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Welcome

Matthew Clements
Editor

The Relative Strength Index (RSI) is perhaps the most popular of all technical oscillators, in that it provides an easy-to-interpret indication of possible market turning points and trend strength. In this edition, we provide a brief overview of how best to use the RSI and what to look for in terms of buy and sell trading signals. Elsewhere, we take a look at oil and what the technicals are saying about the year ahead; it seems that a pick up in the global economy won’t necessarily mean higher crude prices going forward.

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THE TECHNICAL ANALYST
WTI CRUDE OIL: limited upside potential for 2010

By Veronique Lashinski

NYMEX WTI prices are still making higher highs and higher lows and thus may reach $90 or even $100 in the first quarter of 2010. However, constrained price action in the second half of 2009, when the rise was laborious, and with a flattening uptrend combined with the dynamic new uptrend in the Dollar Index, question the ability for WTI prices to continue much above $100.

Since December 1998, WTI prices have been in an uptrend (Figure 1). Following an exponential rally that started in 2004, 2008 ended with a price collapse. Prices then fell back down to the support trendline drawn from the December 1998 low. In 2009, prices rose back up to the vicinity of the 38.2% retracement of the July-December 2008 price collapse.

However, constrained price action since June 2009, with overlapping monthly ranges, illustrates strong resistance and an increasing difficulty in continuing higher. Indeed, between December '08 and June '09, the market rose from a low of $32.40 to the June high at $73.38, or more than $40 higher. In comparison, the December '09 high was only $80.

This slower price rise is consistent with a corrective pattern and points to limited upside potential. While prices may continue to the 50% retracement in the vicinity of $90, or even the 61.8% retracement at $103, the potential for prices to remain durably above $100 is very questionable at this point.

“"A WEEKLY CLOSE ABOVE $82 WILL BE SUFFICIENT TO CONTINUE THE SUCCESSION OF HIGHER HIGHS AND HIGHER LOWS”."
The weekly continuation chart (Figure 2) features a break of the 2009 uptrend at the beginning of December 2009. However, instead of breaking support at $65.05, WTI prices rose back up to the vicinity of that line and of the 38.2% retracement later in the month. Granted, this rise was made on low volume, but this is to be expected in the last two weeks of the calendar year. The key is that even though the actual trend-line was broken, WTI is still featuring higher recent highs and higher recent lows since February 2009.

A weekly close above $82 will be sufficient to continue the succession of higher highs and higher lows. At the time of writing, WTI is just $0.50 under that level, and thus should have little difficulty meeting that goal.

Nevertheless, the laborious price rise in the second half of 2009 is consistent with a corrective bounce and while prices may rise towards $90, and even to $100-$103, the upside potential after that is questionable.

The USD and oil
The two markets have had a marked tendency to trend in opposite general directions (Figure 3). The Dollar Index broke the downtrend which had been in place since March 2009, and has been trending higher since the end of November. At time of writing, the index is stumbling in the vicinity of 78.17–78.20,
Market Views

establishing resistance in that area (Figure 4). Even so, we are not looking for more than a short-term corrective decline at this point, and as long as the Dollar Index remains above 76.50, we will be looking for a resumption of the rise. The next significant resistance is 80.

Strength in the US Dollar is a factor of weakness to commodities priced in that currency, which includes NYMEX WTI. As such, a continued rise in the Dollar Index can be expected to weigh on WTI prices, and at the minimum, slow any rally.

Gold and oil

Figure 5 features the three contracts up to October 2008. In that time frame, WTI and gold have tended to trend in the same general direction, and in the opposite direction as to Dollar Index.

However, they were not locked in step by step, and there were times when WTI and gold trended in opposite directions, sometimes for several months. This was the case for example at the end of 1996, in 2000 and in 2001, and at the end of 2006 (Figure 5).

In fact, (Figure 6) we note that in major long-term directional changes, gold turned before crude oil. If history repeats itself this time, a top in gold would be ominous for the WTI uptrend. For this reason, energy traders will keep the chart of gold on their radar screens. For now, gold remains above its trendline even though it is in a short-term corrective decline.

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Figure 4: ICE Dollar Index futures, weekly front month continuation

Figure 5: NYMEX WTI, COMEX Gold, ICE Dollar Index, weekly continuation between October 1995 and October 2008 (Source: Bloomberg)

Figure 6: COMEX Gold and NYMEX WTI, weekly front month continuation since 2000 (Source: Bloomberg)
QUO VADIS EUR/USD?
An Elliott Wave perspective on the outlook for the US dollar

By Thomas Anthonj

The strong recovery of the USD in the last months was definitely a blow in the face of EUR bulls and is questioning the validity of the long-term up-trend. But let’s take a look at the initial price move from 1.6040 (July 08) to 1.2329 (October 08) to evaluate the Elliott Wave picture.

The decline was very dynamic, and apart from a minor rebound from 1.3882 to 1.4867 in September 08, it was a pretty extensive, straight line down. The extent of this devastating decline, as well as the structure of it with only one minor rebound, which is quite untypical for a countertrend B-wave rally, suggests a risk that we have potentially only seen the wave A low at 1.2329 of a much broader A-B-C down-consolidation (Scenario 1 – the bear view, Figure 1).

Referring to the extent of the whole decline and the short rebound, we can pretty much exclude the possibility of a 3-3-5 flat correction. That said, we are left with two main scenarios which is the already described broader A-B-C down consolidation or, what looks less likely but still possible, the assumption that the 1.3882 to 1.4867 rebound was indeed a very untypical B-wave rally, which would still allow for a straight resumption of the 2009 bull-trend (Scenario 2 – the bull view, Figure 2).

With this distinction in mind we can now thoroughly examine these two scenarios to extract decisive chart levels (T-junctions) which would allow us to draw further conclusions in terms of which scenario the market is opting for.

The bear view
Following the idea that the whole decline from 1.6040 down to 1.2329 was nothing more than the A-wave of a broader down-consolidation, the successive B-wave rally was expected to form a classical 3-step zigzag pattern up with the tendency to top out in the area of the 76.4% retracement of wave A (1.5164). Well, what happened after the 1.2329 bottom was reached could be described as an absolute match to this scenario. But in terms of receiving the final confirmation that a major B-wave top is already in place at 1.5145, which would of course have to be followed by a broad 5-wave structured C-wave down to at least 1.2134 (50%), we are still missing one mosaic to complete the negative picture. The latter would be another decline to a new low below the recent 1.4218 low marked on 22nd of December (Figure 1).

