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Technical Research

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Time Cycles — A Short Primer

"Technical Research" is drawn from our full *Market Interpretations*, dated September 8, 2004; order no. US09M028. The report is also available online on Smith Barney's Global Equities Online (GEO) system, Smith Barney Direct, and FC Linx.

Time is usually the stepchild to price and volume in the realm of technical analysis. In fact, too often we want to know *where* the market is going, while *when* it may get to our target becomes a secondary consideration. Technicians are loath to judge both where and when. The study of time cycles is another dimension to the investment strategy picture that may help with this dilemma. Cycles have a history dating to the early 1800s. Time cycles are a tool that can be added to a "top down" approach while realizing that other trends and influences can be operating in the marketplace and that cycles may not be dominant.

As we explained in *Market Interpretations* dated June 9, 2004, order no. US06M052, the word *cycle* comes from the Greek word meaning "circle." A cycle can be described simply as a regularly occurring sequence of events. There are at least two explanations for the existence of cycles in the financial markets: one fundamental and the other psychological.

First, the fundamental interplay of supply and demand does not evolve smoothly, so we often experience lags between observation and reaction. This leads to imbalances between supply and demand and from there to cyclic swings in prices and activity. Second, most technical analysts believe that fear and greed — the two basic human emotions that are the psychology behind price extremes — drive the markets and this is why cycles appear in the data.

There are three basic ways to measure a cycle, and these descriptive qualities should sound familiar to anyone who took high school or college physics: *amplitude, period, and phase*. The amplitude simply measures the height of the cycle. The period of a cycle is the time between the lows or troughs of the wave. Last, several different cycles may be operating at once, and phase is a measure of the time location of the cycle low or trough.

Principles

In a sideways trading range market, a cycle will peak, or crest, roughly halfway between the lows. However, when a market is trending, cycle peaks will shift to the left or right depending on the larger trend. This is known as left or right translation.

Several examples of *right translation* occurred in the stellar equity markets in the 1990s. Following the bottom of the four-year cycle in 1994, we saw stock prices climb until July 1998 and then correct downward to their next cycle low in the fourth quarter of 1998. The strength of the bull market stretched the anticipated 1996 peak and skewed or pushed it out into late 1998, followed by a sharp downward adjustment into the four-year low.

In 2004, we may be seeing a *left translated* four-year cycle, as prices appear to have topped early in February 2004 after their 2002 low. A left translated cycle is bearish, as it means the top has developed sooner than anticipated and prices are likely to decline further. This should make sense even to the casual observer that cyclical uptrends should be shorter in duration during a secular bear market than during a secular bull market. Cyclical uptrends in secular bear markets are essentially countertrend rallies.

Summation, Harmonicity, Synchronicity, and Proportionality

Most books on technical analysis that delve into cycles typically outline four important principles: *summation, harmonicity, synchronicity, and proportionality*.

- Summation holds that price movement can be described as the simple addition of all active cycles.
- Harmonicity means that cycle lengths are usually related by a small whole number (e.g., 20-, 40-, and 80-week cycles).
- Synchronicity demonstrates the tendency of a number of cycles of different lengths to bottom or trough at the same time.
- Proportionality explains the relationship between cycle period and amplitude. Longer cycles will tend to have bigger amplitudes, and shorter cycles will tend to have smaller amplitudes.

Classification

Longer-term cycles, like the four-year (also known as the Kitchin Wave) and the 20-year stock market cycle, can be used to anticipate overall market trends (see

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Market Interpretations dated May 6, 2004; order no. US05M019).

Kitchin Wave: This is known as the 3.5- to four-year rhythm in security prices, interest rates, business activity, and prices at the wholesale and retail level. This cycle is sometimes known as the 41-month cycle. The cycle was first "discovered" in 1912 by a group of investors in New York who were trying to replicate how the Rothschild banking family had been so successful in trading British consols, or perpetual bonds. In 1923, Professor Crum of Harvard showed a recurring 40-month cycle in commercial paper rates. At the same time, Professor Kitchin, also of Harvard, found a four-year cyclic pattern in bank clearing, wholesale prices, and interest rates in the U.S. and Britain.

Juglar: Clement Juglar noticed in 1860 an economic cycle lasting eight to ten years, and the 9.225-year cycle was the result. Mr. Juglar's findings were seen in stock prices, wholesale prices, and industrial activity. This cycle is better known by investors as the "decennial pattern." Cycles that measure from 9.15 to 9.25 years have been found in a number of phenomena such as business failures, average wholesale prices, and the number of patents issued.

Technical analysts frequently utilize the decennial pattern to profile years ending in 0 to 9. As an example, the upcoming year ending in 5 (2005) has a record back to 1885 of being an up year 100% of the time.

