can substitute the closing price for the median. After drawing a line connecting each bar on the chart, you are ready to do the tracing.

The same concept is presented in **Figure 7.4,** but with a more realistic idealization, using a bar chart. A line is drawn from each day's median or average price to the next day's median or average price. Notice how the average price starts at 10, moves up one point per day for 10 days, then reverses and moves down one point a day for 10 days. The distance from top to top is 20 weeks and the distance from bottom to bottom is 20 weeks—a perfect cycle. If you were doing cycle analysis on this idealized chart, you would place tracing paper over the chart and simply trace a line connecting the midpoints (medians or aver-

FIGURE 7.4

Idealized Bar Chart 20-Week Cycle

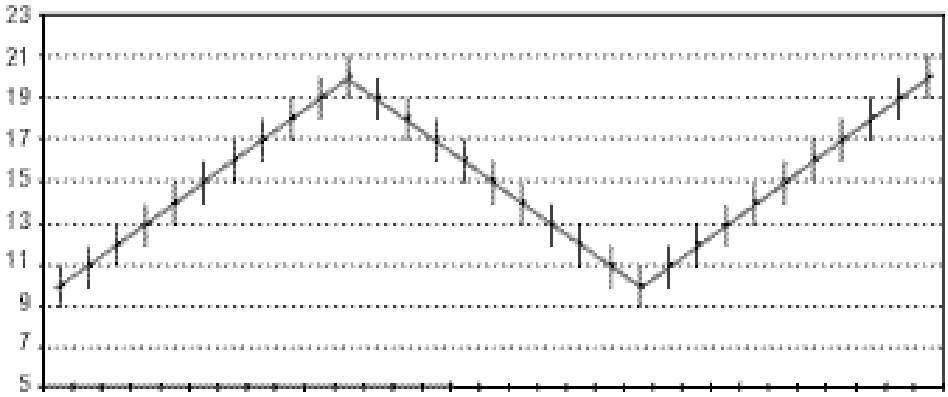
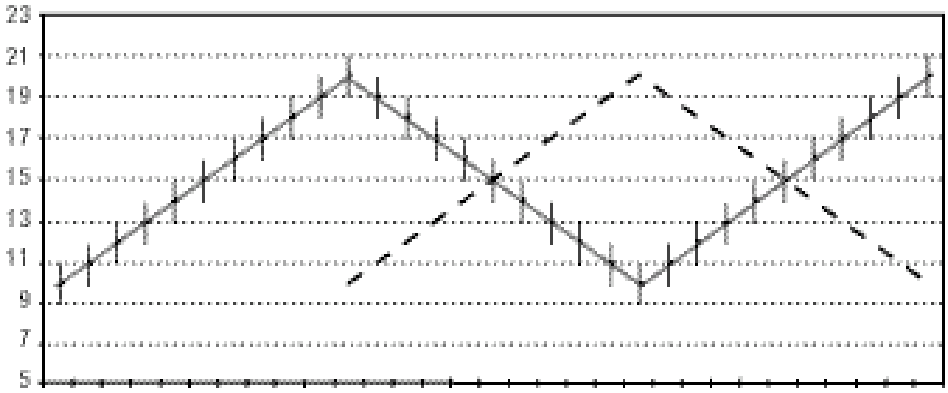


FIGURE 7.5

Idealized Bar Chart with 10-Week Offset for 20-Week Cycle



ages) of each day's high and low. The next step would be to move the tracing paper forward in time the distance equal to one-half the nominal cycle length, in this case 20 weeks, so the offset would be moved forward 10 weeks.

Figure 7.5 shows the principle of all cycle projections made with this technique. After moving the median or average price line forward the equivalent of one-half the distance of the nominal cycle being analyzed, you simply wait for the price in real time to cross above or below this "cycle line" or "offset line." Notice how the price bar line connecting all the medians meets the offset line at a price of 15. To generate a price projection, simply note the price where the price bar line crosses above or below the offset line and that theoretically marks the halfway point of the complete cycle move. In the idealized example the lows of the average or median price are at 10. When they cross above the offset line at 15, the arithmetic is simple. If the move started at 10, and 15 is the theoretical halfway mark, prices would have another 5 points to go before reaching a top. Adding 5 to 15 gives a projection of 20 for the high of the average or median price line.

If you want to generate a projection of price extremes, you would use the highs and lows of the weekly bars, rather than the average. In such an example, prices would bottom at 9, reach a midpoint at 15, and give a projection of 21 (from 9 to 15 is 6 points—15 plus 6 more points equals 21). The opposite is, of

FIGURE 7.6

New York Composite Index: Calendar Day Chart (October 1999–January 2000, daily)

course, true on the way down. Prices start at a high point of 21 on an extreme basis and 20 on an average price basis, move down to a halfway point of 15, and give "downside projections" of 10 on an average or median basis and 9 on an extreme basis.

When Hurst formulated his technique of price projections, the daily charts used were specially constructed charts that left spaces for Saturdays, Sundays, and holidays. **Figure 7.6** is an example of a "calendar day" chart, leaving spaces on the days when the stock market was closed.

Nominal Price Projections and Terminology

Hurst contended that there are so-called nominal cycles in the price fluctuations of the stock market which can be used to give price projections for the various indices and averages. Hurst identified five basic "nominal" cycles that should be analyzed on weekly charts. Those five nominal cycles are:

1) 10 week
2) 20 week
3) 40 week
4) 78–80 week
5) 4 year (200–220 weeks)

The example given previously was of a nominal 20-week cycle and its half-span offset of 10 weeks. When weekly charts are used, there is, of course, no need

to draw distinctions between "calendar week" and "market week" charts as is done with the daily charts. In fact, weekly charts are a good place to start learning the technique of calculating price projections. There are also daily cycles shorter than the nominal 10-week cycle. The daily cycles are the nominal 10-day and nominal 20-day cycles, which use 5- and 10-calendar-day offsets to generate projections, and the 35–40 day cycles. Beyond that, the nominal 70–80-day cycle is the same as the nominal 10-week cycle. And the nominal 140–160-day cycle is the same as the nominal 20-week cycle. As you can see, the analysis of daily and weekly cycles overlaps, and it is always interesting to use both daily and weekly analysis for the equivalent time periods (for example, 140–160 days and 20 weeks) to compare the results. They should give similar results.