Such a decline would not only complete a textbook 5-wave structure from the 1.5145 top (potential wave 1 down of the new and bigger C-wave), but →
would at the same time constitute a decisive break below key Fibonacci support at 1.4284 (38.2 %). The previous penetration by 67 pips could still be regarded as overshooting only but if the latter gets extended even further in combination with a completed 5-wave structure down, the chances of having an internal 4th wave setback at hand within an intact up-trend would have become very slim. As long as the market doesn’t give a new low below 1.4218, there is still the possibility of missing a 5th wave advance up to 1.5164 (76.4 % - dark red scenario) which in itself would fit into the picture of a countertrend B-wave rally. Only a decisive break above 1.5164 (say higher than 1.5300) would clearly force the EUR bears to retreat in favour of the currently questionable bull-scenario.

**The bull view**

According to the already outlined facts, the EUR bulls face extinction if EUR/USD breaks to a new low below 1.4218. But so far we have not seen more than a 67 pip overshooting of the internal 38.2 % retracement at 1.4284 so that the backdoor to a resumption of the 2009 up-trend remains open. The structures in the USD Index (Figure 2) support the idea of another USD bear-swing as long as the key-T-junction at 79.022 is not taken out.

Since the 1.4218 low in EUR/USD was marked, the market managed to put in a row of higher lows which looks constructive at first sight but only a break above 1.4924 (76.4 % of the last decline) would eliminate the risk of a potential wave 2 rebound in favour of the overshooting view at 1.4284. Such a break would re-challenge the ultimate T-junction at 1.5164 (76.4 %), which would still have to be cleared to get the EUR bulls back into pole position. A failure to produce a decisive break above the latter (higher than 1.5300) could still prove to be fatal as the risk of having just completed the C-leg up within a bigger countertrend rally would still arise.

Only above 1.5300 would the odds have moved in favour of a stronger internal 3rd wave rally with projected targets between 1.6233 and 1.6327 (Fibonacci-projections). A high in that region would be followed by a rather extensive 4th wave consolidation (38.2 % of the rise from the bottom of wave 2 at 1.2458) to then display the final 5th wave impulse up, which would most likely end in a major trend reversal in the 1.6300 level.

**Summary**

Taking everything together, the chances of resuming last year’s up-trend are rather slim but even in this case we are only dealing with a countertrend rally. There is still a chance of re-visiting the 1.5145/64 key-resistance barrier in order to complete the 5-wave C-leg up within wave B. A failure to clear the 1.4925 handle, or an earlier sell-off beyond the 1.4218 low, would more or less end the dreams of a prolonged EUR supremacy with projected targets in the 1.62/63 handle in favour of a new long-term bear-trend with potential targets at 1.2134 (50 %) or even at 1.1640 (2005 low).
Definition

The Relative Strength Index (RSI) is a momentum indicator or oscillator that measures the market’s current price relative to the price n periods ago. It was developed by Welles Wilder and first mentioned in an article published in Commodities Magazine in 1978, and later in Wilder’s book, *New Concepts in Technical Trading Systems*.

The indicator is so called because it compares the relative strength of price gains on days that close above the previous day’s close to price losses on days that close below the previous day’s close. It is plotted on a scale of 0-100 which makes it easy to quantify and measure trading signals the indicator generates. The RSI can be used for both short-term and long-term analysis by substituting weeks and months for days in the calculation.

Relative Strength Index (RSI) formula:

\[
RSI = 100 - \left(\frac{100}{1 + \frac{U}{D}}\right)
\]

Where:
- \(U\) - average value of the positive price changes over n days;
- \(D\) - average value of the negative price changes over n days.

RSI and momentum

The RSI is generally considered a more sophisticated measure of market momentum than the basic momentum indicator. The momentum indicator simply compares the current price directly with the price n periods ago. In contrast, the RSI takes the average value of up days divided by the average value of down days over that period. This solves the problem of large moves in the oldest data (i.e. 10 days ago) that can cause large or misleading readings in the momentum indicator.

The relationship between momentum and the RSI indicator is of significance. The direction of the RSI is determined by the speed with which the price moves either up or down. This means that even when the price movement over the period is negative, the RSI can be high, and visa versa. In other words, momentum will often be positive when the RSI is low or falling.

Trading signals

The most frequently used time periods (n) for the RSI are probably 8 and 14 days. Indeed, Welles Wilder himself recommended using 14 days but since then, the 9 day and 25 day have also gained popularity. The higher the number of days, the less volatile the RSI is and the fewer signals it generates. Conversely, the lower the number of days, the more volatile the index is and the more frequently signals are generated.

The most basic trading signal is to buy when the RSI moves into its oversold range and sell when it enters the overbought range. Typically, the market is said to be overbought if the RSI moves above the 70 level and oversold if it falls below 30. For a stricter interpretation of overbought and oversold conditions, the 80 and 20 levels are also often used.

“THE MOST EFFECTIVE WAY TO USE THE RSI IS TO LOOK FOR DIVERGENCE BETWEEN PRICE AND THE INDEX; FOR EXAMPLE, WHEN THE PRICE IS MAKING A NEW HIGH, BUT THE RSI IS FAILING TO SURPASS ITS PREVIOUS HIGH.”

Indicator Focus: THE RSI

Techniques
Although most signals are based on using the RSI as an overbought and oversold indicator, Welles Wilder himself never discussed the indicator in this way in his original publication. He focused on using the divergence between the RSI and price for generating trading signals and looking for a "Failure Swing". Here is a quote from "New Concepts in Technical Trading Systems":

"Although divergence does not occur at every turning point, it does at most significant turning points. When divergence begins to show up after a good directional move, this is a very strong indication that a turning point is near. Divergence is the single most indicative characteristic of the Relative Strength Index. Failure swings above 70 or below 30 are very strong indications of a market reversal".