The decennial pattern, or cycle, appears to have been discovered by Edgar Lawrence Smith and Anthony Gaubis. Without the use of spreadsheets and other tools, Mr. Smith supposedly cut up graphs in ten-year sections and stacked them to reveal a pattern where the strongest markets came at the middle of a decade. The eighth year is also strong, and the seventh and zero years tend to be weak. Critics of cycle research and technical analysis in general suggest that the decennial pattern is not a cycle but rather something akin to numerology.

Kuznets: This is known as the 18- and one-third-year cycle in security prices, real estate activity, and industrial activity. The Kuznets cycle is perhaps best linked to real estate prices. Many market observers have been suggesting that the real estate market in the U.S. is another bubble waiting to burst, but they may have to wait a few years based on the Kuznets cycle. Real home prices declined from 1987 through 1992, so the next cycle low could be anticipated for the 2006–10 period.

Kondratieff: This is known as the 54-year cycle in wholesale prices, securities, interest rates, and industrial developments or innovations, which is also known as the "long wave." Russian economist Nikolai D. Kondratieff discovered the cycle, but he found only three examples in the data he collected from 1789.

Shorter cycles can be used to refine market timing. Short-term weekly cycles in the equity market that many traders focus on include the 10-, 20-, 40-, and 80-week cycles.

Conclusion

The 20-week cycle that bottomed at the end of March 2004 was due to attempt its next low around the week of August 9. With the 40- and 80-week cycles pointing down until September–October, we may only see the 20-week cycle carry sideways-to-higher for a few weeks or less and then turn down again. The combination, or synchronicity, of the 20-, 40-, and 80-week cycles due to bottom ahead of the U.S. presidential election could generate some anxiety and perhaps a good buying opportunity for investors.

Overview Market Observations

- *Equity Markets:* The equity markets jumped the first hurdle on Tuesday, September 7. Eight months of a downtrending consolidation (defined as a decline of up to 10% off a high) for the Dow Jones Industrial Average (DJIA) and the S&P 500 may now be followed by some upward potential as the first hurdle has been cleared.

  Both the DJIA and the S&P 500 have emerged up through the 200-day MAs that restrained upward progress (the same can be said for the S&P MidCap 400 and S&P SmallCap 600). The next hurdle rests with the June peaks at Dow 10,500 and S&P 1144 (S&P 400 at 111 and S&P 600 at 296). Of course, a sustainable move would need the complement of *increased volume* (see Figure 1).

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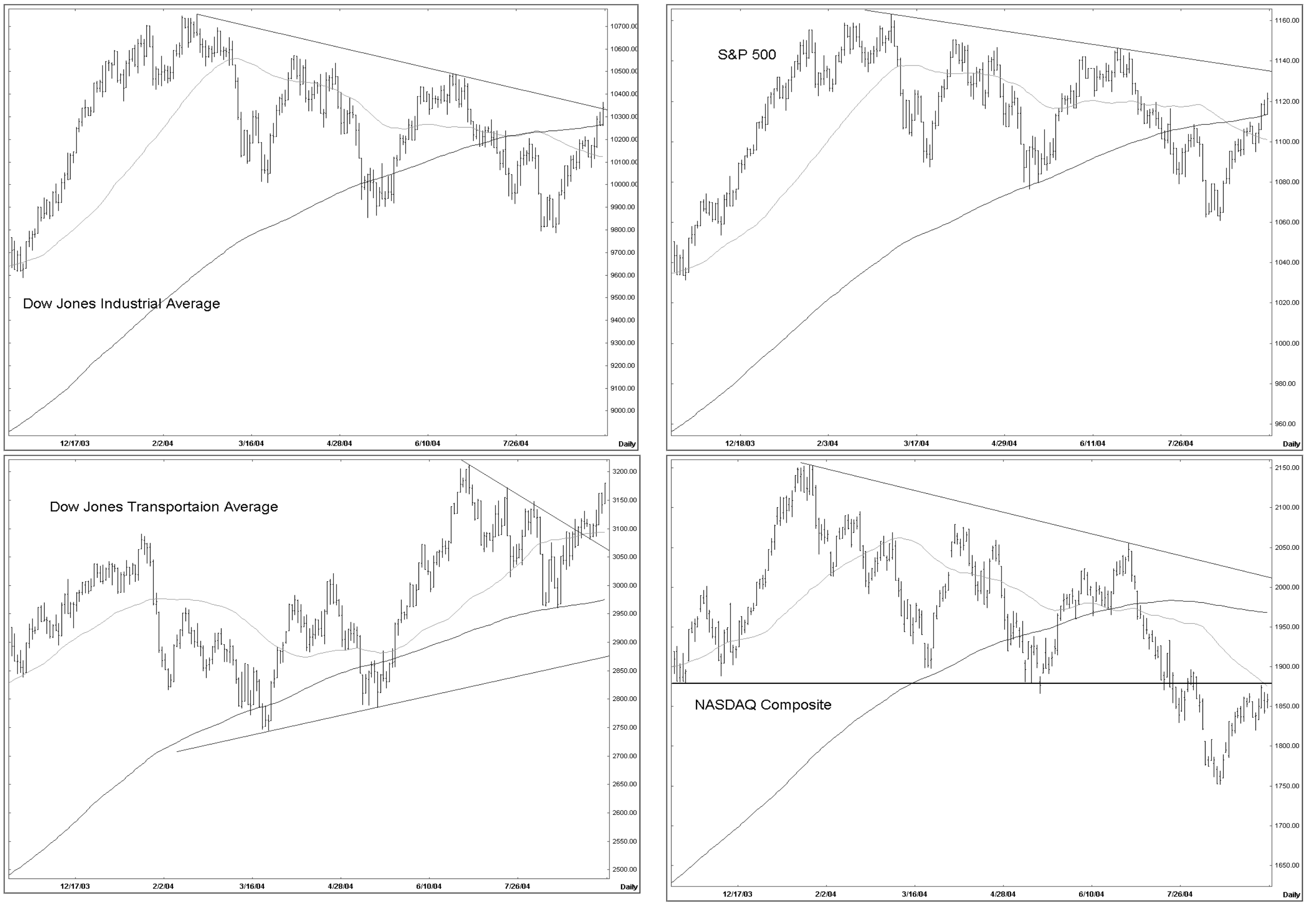
Figure 1