Key Terms and Concepts

Regarding terminology, a *median* describes the midpoint of a bar when a bar chart is used to represent the price of the item being analyzed. It is simply the average of the high and low points represented by the bar. An *offset* refers to the "shadow line" that is created after the original line connecting the medians is traced and moved forward in time. A good example is the offset line seen in Figure 7.5 that is moved forward, or "offset," 10 weeks as the half-span of the 20-week cycle.

Perhaps the most difficult concept to convey is that of nominal projections. The nominal cycles discussed above are all part of the projection arsenal. The dictionary defines nominal as: "being such in name only; so-called." This is precisely the definition of the term as used in this context. It does not mean that the particular index or particular stock being analyzed necessarily has an actual cycle of that precise length. It is used purely as a reference point. Giving a projection for a nominal 10-day cycle does not imply that the market advance or decline will halt after reaching that initial projection. If or before reached, the nominal 10-day cycle projection could trigger a nominal 20-day cycle projection, which, in turn, could trigger a nominal 5–week cycle projection, and so on. The advance or decline should finally halt when all outstanding projections have been met or, in turn, when an outstanding projection has been invalidated and no further projections have been made in the same direction.

Guidelines for Projecting When Price Extremes Will Occur

When a cycle projection is made, usually it is best not to give a corresponding time target for the projection to be met. Price is a more important indicator than

time, except when a consistent time cycle appears to be coinciding with a projected price bottom or top. There are general rules, however, for choosing approximate time periods when projected tops or bottoms should occur. The rules are based on the length of the nominal cycles. For example, a nominal 20-day cycle ideally consists of 10 calendar days up and 10 calendar days down. Theoretically, upside projections are generated at the halfway point, both in time and price, of the advance. Conversely, downside projections are generated at the halfway point of the decline, in terms of both time and price. In the case of the nominal 20-day cycle, any upside projection should be given, in theory, around the fifth day from the bottom of the prior nominal 20-day cycle. Once the projection is given, the implication is that the expected price should be reached in around 5 days.

Another way of arriving at the same general result is to divide the nominal cycle length by four. The result shows the general time period from the date the projection is actually given (by the current price crossing above or below the projection line, or offset line) for the expected projection to occur. Here is an example: assume the market hits a bottom on March 1. Five days later, on March 6, a nominal 20-day cycle projection is given. Because the cycle has already advanced for 5 days, its ideal path would be to advance 5 more days before the nominal 20-day cycle peak is reached, then to decline 10 days to meet the next nominal 20-day cycle bottom. Therefore, the price projection would be met March 11.

An alternate rule can also be used. Let's assume the nominal 20-day cycle projection was generated by price crossing above the offset line on March 3 after a March 1 bottom. Rather than counting the 5 days from the previous bottom, in the alternate case the 5 days would be counted from the actual date the projection was given, or March 3, which leads to an expected projection date of March 8, 3 days earlier than the original calculation. Therefore, the projection would be expected between March 8 and 11. Note, however, that these are general rules and, as noted previously, price is more important than time when predicting cycles.

The converse of the explanation of upward price projections applies to downward price projections. In the case of the initial rule, of course, days would be counted from the prior top, not the bottom, to establish an approximate date for downward projection to be fulfilled. It is also important to reiterate that the fulfillment of short-term price projections is a minimum expectation and does not imply the termination of the advance or decline. We can predict when advance

or decline will terminate only after price projections are reached without generating further cycle projections in the same direction.

Applying Market Cycle Projections

With the background in place, let's get to some real-world applications. We will start with a securities index average that most have heard of, but few are acquainted with, the Dow Jones Composite Average. The average is made up of the thirty Dow Industrials, the twenty Dow Transports, and the fifteen Dow Utilities. Analysts seldom work with this chart in real time, but the technique gains an extra aura of respect if it works with a seldom used indicator. Remember that there are five basic nominal cycles to be analyzed for price projections on a weekly chart. Let's start with the nominal 10-week projection chart (5-week offset) then move through the nominal 20-week, 40-week, 78–80-week, and 4-year projection charts.

Dow Jones Composite Average Example

Let's begin at the all-time high of 1,450.10 registered on January 31, 1994. (All of the numbers on the following charts are "actual print" intraday highs and lows as opposed to the "theoretical" highs and lows reported in some newspapers. For example, look at the Dow Jones Composite Average charts in the *Wall Street Journal*. Beneath them a table gives the data for the hour-by-hour averages, and to the far right of the table are listed the highs and lows of the day for each component Dow Jones Industrial Average Stock, followed by the Composite Average. The table distinguishes between "actual print" highs and lows and "theoretical" highs and lows.

Between the second and third week after the 1,450.10 high was reached, the weekly average or "median" price broke below the 5-week offset line, generating a nominal 10-week projection of 1,362.50 ± 8.80 points. **Figure 7.7** should make it clear how the projection was generated. The price at which the line joining the weekly medians crossed below the offset line was 1,406.30. That should mark the halfway point for the nominal 10-week projection. The previous high was 1,450.10, so the distance from the previous high to the halfway mark is 43.8 points. If that is the halfway point, then prices should fall another 43.8 points before reaching the nominal 10-week projection. Projecting another 43.8 points down from the 1,406.30 midpoint gives you the projection of 1,362.50. Note that each time a projection is given, you should allow for a 10 percent margin of

FIGURE 7.7

Dow Jones Composite Average with 10-Week Projection (August 1993–March 1995, weekly)