Failure Swings
The most effective way to use the RSI is to look for divergence between price and the index; for example, when the price is making a new high, but the RSI is failing to surpass its previous high. When the RSI then turns down and falls below its most recent trough, it is said to have completed a "Failure Swing." The failure swing is considered a confirmation of an impending reversal. See Figure 1.

Figure 2 shows how a failure swing in the 14-day RSI (circled) signalled a stalling in the FTSE after several months of steep advances.

Research into the RSI
Terence Chong of the Chinese University of Hong Kong has done several studies on the effectiveness of using the RSI. In a straightforward test on using the RSI with the FT30 index, he looked at the period from July 1935 to January 1994 and, divided into three sub-periods to avoid data snooping. He used the 14 day RSI and generated a buy signal when the RSI crossed above the 50 level, and a sell signal when it fell below the 50 level.

His results were compared with a buy and hold strategy for the entire sample period which yielded a return of 5.8% annually with the average 10-day return being 0.22%.

His results for using the RSI indicator over the entire sample period showed a return of 22.44%, with an average 10-day return of 0.779% for buy signals and -3.36% and -0.127% respectively for sell signals. However, his results assume that for an annual return of 22.44%, only buy signals were considered (as opposed to sell signals which may have lost money), and he just simply multiplied the 10-day buy return by 25 to annualize it. That means we have signals continuously, which is probably unrealistic.

Chong also said that in his experience, by using just the RSI 50 crossing signal with a buy followed by a sell and then followed by a buy and so on, it is possible to achieve over 10% annualized returns in most developing markets. The disadvantage of this is that the holding period is usually uncertain.
Measuring the power behind pivot turning points

By Trevor Neil

This is the first part of a two-part article that describes two new indicators developed by myself and Catalin Plapcianu, a Romanian trader and mathematician. The TNCP Triangulation indicators, which will soon be available on Bloomberg terminals, are designed to describe the entry trigger, initial stop loss, and how to maximise a trade.

The problem
As traders, one of the most attractive points to buy or sell at is a pivot turning point. They are low risk points of inflexion and are often the start of a price move in the opposite direction. This is the trader’s dream – to catch the turn. The problem is how to describe them technically. Normally we look at the relationship between the open, high, low and close. For example, we might describe a pivot point high or reversal (see Figure 1) as a high followed by a higher high and then a lower high. A sell order might then be placed as the previous low is broken. But this description of a turning point misses important information. How intensive was the rise? How powerful was the rejection? How much power is there as it starts in its new downward direction? A simple pattern-based description cannot adequately give us this information. Not every high which is followed by a higher high and then a lower high is a good and profitable trade.

The solution
We have taken a new approach to describing a market turn: TNCP Triangulation uses the centre of gravity of a rolling three bar sequence as the balance point for each of the three bars. The three centres of gravity together form a triangle. The shape of the triangle indicates the power of the market and the strength of any change in price direction.
TNCP Triangulation calculation
First we count the pips won and the pips lost for a (say) hourly bar from the open to close of the hourly bar. Hourly is chosen because most of the charting platforms that handle real time data can count up to approximately 12000 pips. We need to be sure that an active bar does not exceed the total pips the system can count. Hourly bars as a maximum will never exceed the tick limit.

Let \( W = \) pips won and \( L = \) pips lost

Let \( V = \) variation

We want to measure the variation of the bar on that particular hour. All we have to do is to sum up:

\[ V = W + L \]

After \( V \) is calculated we have to measure the pips won and the pips lost as a percentage of Variation \( (V) \). This calculation is done for all the 3 bars in the pivot if the Conditions (see below) for the pivot are met. After this we can choose how to represent it, in means of pips won or pips lost.

For example let bars 1, 2, 3 form a buying pivot (Figure 1). Under these bars we will have three vertical lines that are scaled with percentages from 0% to 100%. On each vertical line we will have one dot that represents the pips won or lost. Let’s say we choose the calculation for the pips won: We shall have under each of the bars three vertical lines with dots on them that signal the percentages of pips won. Joining the dots up forms a triangle.

After the triangle is formed we will calculate the centre of gravity for the triangle, \( G \).

\( G \) is calculated by intersecting the medians of the triangle. A median is a line that unites a middle side of the triangle with its correspondent top. This is done for the 3 tops of the triangle and in this way we find the center of gravity of the triangle. Note the shape of the triangle indicates the reversal power.

The conditions
The following conditions must be met before each Triangulation calculation takes place.

Conditions for a buy pivot
1. The high of bar 1 has to be higher than the high of bar 2
2. The low of bar 1 has to be higher than the low of bar 2
3. The high of bar 3 has to be higher than the high of bar 2
4. The low of bar 3 has to be higher than the low of bar 2

The relationship between 1 to 3 is calculated using the TNCP Triangulation formula to find the buying power.

Conditions for a sell pivot
1. The high of bar 1 has to be lower than the high of bar 2
2. The low of bar 1 has to be lower than the low of bar 2
3. The high of bar 3 has to be lower than the high of bar 2
4. The low of bar 3 has to be lower than the low of bar 2

The relationship between 1 to 3 is calculated using the TNCP Triangulation formula to find the selling power.

Trading rules
Here are suggested trading rules for a TNCP Triangulation pivot buy:

1. Normal – if \( G \) is in the 40-60% area
   After all conditions are met put a buy order on the 4th bar at the time the market passes the high of the 3rd bar

2. Aggressive – if \( G \) is higher than 60%
   After all conditions are met put a buy order on the 4th bar right at the opening of the bar

3. No trade – if \( G \) is lower than 40%

Here are suggested trading rules for a TNCP Triangulation pivot sell:

1. Normal – if \( G \) is in the 40-60% area
   After all conditions are met put a sell order on the 4th bar at the time the market passes the low of the 3rd bar

2. Aggressive – if \( G \) is lower than 40%
   After all conditions are met put a sell order on the 4th bar right at the opening of the bar

3. No trade – if \( G \) is higher than 60%

Stop losses
The stop-loss order is placed at the low of bar 2 (for a buying pivot) and at the high of bar 2 (for the selling pivot).