DJIA, S&P 500, Dow Jones Transportation Average, and Nasdaq Composite



Source: Reuters and Smith Barney

Interestingly, the Dow Jones Transportation Average portrays a different profile: an uptrend since April and now on the verge of lifting through the June peak. This profile continues to intrigue us. Dow theory suggests that if the companies that make the goods and those that transport the goods move up in tandem, therein lies an economic message. While the Dow itself may include fewer industrials than 100 years ago, the Industrial and related Materials sectors continue to outperform and *are* at or close to new highs as are the Transports, so stay tuned.

The Nasdaq remains weak below a declining 50-day MA at 1902 and a declining 200-day MA at 1960. Capitalization shifts under way continue to suggest lightening technology into strength (see *Market Interpretations* dated July 14, 2004; order no. US07M075).

- *U.S. Interest Rates:* The 10-year yield has rallied back to its 200-day MA. The 200-day MA has held the 10-year yield in check on two previous occasions in August and currently appears to be offering support for the 10-year once again. As stated in our U.S. fixed income *tech@lert* dated September 2, 2004, “the 10-year remains locked in a downtrending channel,” and the recent backup has not altered the channel’s formation. All of these daily fluctuations remain within our anticipated multiyear transitional trading range of 3.5%–5.5%.

- *Energy:* The first consolidation for crude oil appears under way. The recent sell-off appears only a pause in an ongoing bull market. For oil, volatility is a normal characteristic. So, as of this writing, even as crude oil has retraced approximately 60% of this summer’s advance, the recent sell-off appears to be just a pause in an ongoing bull market. The technical models on both an intermediate- and long-term basis remain positive.

Crude oil essentially has pulled back to its late July breakout point at \$41–\$42 a barrel. In addition, the rising 50-day MA is located at the \$41.63 level. On two previous occasions, August 30 and 31, crude oil tested its 50-day MA and held. If crude closes above overhead resistance at \$45.50, we would anticipate that oil could regain upward momentum. Major support exists at \$38–\$40.

The oil sectors are also in a consolidation phase, as their relative strength plots remain in a trend of outperformance. However, short-term momentum models have diverged from the technical price action, suggesting that the consolidation has not yet fully run its course.

- *Metals:* Gold has so far failed to follow through after breaking out to a new reaction high on August 23, suggesting that the precious metal may need to consolidate further. The Philadelphia Gold & Silver Index (XAU-91.66) has held up better than gold itself, having only pulled back to the breakout level of June and July. In addition, technical models for the XAU remain positive on both a short- and intermediate-term basis. Nevertheless, the long-term bull market for gold remains in place.
- *U.S. Dollar:* The U.S. dollar continues to trade in a range between resistance at 90 and support at 85–87. Intermediate-term models for the greenback continue to improve and are close to turning positive once again.
- *Dollar/Canada:* Dollar/Canada (1.2875) is at a new 7.5-month low and continues to look vulnerable. The low in January 2004 was just above 1.2700 and, based on deteriorating technical model readings, could be taken out and would then give us a downside target to 1.2000.