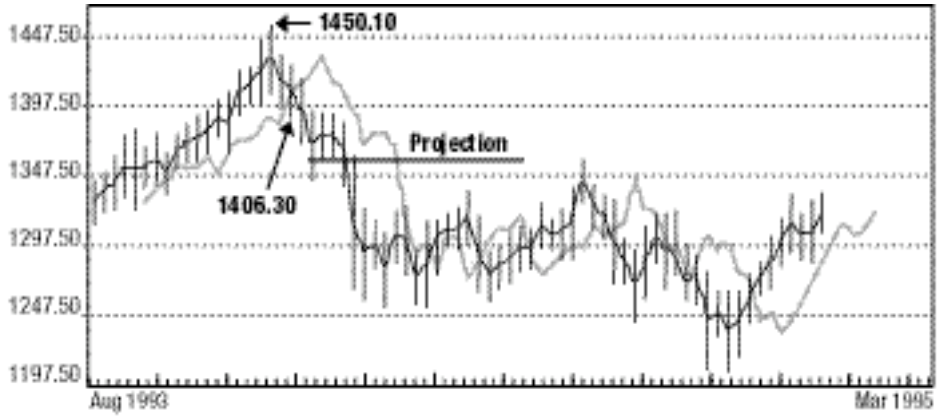
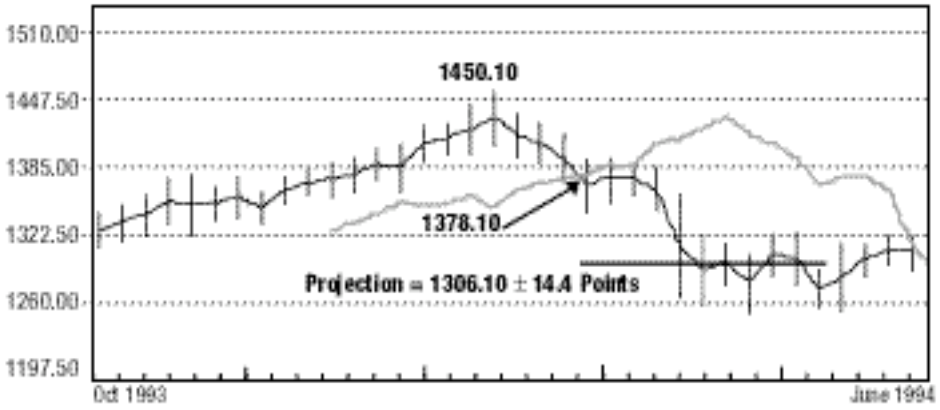


FIGURE 7.8

Dow Jones Composite Average with 10-Week Offset for Nominal 20-Week Projection (October 1993–June 1994, weekly)



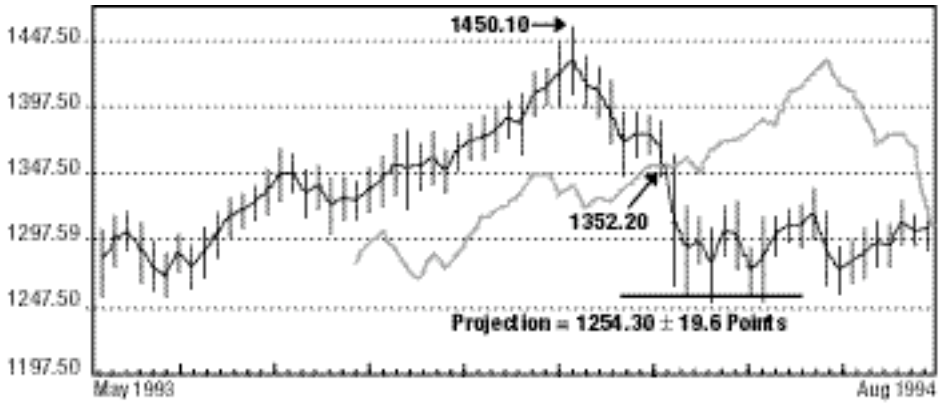
error. In this case, the complete move from the high at 1,450.10 to the projected low at 1,362.50 would be 87.6 points. Ten percent of that would be 8.76 points. Therefore the final projection would be 1,362.50 ± 8.8 points. Now look at **Figure 7.8**.

One week after the above nominal 10-week projection was given, on its way to the 1,362.50 projection, the weekly median line broke below the 10-week offset, giving a nominal 20-week projection of 1,306.10 ± 14.4 points. All the necessary numbers to calculate the projection are shown in Figure 7.8. Notice that the longer the nominal projection, the more meaningful the projection tends to be. The nominal 10-week projection shown in Figure 7.7 was given in the week ending February 18, 1994 with the Dow Jones Composite Average at a price of 1,398.3. The projection down to 1,362.50 was calling for a decline of an additional 2.6 percent from the closing price on the day the projection was given. The nominal 20-week projection to 1,306.10 was given during the week ending March 4, 1994 with the Dow Jones Composite Average at 1,375.7. This time the projection was calling for an additional decline of 5.1 percent. Now look at **Figure 7.9**.

Four weeks after the nominal 20-week projection was given, as the Dow Jones Composite Average was heading toward its nominal 20-week projection, it broke

FIGURE 7.9

Dow Jones Composite Average with 20-Week Offset for Nominal 40-Week Projection (May 1993–August 1994, weekly)



below the 20-week offset used to determine the nominal 40-week projection and gave a projection of 1,254.30 ± 19.6 points. That projection was given at the end of the week ending April 1, 1994 with the Dow Jones Composite Average closing at 1,297.8.