Figure 1

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The TNCP Triangulation pivot is only an entry technique, it doesn’t help you to stay in a profitable position and it doesn’t tell you when to get out of that position. For this we have another indicator we will cover in the next issue. Together these form a trading system that will help you stay in the market on a profitable position and exit when the move is exhausted. However, the Triangulation Pivot, on its own, can be a powerful indicator. On Bloomberg it is calculated dynamically; as each bar is generated, the triangle’s shape changes. This gives a clear visualisation of how the battle between the bulls and bears is progressing. This is an exciting new way to see, measure and feel how the market is moving.

Trevor Neil is the trader and technical analyst at BETA group and is principal trainer with the Technical Analyst magazine. Catalin Nicolae Plapcianu is a mathematician and student of technical analysis. Together they own TNCP Limited. TNCP Triangulation is a trademark TNCP Limited.
Elliott Wave Theory states that stock prices are governed by cycles founded upon the Fibonacci series (1-2-3-5-8-13-21...). Specifically, R. N. Elliott believed that the market moves in waves, which in the case of a bull market comprises three distinct up-movements and two distinct down-movements, followed by an ‘A-B-C’ correction. The basic shape of the wave is shown in Figure 1.

Wavefronts W1, W3 and W5 represent the ‘impulse’, or minor up-waves in a major bull move. Wavefronts W2 and W4 represent the corrective or minor down-waves in the major bull move. B represents the one up-wave in a minor bear wave.

Elliott proposed that the waves are fractal in nature – meaning there could be waves within waves. This means that the chart above not only represents the primary wave pattern, but it could also represent what occurs just between points W2 and W4.

Elliott Wave ascribes names to the waves in order of descending size: Grand Supercycle; Supercycle; Cycle; Primary; Intermediate; Minor; Minute; Minuette; and Sub-MINUETTE. The major waves determine the major trend of the market, and minor waves determine minor trends, similar to the way Dow Theory postulates primary and secondary trends.

According to Prechter and Kendall (1996), Elliott Wave theory can be viewed through the lens of crowd psychology – market sentiment. They suggest that wave theory reveals that mass psychology swings from pessimism to optimism and back in a natural sequence, creating specific and measurable patterns, and that wave analysis measures investor psychology, which is the real underlying factor behind markets: when people are optimistic about the future of a given issue, they bid the price up.

Figure 2 presents an example of a classic Elliott Wave cycle that occurred in the NASDAQ Composite in late 2003.

In theory, trading using Elliott Wave patterns is quite simple. The trader identifies the main wave or Supercycle, enters long, and then sells or shorts, as the reversal is determined. This continues in progressively shorter cycles until the cycle completes and the main wave resurfaces. The problem with this is that much of the wave identification is taken in hindsight and disagreements arise between Elliott Wave technicians as to which cycle the market is in.
There has been some empirical research on Elliott Wave theory for developed capital markets; however, similar empirical work for developing markets especially India is limited. Yet the NIFTY has lost more than 65% from its peak within a period of ten months, leaving no scope for explanation from fundamental analysis.

In this light, our study sets out to find whether there is a significant occurrence of defined patterns, particularly Elliott Waves, in the Indian stock market.

Data and Methodology
The data for the study consisted of the closing prices of a sample of thirty-six of the fifty stocks constituting the NSE NIFTY index in the period 1 January 2001 to 31 December 2008, comprising a series of two thousand and three trading days. Only those stocks which were traded in the entire study period were selected in the sample.

The following patterns were investigated in the study:

**PATTERN1:** a four-day pattern, with alternating gains and losses, i.e. “+ - + -,” where ‘+’ signifies a gain in the stock on that day, and ‘-’ signifies a loss in the stock on that day.

**PATTERN2:** a seven-day pattern resembling the movement of an Elliott Wave, viz. “+ + - + + +,” where ‘+’ and ‘-’ are defined as before.

**TREND:** a pattern in which five time intervals are considered, in Fibonacci ratio to the previous interval: $\Delta t_2 \approx 0.382\Delta t_1$, $\Delta t_3 \approx 1.618\Delta t_1$, $\Delta t_4 \approx 0.382\Delta t_3$, and $\Delta t_5 \approx 1.618\Delta t_3$.

**WAVE:** a pattern similar to TREND1, with similar ratios of time intervals, with the additional condition that $\Delta t_2$ and $\Delta t_4$ should have negative returns.

**ELLIOTT-WAVE:** a pattern resembling the general Elliott Wave, with time intervals similar to those considered in the patterns TREND1 and WAVE1, and with the additional condition that the retracements (i.e. in time intervals $\Delta t_2$ and $\Delta t_4$) would lie in the range 30% to 50%.

The study used the lognormal model to analyse wave behaviour in stock prices. The model was calibrated using estimates of the drift and volatility parameters obtained from the closing NIFTY index values in the study period. With these estimates, stock prices were simulated using the Monte Carlo method for five hundred runs. In each simulation run, the number of occurrences of each type (Pattern1, Pattern2, Trend, Wave, and Elliott Wave) were counted, yielding the →

"SHORT- AND MEDIUM-LENGTH ELLIOTT WAVES WERE SEEN ACROSS SEVERAL STOCKS"
sampling distribution for the number of occurrences of each type in the simulated sample.

This was used to test for the presence of each pattern by the construction of z-scores, using the formula: $z = \frac{(N – \text{mean}(N))}{s_N}$, where $N$ is the observed number of “waves” of a particular pattern detected in a stock, $\text{mean}(N)$ is the sample mean number of “waves” of that particular pattern from the sampling distribution, and $s_N$ is the sample standard deviation of the number of “waves” of that particular pattern from the sampling distribution. If the $z$-score is positive and significant (right tail), the occurrence of the given pattern is high in the considered stock; while if the $z$-score is negative and significant (left tail), the occurrence of the given pattern is low in the considered stock. If the $z$-score is insignificant, the occurrence of that pattern in the considered stock is consistent with the occurrence of the pattern in a random series of stock prices.

"THE NIFTY HAS LOST MORE THAN 65% FROM ITS PEAK WITHIN A PERIOD OF TEN MONTHS, LEAVING NO SCOPE FOR EXPLANATION FROM FUNDAMENTAL ANALYSIS."