Louise Yamada / Ronald F. Daino

Stocks: An Uneven Start to the School Year

Students from ages 5 to 55 all over the U.S. are heading back to school. Some are learning the three Rs for the first time and others are learning new skills to reinvent themselves in our rapidly changing economy. Looking at a small group of stocks that could be associated with back-to-school shopping, we find that some of them have been sitting in the front of the class and others are falling behind. Most of these companies would fall under the Consumer Discretionary sector.

The Consumer Discretionary sector has shown absolute and relative strength underperformance for much of 2004, but as we have seen on many other occasions there is little homogeneity within sectors and industries.

The footwear company **NIKE, Inc.** (NKE-77.20) has been consolidating its 2003 gains after setting a new all-time high near 79 earlier this year. The chart remains constructive, with prices above the rising 200-day moving average (MA), and further gains appear possible with the 90–95 area our next target price.

Staples Inc. (SPLS-29.51) seems to be a beneficiary of back-to-school shopping and broke above a seven-month sideways area in July to a new 52-week high before retesting the consolidation zone in the 28–24 area. A move above resistance in the 29–30 area could mean a challenge of the all-time high near 36.

Dell Inc. (DELL-35.21) may have some fast computers for the dorm room, but the stock price has gone nowhere for nearly a year. This lengthy consolidation, roughly around 35, could be resolved on the upside if DELL closed strongly above 37.

Apple Computer Inc. (AAPL-35.76), which is another choice for the wired student or investor, shows a strong uptrend after making a base in 2001 through the first quarter of 2003. AAPL has been trending higher, and the stock has cleared some resistance at 34 and looks poised to extend its run toward our next target in the 41 area. There is no nearby resistance, while nearby support is in the 31–29 area.

Shopping for clothes can be a trying experience, and finding an apparel company/retailer with a strong chart pattern can also be a challenge.

Tommy Hilfiger Corp. (TOM-13.39) made a strong base at 6 last year and tripled to 18 by April, but prices have been “marked down” to correct approximately half of the prior advance. Prices may be poised for a technical advance, but without better evidence of more accumulation, we would lighten existing positions. You may not shop everyday in **Polo Ralph Lauren** (RL-38.05) for your school wardrobe, but the stock displays an uptrend worth your attention. RL traded sideways for three to four months before recently advancing to a new all-time high above 37; 40 is a readable target, and the 35 to 33 area should act as nearby support.

Apollo Group (APOL-82.72), better known for its online university, has made a small topping-like pattern since April following a strong two-year uptrend. This stock needs to clear key resistance between 94 and 98 to restart the uptrend; otherwise, further consolidation or price weakness could be expected. Key support lies in the 70–60 area.

Please see Market Interpretations *dated September 8, 2004, for accompanying charts.*

Groups: S&P MidCap 400 Diversified Chemicals and Specialty Chemicals Upgraded to *Buy* from *Hold*

The S&P MidCap 400 Chemical areas contain numerous attractive components. Of the nine components in the Specialty Chemicals sub-industry, six are technically appealing. **Albermarle Corp.** (ALB-34.97), recently upgraded to *Buy*, has penetrated a two-plus-year consolidation, providing target readings toward 45. Support lies at 30–32. **Crompton Corp.** (CK-7.52) is on the verge of a breakout through about an eight-month consolidation. Once 8 is attained, a target reading would be 11. Support lies at 6.50 and 5.00. **Cytec** (CYT-49.99) recently broke out at 49, providing a target of 53. However, as a result of the breakout at 42, through three-plus years of consolidation, longer-term targets toward 64 are also in place. Support lies at 45. **Lubrizol Corp.** (LZ-37.36) is poised for a three-year breakout at 38, which would provide target readings toward 49. Support lies at 35 and 33. **RPM International Inc.** (RPM-16.20) is poised to break out at 18, whereby targets toward 22 would be readable. Support lies at 15 and 13. **Sensient Technologies** (SXT-21.70) is poised to penetrate resistance at 22, which would also break the stock out of a year- and one-half-long downtrend. Support lies at 20 and 18.

Ferro Corp. (FOE-21.37), **Minerals Tech.** (MTX-55.86), and **Valspar Corp.** (VAL-48.20), the remainder of the Specialty Chemicals components, show little in the way of technical appeal.

In the Diversified Chemicals area, **Cabot Corp.** (CBT-40.40) is breaking out through resistance at 40 and could follow through toward a target reading of 45. From a longer-term perspective, a move through 42 would penetrate nearly a three-year consolidation, providing target readings toward 50 and possibly higher over time. Support lies at 37. **FMC Corp.'s** (FMC-46.75) recent breakout at 46 allowed us to project target readings toward 53. There is no resistance until 60, and support lies at 42. **Olin Corp.** (OLN-17.55) is the laggard and, from an intermediate-term perspective, shows little in the way of technical appeal. However, given the breakout through a seven-month downtrend, perhaps some stabilization from an investment standpoint is under way. Support lies at 16.

Susan Stern

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