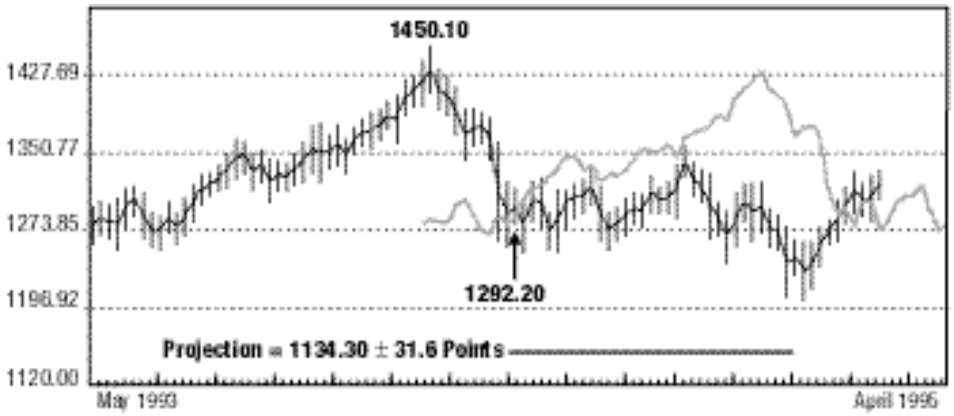
This is where the analysis gets more complicated. In the week ending April 22, the Dow Jones Composite Average moved within the "window" of its projection with a low of 1,262.8. Remember, you must allow a 10 percent window for a margin of error with each projection. The nominal 40-week projection given above calling for 1,254.30 ± 19.6 points actually gives a projection within a price window between 1,234.70 and 1,273.9 points. The low of 1,262.80 registered during the week ending April 22, 1994, was located comfortably within the projection window. At the same time, however, it broke below its 39-week offset giving a nominal 78-week projection to 1,134.30 ± 31.6 points, as you can see from **Figure 7.10**.

When New Projections Are Generated

Once an outstanding projection has been met, you should always check to see if any new projections have been given. Note that in the analysis done so far, each time a projection was met, and sometimes even before an existing projection was met (while prices were headed toward the outstanding projection) a new pro-

FIGURE 7.10

Dow Jones Composite Average with 39-Week Offset for Nominal 78-Week Projection (May 1993–April 1995, weekly)



jection was generated. There is no way of knowing, even with this projection technique, whether prices will continue down immediately to the latest outstanding projection or attempt to rally first after reaching the level projected by the prior outstanding projection.

In the Dow Jones Composite Average case in Figure 7.9, the decline stopped at the nominal 40-week projection and over the period of the next several months prices attempted to rally. Sometimes, in fact, an interim projection will be given in the opposite direction of the remaining outstanding projection. That is just what happened in this case. Examine Figures 7.10 and 7.11. Figure 7.10 shows a nominal 78-week projection to 1,134.3 € 31.6 points given in late April 1994. By September 23, prices had moved 22 weeks beyond the time that projection was given without making a significantly lower low. Notice, however, that prices had not crossed back above the offset line on Figure 7.10 despite the rally, and that means the projection down to 1,134.3 € 31.6 points remained in effect. If the price moved above the offset line, the projections would be "invalidated." That did not happen with the 39-week offset on Figure 7.10.

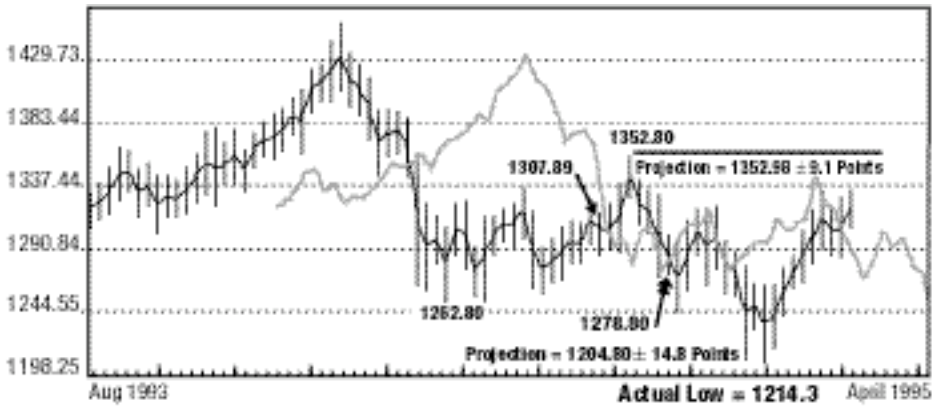
Now look at an updated nominal 40-week projection chart (see **Figure 7.11**). In the week ending August 26, 1994 the median price line for the week moved *above* the nominal 40-week projection line (20-week offset) at 1,307.89 (the computer is able to determine the exact crossing of the lines to within one-hundredth of a Dow point), giving a projection of 1,352.98 ± 9.1 points. That meant that there were now both upside and downside projections outstanding at the same time.

The general rule is that a projection remains outstanding until it is met or invalidated. As was just noted, the only way to invalidate a projection is for the price to move back above the offset line after a downside projection has been given and before the projection is met, or back below the offset line after an upside projection has been given and before it is met. On August 31, the Dow Jones Composite Average reached a high of 1,352.9, within 0.2 points of an exact projection. If you were doing this projection in real time, it would have been a perfect time to sell or even sell short and take aggressively bearish mutual fund positions. The reasoning behind such a strategy is that all upside projections had been met without generating higher upside projections, while at the same time downside projections remained outstanding.

Let's see how the downside projections were resolved in late 1994. Without taking you through the intermediate steps of showing the 5-week and 10-week offsets associated with generating nominal 10- and 20-week projections, let's look

FIGURE 7.11

Dow Jones Composite Average with 20-Week Offset for Nominal 40-Week Projection (August 1993–April 1995, weekly)



at what happened after the 1,352.80 high was reached on the nominal 40-week projection chart (see Figure 7.11).

Notice that, after reaching the interim upside projection almost perfectly, prices started down again, and reaching nominal 10- and 20-week projections (these projections are not shown in Figure 7.11), prices moved below the 20-week offset on Figure 7.11 at a price level of 1,278.8, giving a projection of 1,204.8 ± 14.8 points. Thus the range of the projection was between 1,190 and 1,219.6. In the week ending November 25, 1995, the Dow Jones Composite Average reached a low of 1,219.1, just barely moving into the projection window. Two weeks later, it registered a low of 1,214.3, moving comfortably into the projection window. Remember, however, that there was also a nominal 78-week projection outstanding down to 1,134.30 ± 31.6 points, calling for a move down to at least 1,165.9 points. As it turned out, that projection was never reached, and the low of 1,214.3 turned out to be an important low prior to a very dramatic bull market over the next several years.