Analysis
It was found that PATTERN1 appeared very frequently in the simulated sample. The lower 95% confidence limit for PATTERN1 suggests that for 97.5% of the stocks, at least one hundred occurrences of PATTERN1 would be expected. However, in the actual market data, it was found that PATTERN1 was significantly less prevalent than expected for 38.89% of the sample stocks, and for the index. Thus, PATTERN1 was found to be significantly less prevalent than expected.

It was found that PATTERN2 did not appear at all in the simulated sample, while it was found to be quite prevalent across all of the sample stocks and in the index. Thus, PATTERN2 was found to be significantly more prevalent than expected for all the sample stocks.

It was found that TREND appeared very frequently in the simulated sample, increasing with length. However, mixed results were obtained for the market data. It was found that TREND (5dy) was significantly less prevalent than expected for 5.56% of the sample stocks, while it was found to be significantly more prevalent than expected for 11.11% of the sample stocks; TREND (21dy) was significantly more prevalent than expected for 13.89% of the sample stocks; TREND (55dy) was significantly more prevalent than expected for 2.78% of the sample stocks; and TREND (200dy) was not significant for all the sample stocks. Also, TREND was found to be not significant for the index.

It was found that WAVE appeared moderately frequently in the simulated sample. On the actual market data, it was found that WAVE (5dy) was significantly more prevalent than expected for 8.33% of the sample stocks; WAVE (21dy) was significantly more prevalent than expected for 11.11% of the sample stocks; WAVE (55dy) was significantly more prevalent than expected for 8.33% of the sample stocks; and WAVE (200dy) was significantly more prevalent than expected for 8.33% of the sample stocks. Also, for the index, WAVE (5dy) was found to be significantly less prevalent than expected, while WAVE (200dy) was found to be significantly more prevalent than expected.

It was found that ELLIOTT-WAVE appeared very rarely in the simulated sample. On the actual market data, it was found that ELLIOTT-WAVE (5dy) was significantly more prevalent than expected for 19.44% of the sample stocks; ELLIOTT-WAVE (21dy) was significantly more prevalent than expected for 16.67% of the sample stocks; ELLIOTT-WAVE (55dy) was significantly more prevalent than expected for 8.33% of the sample stocks; and ELLIOTT-WAVE (200dy) was not significant for all the sample stocks. Also, ELLIOTT-WAVE was found to be not significant for the index.

Discussion
The results of the study show that patterns do exist in the market. In particular, PATTERN1 was significantly absent for several stocks; PATTERN2 was significantly present for all stocks; short-length TREND was significantly present across several stocks; WAVE over all lengths was seen across several stocks; and short- and medium-length ELLIOTT-WAVE was seen across several stocks. The results of the study thus tend to support Elliott Wave Theory, especially for short- and medium-length waves.

The study also presents an innovation whereby charting patterns are translated into logical expressions, thus removing the subjectivity of charting. This technique can be used to detect patterns for any technical chart, and it can be customized to the analyst’s own requirements, either with exact values or with bounded ranges.

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The first Commitments of Traders ("COT") report was published back in 1962 and antecedents of the report can be traced all the way back to 1924. Since its inception, the COT report has gone through numerous changes and improvements over the years. The Commodity Futures Trading Commission ("CFTC"), an independent US agency created by congress in 1974 to regulate the US commodity futures and options markets, is responsible for maintaining the COT report and publishes the data on its website (www.cftc.gov). The CFTC also provides several decades of historical COT data on their website.

The COT report provides a breakdown of the buying and selling that takes place in the futures markets each week. By combining certain price indicators with specific information contained in the COT report, one can create very powerful trading tools. For example, one can ascertain that certain large market participants likely have access to certain fundamental information before the information is made public. Thus, one might monitor the trading activities of these large participants to gain insight into the direction of the market. The COT data provides information that makes this possible. The insight obtained by combining COT data with price indicators can be far more reliable than any price indicator by itself (see Box on Trading Strategies).

Over the years the data in the COT report has become highly regarded and highly sought after as a trading tool used by traders and speculators all over the world. The CFTC has also made numerous improvements and updates to the report. Below is a list of the most significant updates and improvements since the 1990s.

- 1990 - CFTC increased the frequency of the report from monthly to mid-month and month-end.
- 1992 - CFTC increased the frequency of the report to every two weeks.
- 1995 - CFTC added options data to the COT report (creating combined futures & options rpt).
- 1995 - CFTC began providing the COT report on their website free of charge.
- 2000 - CFTC increased the frequency of the report from every two weeks to weekly.
- 2007 - Supplemental report was released to track “Commodity Index Traders”. This special report covers select agricultural markets only.
- 2009 - significant COT changes occurred. In September 2009 the CFTC began publishing a new disaggregated COT report.

The changes made during the 2nd half of 2009 are the most significant improvements ever made to the report in my opinion. These changes were made in response to significant changes in market dynamics. ETFs have become extremely popular during the last 10 years, and ten years prior to that they simply did not exist. In addition, OTC activity in
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derivates has exploded. Swaps are a big part of this and the recent changes in the COT report now include a category for tracking swap dealers. Furthermore, during the last 10 years we have seen pension and endowment funds moving into commodities, which did not occur to any significant degree during the prior ten years. Pension and endowment funds now control huge sums of money, much of which is passively managed index fund exposure. Some would say this is only the tip of the iceberg. There is a great deal more in sovereign funds for example.

The driving factor behind the flow of money into commodities may simply be out of control printing of fiat currencies throughout the world. Whatever the case may be, the upgraded COT report should prove very useful in the years ahead. For example, the new swaps category will help track pension fund activity. The fact that the CFTC has pulled the swaps out of the traditional commercial category also enables followers of the COT report to track the activity of true hedgers in the same way that we have tracked them in the past. I have highlighted the recent changes in the COT report below.

The original COT report contained the following categories of traders:
1 – Commercial category
2 – Non-Commercial category
3 – Non-Reportable category

The new disaggregated COT report contains the following categories of traders:
1 – Producer/Merchant/Processor/User category
2 – Swap Dealers category
3 – Managed Money category
4 – Other Reportables category
5 – Non-Reportable (small positions under the CFTC position limits)

Each category of traders in the COT report provides a unique view on the market. The new Producer/Merchant/Processor/User category consists primarily of commercial hedgers. This is what the “Commercial” category originally represented in the traditional COT report. In recent years the growing number of swap dealer positions greatly skewed the data in this category. The new disaggregated COT report addresses this issue by separating the swap dealers out of this category and placing these positions in their own category. Thus, the Producer/Merchant/Processor/User category now represents traditional commercial hedgers only. This group is widely considered to be the most knowledgeable in a market. For example consider the grain markets. A large producer of wheat typically understands the supply and demand fundamentals much better than a small speculator, for the simple reason that they are much closer to the market and that they create the supply. A large commercial consumer (such as General Mills for example) likewise typically understands the supply and demand much better than the individual speculator. Speculators on the other hand tend to understand the technical condition of the markets better than the commercial hedgers. And the larger the speculator, the more knowledgeable they tend to be in regards to the technical conditions. Large speculators focus on price behavior and on deciphering fundamental information. Commercial hedgers on the other hand are the suppliers of the fundamental information and they tend to know or care very little about the technical condition of the market. A commercial producer in copper for example will use the futures contracts as a way to lock in the price they receive for the copper they mine out of the ground. They may increase their hedging activity when they believe there is a risk that prices may fall in the future. A commercial consumer on the other hand is much more concerned with the risk of rising prices in the future. As such, each commercial entity has opposing needs. The COT report allows us to monitor the hedging activities of these entities, and by doing so we hope to gain insight into their view on the direction of the market.

The "managed money" and "other reportable" categories combined equate to the traditional non-commercial ("large speculator") category in the original COT report. The big change here is the move away from "commercial" and "non-commercial". The fact that the CFTC is taking this approach indicates we may see more categories or expanded categories in the future. No longer are they locked into lumping traders into "commercial" and "non-commercial" categories any longer. They may place them into new or existing categories depending on the type of trader.

With regards to the future of the original COT report. My understanding is that the CFTC intends to continue providing the original COT report, in its original format, along side the new disaggregated report for the foreseeable future.
Example – Copper

Let us compare the data using Copper as an example. Figure 1 plots the Copper net-commercial position from the original COT report, where the net-commercial position includes the swap dealer positions.

Figure 2 plots the net-commercial positions in Copper from the new disaggregated COT report for the same period, with the swap dealer positions excluded.

I would like to draw your attention to two observations: i) How much deeper the net-commercial position is in the disaggregated COT report than in the original report and ii) How the near-inverse relationship between price and net-commercial positions is more consistent throughout the period in the disaggregated COT report. That said, we don’t have enough data yet to draw a reliable conclusion on this second point. Notice the disaggregated data only goes back to June 2006. This is all the disaggregated data the CFTC has given us (only back to June 2006, whereas the CFTC provides traditional COT data back to 1986). Notice also if you compare the traditional net-commercial to the disaggregated net-commercial back to June 2006, the inverse correlation is very similar. As time goes on, we will accumulate more disaggregated data and then we can make more meaningful comparisons.

Going back to the first observation, in the original report the traditional net-commercial position in copper (as reported on 12-29-2009) is -16398. The negative number indicates the number of commercial short positions is larger than the number of commercial long positions. This number is even more negative when the swap positions are moved. The net-swap position for copper on 12-29-2009 is +57481 (see Figure 3). Subtracting this position from the traditional net-commercial position equates to the new disaggregated net-commercial position for 12-29-2009 of -73879.

So what are the swap dealer positions and how might these positions impact the markets? Swap dealers provide a service to pension funds and other larger market participants (such as endowments for examples). When a pension fund decides to allocate a portion of their total portfolio into commodities, they generally do not enter directly into the futures or forwards.

"BY TRACKING THE SWAP DEALER POSITIONS WE ARE ABLE GAIN MORE INSIGHT INTO THE ACTIVITY OF THE PENSION FUNDS AND ENDOWMENTS".
the spot markets. Instead they tend to allocate funds into commodity indices. One such popular index is the Goldman Sachs Commodity Index for example. This index generally consists of 24 different commodity markets. The number of markets in the index can vary slightly based on weighting (energy markets). A pension that allocates a portion of their assets into the commodities may do so using this index. The index itself however is not used. Instead, positions must be established in each individual market that makes up the index. Obviously this involves a good bit of work. The individual positions must be managed through rolling and so forth. The pension fund generally does not manage the positions and neither do the swap dealers. A swap dealer will simply provide the means for which the pension fund can swap a portion of their assets from one investment into another. In this case, a swap dealer may accept a known rate of return on a basket of dividend paying stocks in exchange for providing the pension fund with an unknown rate of return on a basket of commodity markets (e.g. Goldman Sachs Commodity Index). The value of the two assets may be equal at the time of the swap. The rate of return that the swap dealer receives is known while the rate of return the pension fund will receive is not known. This is the risk/potential reward that the pension fund desires.

By tracking the swap dealer positions we are able gain more insight into the activity of the pension funds and endowments. Their activity has placed price floors in some markets (crude for example) and in most cases (not all, but most) these positions are long only. It’s worth noting that the bulk of their positions are passively managed, and passively managed generally also means non-leveraged. There are however increasing cases where such funds are actively managed as well, and if/as this increases it may also impact on the volatility of the markets as well.

Conclusion
In recent years there have been rumors that the COT report was about to be pulled. My understanding is that the CFTC has no plans to pull the report. And in fact, their latest upgrades strongly suggest they are doing just the opposite. Rather than pull the report they are improving it and making it better.

The new disaggregated COT report addresses many issues associated with changing market dynamics. In just the last ten years, trading in the old open outcry trading pits has dried up. Fewer and fewer of the open outcry markets remain and most markets are traded on electronic exchanges via electronic platforms. These changes are also opening up markets to larger customers (pension funds for example) and on a global scale as well. More and more money is likely to continue pouring into these markets during the next few decades. The new improvements in the COT report have been necessary to address these changes and to keep the report valid into the 21st century.