Tips on the Success Rate of Projections

A few lessons can be learned about the cycle projection technique as it relates to the failed projection. No scientific study has been done regarding the success rate of projections, but it would be surprising if the success rate were below

65 to 70 percent. Conversely, of course, this means there is a 30 to 35 percent failure rate. Chances are, however, that this represents a far better success rate than other price projection techniques. It is important to remember that the actual final low in the example in Figure 7.11 was given quite closely by the nominal 40-week projection. Any time a longer-term projection (nominal 20-weeks or longer) is met, it is prudent to be continuously on the lookout for signs that the tide could turn, even if there are further projections outstanding. One way to judge whether any further unmet projections have a good chance of being reached is to determine whether all shorter-term projections have been exceeded.

Let's examine an example of that technique. When the nominal 40-week projection window was reached on the Dow Jones Composite Average in the analysis illustrated here, there was still a further downside projection outstanding, the nominal 78-week projection calling for 1,134.3 ± 31.6 points as shown in Figure 7.10. There is a much greater probability that projection would be reached if all shorter downside projections had been exceeded. The nominal 40-week downside projection called for a projection range of 1,190 to 1,219.6 points (see Figure 7.11). If the lowest price in the projection range was exceeded, namely 1,190, the odds of the nominal 78-week projection being reached would have

FIGURE 7.12

Dow Jones Composite Average with 100-Week Offset for Nominal 4-Year Projection (June 1991–March 1995, weekly)

increased significantly. That far side of the projection range was not exceeded in this case. Were there any other clues that the nominal 78-week projection would or would not be reached?

Figure 7.12 shows the Dow Jones Composite Average chart and the 2-year (100-week) offset used to generate nominal four-year projections. Notice that when the nominal 40-week projection was being met at the lows on the right side of the chart, prices came down almost exactly to the nominal 4-year offset line. In fact, it would not be an exaggeration to say that the offset line acted as support. This often happens. As one projection is being met, prices will come down to and find support on the offset line of a longer-term projection chart.

Unfortunately, despite the fact that there were some clues that the lower projections for the Dow Jones Composite Average would not be met, a projection remains in effect until it is either met or invalidated. In January 1995, the Dow Jones Composite Average moved above the 39-week offset line (see **Figure 7.13**) to invalidate the nominal 78-week downside projection and simultaneously give a new nominal 78-week upside projection.

Cycle Projections Are Either Met or Invalidated over Time

You have now followed a full sequence of weekly projections from an intermediate high to an intermediate low. Other indices could have been used and far

FIGURE 7.13

Dow Jones Composite Average with 39-Week Offset for Nominal 78-Week Cycle Projection (September 1992–March 1995, weekly)

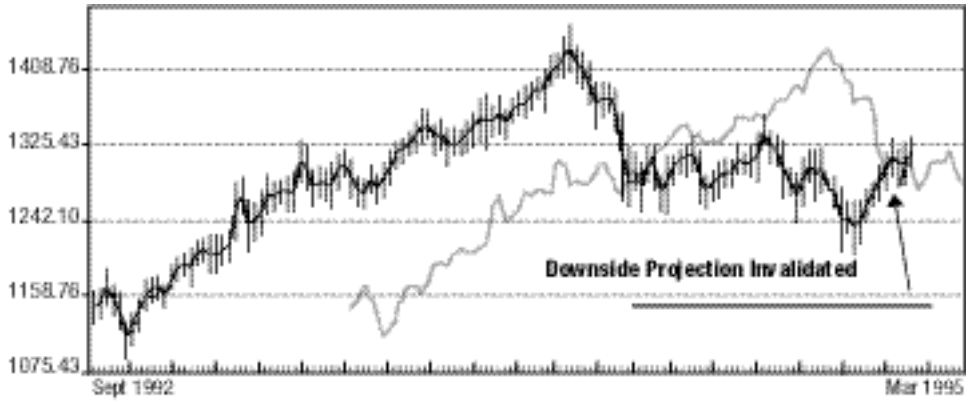
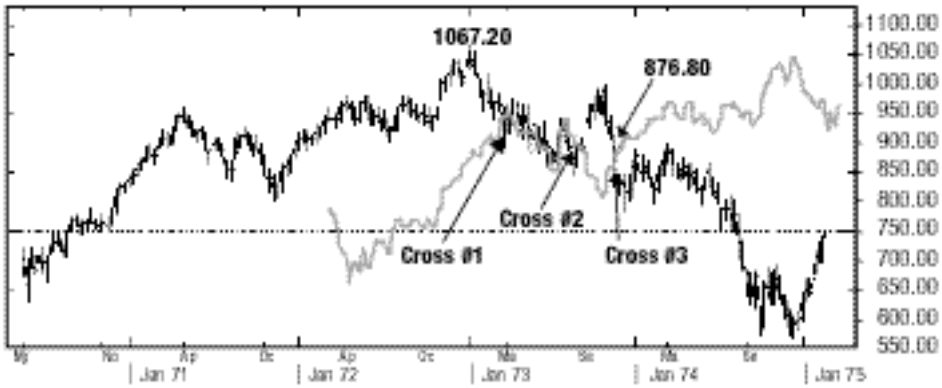


FIGURE 7.14

DJIA/Dow Jones Industrial Average with 100-Week Offset (May 1970–March 1975, weekly)