The recent adjustments to the COT report have effectively re-aligned the commercial category with the original intention, to provide transparency into commercial hedging. In addition the new changes also provide transparency into one of the fastest growing areas of the market and that is the swaps. As such, the advantages of incorporating COT data into a trading system remain as strong as ever and, with the recent improvements described here, are probably even greater.

Floyd Upperman is Director of Floyd Upperman & Associates. The charts and market studies contained in this report are part of Floyd Upperman & Associates trading systems. Floyd Upperman COT trading systems, COT charts and all market studies are available and accessible to members of Floyd Upperman & Associates website (www.upperman.com).

Trading Strategies using COT Data
Figure 4 provides an example of a setup trade in Wheat during late 2005 and early 2006. The setup is for a buy. The completion of the setup relies on having both a COT trigger along with specific price criteria that confirms a change in price trend may be underway. The first step in our trading system (called ‘IMPA’) involves an extreme position held by the commercial hedgers. When the net-commercial position exceeds a specified limit (the Upper-Commercial Limit in this case) a buy selection is triggered. Once this happens we turn our attention to the price behavior and begin looking for signs of an impending change in trend, which in this example was a double bottom / “W” pattern. Below is a chart that explains the initial trigger for the buy in Wheat.
Figure 5 shows what the trigger graph looked like on February 14th 2006 after the trade had been established and the new upward price trend was underway.

Figure 6 is one of our daily price studies in Wheat on November 30th 2005. You can see that the new price trend had not been established yet.

Figure 7 is the same graph, with the date now December 21st 2005. Here we can see a “W” price pattern has formed. The “W” price pattern is a pattern we like to see during buy selections because the price-low has already been tested once. The “W” pattern also provides an excellent logical stop (an exit if the new trend fails to unfold). We can see that the “W” lows are holding and a new price trend appears to be unfolding. The black line just above the blue closing price bars is the 50day moving average.

Figure 8 illustrates a more recent (June 2009) updated net-commercial study in Chicago Wheat. I’ve circled two sell trigger selections. The first one (“huge top”) occurred in 2008 and the other one at the end of June 2009.

"THE FIRST STEP IN OUR TRADING SYSTEM INVOLVES AN EXTREME POSITION HELD BY THE COMMERCIAL HEDGERS."

Figure 9 is our weekly price graph for Wheat. Here I have circled two price indicators that gave us sell signals during the time of the trigger selections noted in the net-commercial graph above.

These red price bars occurred in conjunction with the extreme commercial sell triggers. The red price bars are a proprietary indicator known as weekly Reverse Plunger (RP) formations.
Within technical analysis, Dow Theory is one of the classic methods to analyse the trend of the market. Charles Dow, the originator of the principles of the Dow Theory, used two indices; the Dow Jones Industrial Average and the Dow Jones Transportation Average to determine the overall health of the US economy. It is thus not surprising that the first and basic tenet of Dow Theory is that the two indices must confirm each other’s direction. But what does it say about last year’s stock market rally? Are we still in a bear market environment?

The rising peaks and rising troughs since the March 2009 low suggest that we have moved to a strong secondary bull market. But let us first go back in history. Dow combined various indexes in the search of the underlying trend of the market as a whole. Moreover, his conviction was that only the closing price of the day is important and he was not interested in what happened during a trading session. He was, therefore, only plotting the closing prices of the averages as they discount all known factors that affect supply and demand in the market.

Incidentally, there is a misconception that the Dow Jones Utilities index is part of Dow Theory. In fact, at the beginning of the twentieth century, the utilities index did not exist. The index was launched in 1929, almost 33 years after Dow’s development of the Industrials and Rails indexes (which was renamed Transportation later).
The most important principle of the Dow Theory is the joint movement of the Industrials and the Transports indexes above and below previous secondary high and low points. Dow Theory consists of three trends: the first is the primary bull, or bear market, when both averages are making new closing highs or new closing lows, respectively. The market, however, does not trend in a straight line but can correct, which is also known as a countertrend rally, that is the second trend. This will be the secondary reaction according to Charles Dow. The near term or minor trend (i.e. the third trend) will be represented as fluctuations in the secondary reaction (i.e. the second trend). Volume, according to Dow, is a secondary indicator but it should confirm the trend.

The duration of the primary bear and bull market phase normally lasts a number of years. The countertrend reaction can last from three weeks to several months, before the primary market continues its direction. The third trend of the Dow Theory lasts less than three weeks. The primary trend is still effective until there are definite signals that the primary trend has reversed.

Did the Dow Theory signal a warning in 2007?
Yes, the averages were not confirming each other’s direction. In the primary bull trend, the averages confirmed each other’s price movements and had a joint high on 19 July 2007. From that ‘secondary’ high point, the Industrials and Transportation moved down during August 2007 to mark a secondary low point. The Industrial average advanced from the low to a new high in October 2007, while the Transportation average declined during the same time frame. This resulted in a negative non-confirmation between the two averages in October 2007. In November 2007, the averages broke below their major support levels, indicating the start of the primary bear market.

Given the current market rally, is the primary bear market trend still intact? Or are we already in a primary bull market rally? To determine whether the primary bear market has reversed into a primary bull market, we need to seek first for positive non-confirmation. Non-confirmations are not buy or sell signals, but rather warning signals. That is, investors should be aware that there is something wrong. Only if both averages jointly close above their secondary high or close below their secondary low can one consider that there is a turn in market sentiment.

But which signal is the most important? First non-confirmation has to be established between the two averages. When the secondary reaction (i.e. the current market rally) breaks out above the previous important secondary highs in both averages, one can talk about a turning point, i.e. that the primary bear market has turned into a primary bull market. The main resistance levels should be sustainably broken. What are the main resistance levels for the Dow Industrials and Transports? There were differences of opinion among technical analysts on the secondary high level (resistance level).

For the transportation index, some argued that the high on 6 January 2009 at 3717 is the secondary high, while others argued that the high was on 4 November 2008 at 4071. For the Dow Industrials, the levels were the close on 4 November 2008 at 9625 and the close on 2 January 2009 at 9024. Before the primary uptrend could be confirmed, a joint violation of the secondary highpoint of 4 November 2008 should be established. We have seen that all these main resistance levels have been significantly broken on the upside.