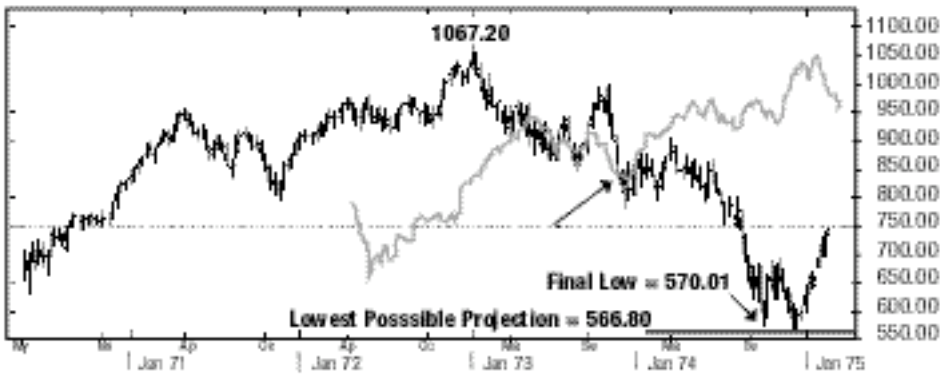


more successful historical results could have been shown. But using the Dow Jones Composite Average, which is unfamiliar to most people, to show both successful and failed projections is a more realistic way to demonstrate the technique. It is important to note that, at least in theory, cycle projections cannot be wrong for long. A projection will ultimately either be met or invalidated. There are no other options. Once a projection is invalidated, and if there are no other projections outstanding, then there is no further reason to look for prices to move in the direction of the original projection. In fact, the invalidation of a projection causes a new projection to be given in the opposite direction.

Sometimes, however the price will whipsaw above and below the offset line before moving with conviction in one direction or the other. Those situations can try your patience, but ultimately prices will move clearly in one direction or the other. When there are multiple crossings of the offset line, the analysis becomes more complicated. Let's look at a real-world example and consider some of the alternative solutions to the analysis. The worst bear market in the Dow Jones Industrial Average of the past sixty years occurred from January 1973 through December 1974 when the Dow dropped 46.6 percent from theoretical intraday high to theoretical intraday low.

FIGURE 7.15

DJIA/Dow Jones Industrial Average with 107-Week Offset (January 1971–January 1975, weekly)



Dow Industrials Bear Market Example

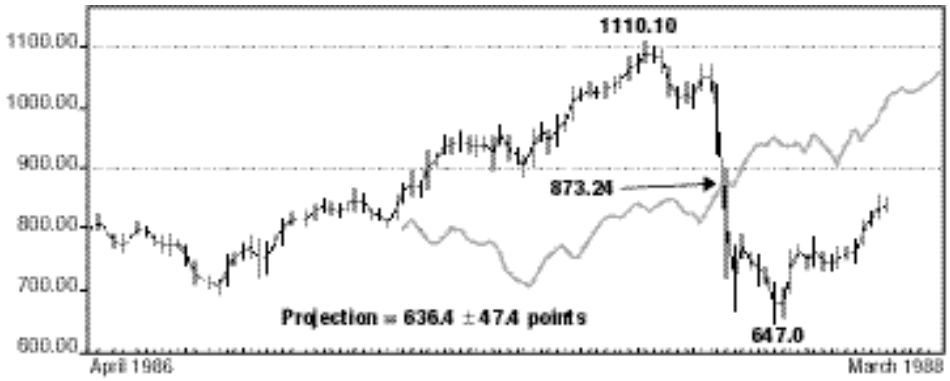
Figure 7.14 is a weekly chart of the Dow Jones Industrials including the January 1973 top and the December 1974 bottom. The length of the offset in this chart is 100 weeks. Longer cycles have more variable offsets, and the longest cycle used for price projections, on a practical basis, is the nominal 4-year cycle. Because that cycle has averaged between 200 and 220 weeks in length, the half spans used to generate the projections are 100 to 110 weeks.

Notice that, after the top at 1,067.20 in January 1973, prices moved below the 100-week offset line on three separate occasions. The first crossing (referred to as Cross #1 on the chart) occurred 10 weeks after the top at a price of 944. The next week, prices moved back above the offset line, invalidating any projection given by that first crossing. Four months later, in August 1973, prices again moved below the offset line, this time for only 4 weeks, before crossing back above 5 weeks later. Finally, in November 1973, prices moved below and stayed below the 100-week offset. The cross below the offset occurred at a price of 876.80, giving a projection of 686.40 ± 38.1 points.

In this 100-week offset there were two "whipsaw" crossings below the offset line, then a final decisive move below the line. If you look closely at the third crossing point it is clear that moving the offset to the right further than 100

FIGURE 7.16

Dow Jones Transportation Average with 39-Week Offset (April 1986–March 1988, weekly)



weeks would cause prices to cross below the offset line at a lower price, and that would, in turn, generate an even lower projection. Your analysis should try to determine the two extremes where crossings below the offset would occur throughout the complete range of 100- to 110-week offsets.

Figure 7.15 shows the lowest possible crossing that could have occurred using any offset between 100 and 110 weeks. The offset shown is a 107-week offset. Do you see that if the offset were moved further to the right, to 108, 109, or 110 weeks, the crossings below the offset line would have occurred at a higher level?

If only a single crossing occurs above or below the offset line to generate the projection, then the technique described above should be used to finalize the projection. To do this, you would calculate the projection based on the single crossing, then allow for a 10 percent margin of error (not 10 percent of the projected price, but 10 percent of the distance covered from the prior high to the projected low or the prior low to the projected high). In the situation in which there are several crossings above and below the offset line prior to the final penetration, it is usually best to determine what the highest and lowest crossings could have been within the range of the specified offsets, as just shown in Figure 7.15.

It is interesting that the largest bear market reported in the Dow Jones

Industrial Average in the past sixty years was analyzed very capably by the projection technique. The lowest possible projection for the bottom of that bear market was for 566.80. The actual bear market low of the Dow Jones Industrial Average in December 1974 was 570.01, just 3.21 points away from the final theoretical intraday low registered on December 9, 1974.

Let's look at one more compelling example of the prospective accuracy of the cycle projection technique.

Dow Jones Transportation Average Example

Figure 7.16 is the Dow Jones Transportation Average from April 1986 through March 1988. It includes some very dramatic market history—the crash of 1987. Some people would have you believe that there is no possible way to predict where a market that crashes will find a true and important bottom. Frankly, the Dow Industrial Average projection charts were looking for significantly lower lows after the crash of 1987, but people who were doing their cycle projections on the Dow Transportation Average in late 1987 were rewarded with an almost flawless call.

The projection chart in Figure 7.16 is a weekly chart of the Dow Transports accompanied by a 39-week offset to measure the nominal 78-week projection. Prices crossed below the offset line at a price of 873.24. Measuring from the high in August 1987 of 1,110.10, you can see that the Transports declined 236.86 points before crossing the 39-week offset line. The projection thus calls for an equivalent 236.86 points below the crossing point, or 636.38, rounded off to 636.4. As it turned out, after declining over 40 percent from intraday high in August 1987 to intraday low in December 1987, the Dow Transports reached a final low of 647.0 intraday, a mere 1.7 percent away from the exact projected low.

Offsets for Weekly, Daily, and Intraday Cycle Projections

Let's do a final projection exercise by looking at the recent price action of the Dow Industrials going back to 1998. This is also a good time to present a table of the eight principal nominal cycles with the equivalent offsets. Be aware that cycle projection techniques can also be used on intraday charts such as hourly index charts (65 minutes in this case, so there will be exactly six intraday periods each market day or 30-minute charts with exactly 13 periods in each market day). The following table lists the nominal cycles along with the half-span offsets used to generate the cycle projections.

Offsets for Selected Nominal Cycles

NOMINAL CYCLE	WEEKLY	MARKET DAYS	CALENDAR DAYS	CASH CHARTS (30 MINUTE BARS)	FUTURES CHARTS (27 MINUTE BARS)
				2.85-3.25	3.28-3.75
				5.69-6.5	6.56-7.5
				11.38-13	13.13-15
				22.75-26	26.25-30
10 Day		3.5-4.0	5	45.5-52	52.5-60
20 Day		7.0-8.0	10	91-104	105-120
5 Week		12.1-13.8	17.5-20	157.3-179.4	181.5-207
10 Week	5	24.2-27.6	35-40		
20 Week	10	48.4-55.3	70-80		
40 Week	20	96.8-110.6	140-160		
78-80 Week	39-40	189-194	273-280		
4 Year	100-110				

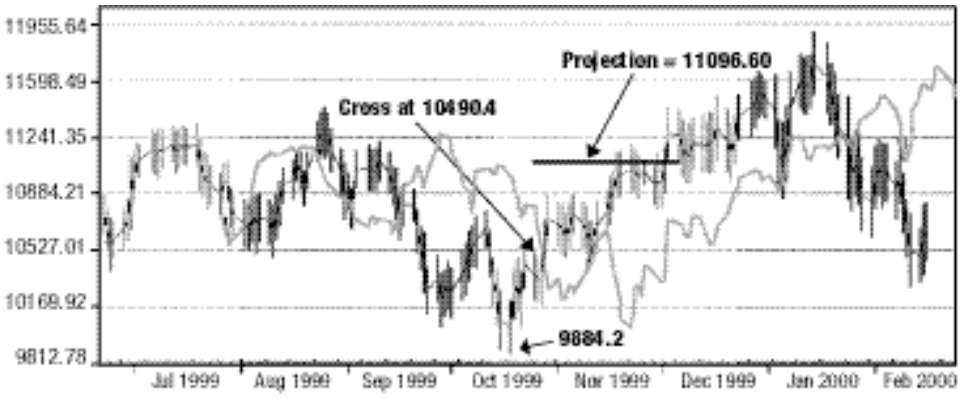
Preliminary versus "Confirmed" Projections

Before reviewing the analysis for the recent Dow Jones Industrial Average charts, let's discuss the concept of how projections are "confirmed." In the table above notice that all of the half-span offsets, except for some of the weekly ones, contain a range of numbers rather than a single number. For example, the "market day" daily offset equivalent to the 10-week offset used to generate nominal 20-week projections shows an offset of 48.4 to 55.3 market days. Suppose you are using the 48.4 offset and prices cross above or below the offset line. That would constitute a "preliminary" projection. Further, let's suppose that prices did not cross the offset line if the offset was moved to the higher end of the offset range, in this case 55.3 days. It is only when the price is above all ranges of the offset line that a projection is considered to be confirmed. Until then, it remains a preliminary projection.

It is common to see a projection met at the same time as a new preliminary projection is given. Those situations are the most challenging for the cycle projection technique. The fact that a projection has been met tells us prices could now turn and head in the opposite direction. On the other hand, because a new "preliminary" projection has been given, it is possible that prices could continue further in the same direction. Only when the projection is "confirmed" does

FIGURE 7.17

DJIA with 35-Day Offset for Nominal 10-Week Projection (June 1999–February 2000, weekly)



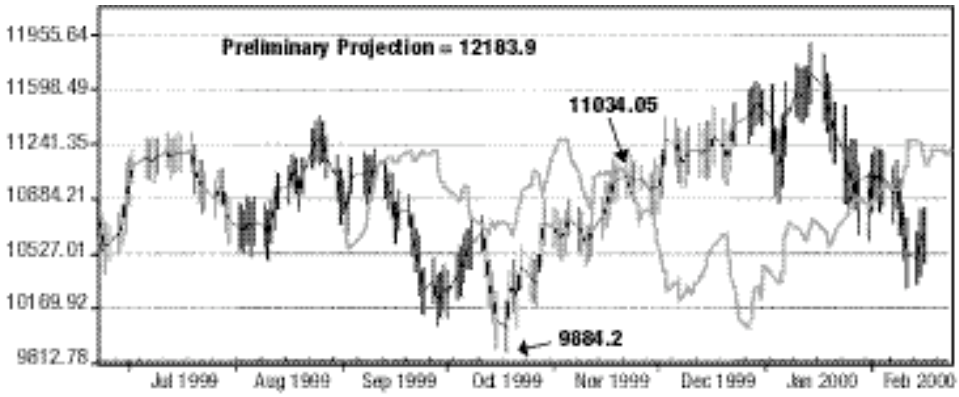
confidence increase that prices are not yet ready to turn.

Be aware that no aspect of the projection technique can promise results approaching 100 percent accuracy, but as projections are confirmed, the success rate of the projections increases substantially. On the other hand, until a subsequent projection is confirmed, the possibility remains that a turning point is forming based on the fact that the previous projection had been met.

Another way to test the confirmation of a new projection, even before it is technically confirmed (by crossing the half-span offsets for all values of the offset range) is to note whether the extremes of the prior projection have been exceeded. For example, if there is a nominal 10-week downside projection to 10,500 ± 100 points on the Dow Jones Industrial Average, and the Dow moves to 10,500, that projection has been satisfied. Let's say that at the same time the 10,500 projection was being satisfied, a preliminary nominal 20-week projection was given down to 9,800. If the Dow were to move below 10,400, the extreme objective of the nominal 10-week projection, there would be an assumption that the nominal 20-week projection was confirmed at that point, even if prices had not technically confirmed that 9,800 projection by being below all of the possible offsets within the range of the half-span offsets for that nominal 20-week projection. That is because the extreme downside objective of the nominal 10-week projection had

FIGURE 7.18

DJIA Calendar Day Chart with 70-Day Offset for Nominal 20-Week Projection (June 1999–February 2000, weekly)



been exceeded, and, theoretically at least, there had to be another projection allowing prices to go even lower than that extreme objective. For that reason, you could surmise that the nominal 20-week projection was confirmed.

Dow Jones Industrial Average Example

Let's look back at the Dow Jones Industrials from late 1999 to early 2000 to see how the cycle projections would have fared. In the current analysis, let's use daily calendar day charts (calendar day charts leave spaces for Saturdays, Sundays, and holidays) to differentiate this analysis from the earlier analysis of the Dow Jones Composite Average with the weekly price projection charts. The table appearing on page 157 shows that the first five offset groups for the calendar day charts are 5 days, 10 days, 17.5–20 days, 35–40 days, and 70–80 days.

Figure 7.17 starts the analysis with the 35-day offset for projecting the nominal 10-week cycle. A projection to 11,096.60 is given. It is not shown in the figure, but if the far end of the offset were used, namely, a 40-day offset, the projection would have called for a move to 11,543.2. There are two ways to express the projection given by the crossing of prices above the nominal 10-week cycle offset. One way is to use the preliminary projection generated by the 35-day offset and use a plus or minus qualifier based on 10 percent of the total move in points from

the prior low at 9,884.20 to the projected top at 11,096.60. Ten percent of that total move (1,212.40 points) would be 121.2 points rounded off to the nearest tenth. The projection could then be stated as 11,096.60 ± 121.2 points.

But there is another more accurate way of stating the projection. Remember, it was just pointed out that the far end of the projection offset, a 40-day offset, would have generated a projection to 11,543.2. Because these represent the two extremes of projections, you can take the average of the two projections, 11,319.9, and add just enough points to the plus or minus qualifier to cover the two extreme projections. In this case the final projection for the nominal 10-week projection would call for 11,319.9 ± 223.3 points.

By the time prices approached the 11,319.9 projection, a higher projection had already been given. **Figure 7.18** shows the nominal 20-week projection chart with a 70-calendar-day offset. Prices broke above the 70-day offset at a price of 11,034.05, giving a preliminary projection up to 12,183.9. Notice, however, in looking at the projection chart with the 70-day offset, that if the offset were moved forward just a few days the projection would actually be lower rather than higher. If you were to experiment with the offsets, it appears that with an offset of 74.5 calendar days, a projection as low as 11,716 would be generated.

The next step is to determine what offset between 70 and 80 calendar days would generate the highest projection and what that projection would be. It turns out that an offset of 71 days would generate a projection of 12,199, which would be the highest or close to the highest projection that could be generated with an offset between 70 and 80 days. There is now enough information to generate a complete nominal 20-week projection. The average of the two extremes, 11,716 and 12,199, is 11,957.5, so the official nominal 20-week projection is 11,957.5 ± 241.5 points. On January 10, 2000 the Dow Jones Industrial Average entered the window of that projection for the first time since the preliminary nominal 20-week projection was initially generated in late November 1999. Four days later, the Dow reached a theoretical intraday high of 11,908.5, completely satisfying the projection and missing an exact hit by fewer than 50 points or 0.4 percent. As of mid-February 2000, the theoretical high of 11,908.5 had been the all-time high on the Dow Jones Industrial Average, and the Dow had fallen 13.5 percent on a theoretical intraday basis to a low of 10,301.12 on February 11, 2000.

Adding Cycle Price Projections to One's Toolbox

There are many subtleties and nuances to the technique of analyzing cycle price projections that have not been discussed in this chapter. But the foundation has been laid for interested technical analysts to pursue their own cycle projections using the techniques shown. The half-span offsets given above have been effective with stock indices and commodities in the past. As a general rule, the more actively traded a particular entity is, the more likely it is to be susceptible to accurate cycle price analysis.

If the offsets do not appear to be working with the instrument you are analyzing, try the procedure in reverse. In other words, look at two obvious consecutive turning points on the price chart of the item being analyzed. What offset would have generated an accurate projection? Do the same reverse analysis on a series of turning points. You should soon arrive at a group of offsets that correspond fairly closely to the ones given in this chapter. It might be worthwhile to try the same analysis on actively traded individual stocks. No matter what instrument you analyze, you should soon be amazed at the prospective accuracy of the price projection technique.

Do not be discouraged, however, to discover that projections are not infallible. Cycles other than the one being investigated can add or subtract from prices at crucial times, leading to an incorrect intersection and an incorrect projection. Prices may cross above and below the projection offset line in a series of whipsaws, confusing the projections (and the one doing the projecting). But working with offset lines is a powerful technique for generating price projections, and it is made the more powerful because so few technicians are doing this analysis. In combination with other techniques you may be fond of, or as a stand-alone tool, the cycle projection technique is one of the most accurate and exciting tools available to a market analyst or technician.