So, according to the Dow Theory, we have now moved to a primary bull market trend. The averages have jointly closed above these secondary highs to alter the primary trend. It seems that there is still some upward potential before we reach new resistance levels around 10710 for the Dow Industrials and 4425 for the Dow Transportations, respectively. A sustainable break here could extend this primary bull market but we should be aware of the secondary counterrtrend.

Jean Paul van Straalen is a fund manager at Iniohos Investment Management.)
Intraday Trading Rules for Month-End FX

By John Normand
A common perception is that portfolio rebalancing at month-end generates large and unpredictable market moves in FX. In global portfolios employing currency hedges, investors would sell the currency of the better-performing region, since rising asset values require additional FX selling to maintain a target hedge ratio.

Rebalancing is a bone fide month-end flow: the question is whether this activity is large enough to impact asset prices systematically. Our research examines some simple trading rules and the results suggest that the most likely influence on month-end FX movements is hedge rebalancing of non-US equity investors. This flow would explain why the dollar tends to sell-off at month-end if US equities rallied in that month and tends to rally if stocks declined that month, even controlling for fundamental influences on that day.

At first glance, the month-end effect looks overstated. Figure 1 compares the average intra-day range on G-10 currencies on the last business day of the month with the average range on other days, based on a five year sample. Indeed intra-day ranges are wider at month-end for seven of nine currencies, but the differences are small (under 0.2%) and statistically insignificant. The same conclusion holds for government bonds; intra-day ranges are wider at month-end but by less than a basis point (Figure 2). The opposite holds for equities: intra-day ranges are narrower on the last day of the month for all major markets but the FTSE (Figure 3).

The lack of unusually large moves at month end doesn’t deny the rebalancing effect, however. A discrete flow at month-end may indeed drive prices on that day, even if the movements are no larger than average. In FX the typical month-end flow is hedge rebalancing since the value of underlying assets change after hedges are initiated. But forecasting the size and direction of these flows is impossible without knowledge of investors’ hedging policies across regions and asset classes.

As an alternative, however, we can infer hedging policy by testing whether trading rules which replicate month-end behaviour deliver reliable signals. Rules which generate consistently positive returns are an initial indication that such hedging activity determines price patterns at month-end. Consider three competing assumptions for what drives rebalancing flows, along with a trading rule to test the theory.


**Assumption:** Hedging practices are uniform across countries and asset classes, so rebalancing flows reflect the differential in equity and bond market performance that month.

**Example:** Investors in Country A and Country B invest in each other’s markets and hedge currency risk by selling the foreign currency forward. If assets in Country A rally during the month, investors in Country B sell additional Currency A to rebalance the FX hedge at month-end. (If the notional balance of Country A’s assets have increased over the month, the investor is underhedged relative to the amount of foreign currency sold earlier in the month). Investors in Country A do the inverse if assets in Country B rally. The net hedging flow depends on whose stock or bond market has outperformed, thus generating a larger amount of currency selling.

**Trading rule:** On the last business day of the month, calculate equity and bond returns for each country in local currency. Buy (sell) the currency of the worse (better) performing market at the beginning of the trading day (0600 GMT) and close at the end (1600 GMT). Consistently positive →
returns on this rule suggest that investors employ similar hedging policies.


Assumption: Hedging practices are asymmetric across countries and asset classes, so rebalancing only reflects the performance of one market.

Example: Country A investors hold assets in Country B and hedge currency risk by selling Currency B forward. Country B investors hold assets in Country A but do not hedge, perhaps because they are bullish on Currency A, because Country A’s interest rates are high or because they desire FX exposure in Country A as a matter of policy (foreign reserves). If assets in Country B rally during the month, investors in Country A sell Currency B to rebalance the FX hedge, since the notional balance of Country B’s foreign assets has increased. The net hedging flow therefore reflects only underlying stock or bond market performance in Country B.

Trading rule: On the last business day of the month, calculate equity and bond returns for Country B in local currency. Sell (buy) Currency B if assets rallied (sold off) that month. Execute the trade at market open (0600 GMT) and close at the day’s end (1600 GMT), as in the previous example.

3. Month-end movements driven by multiple investor and corporate flows

Assumption: Currency movements at month-end are systematic but due to a wider range of flows than investor hedge rebalancing. Other flows could include corporate hedging, corporate profits repatriation, dividend payments or rebalancing of rule-based structured products (carry and momentum baskets, for example).

Results

Symmetric hedging (Assumption 1): If US and non-US investors hedge, the net flow will reflect selling of the better-performing equity or bond market. The trading rule based on this presumption has performed poorly over the past five and ten years; returns for G-10 pairs are barely positive and success rates are close to 50%. Performance has improved in 2009 but only for a rule based on relative bond market performance. Thus there is little evidence that US and non-US investors hedge their stock and bond portfolio equally and that this flow drives FX at month-end.

Asymmetric hedging (Assumption 2): There is decent evidence, however, that the hedging activity of non-US equity investors is a meaningful driver of month-end FX movements. If non-US investors hedge their USD exposure but US investors do not reciprocate, the dollar will be sold at month-end if US markets rallied, and it will be bought if markets fell. When based on equity market movements, this rule delivers surprisingly consistent results across currency pairs and sample periods. The average success rate is 59% to
61% over the past five years, somewhat stronger in smaller currencies (AUD, NZD) where discrete flows have larger influence.

Importantly, the trading rule still performs well controlling for fundamental influences at month-end. For example, a signal that the dollar should rise at month-end even generates a positive return when fundamentals – such as a rally in risky markets on the same day – implies dollar weakness on that day. True, returns are small when measured from London market open to close (0.2% per daily trade), but intra-day movements can be much larger (1%). Also note that this framework only attempts to capture a single, intra-day event per month. By comparison, an algorithmic model which generated average returns of 0.2% per day on a success rate of 60% would deliver very respectable monthly returns of 2.4% unannualised.

Note that the results imply that the dominant rebalancing flow is related to equity market exposure, not to bond market investments. The same rule driven by US bond market performance delivers much lower success rates, implying that non-US investors do not hedge their US bond exposure. This result is consistent with the ownership structure of the Treasury market. If foreign official investors hold roughly 50% of outstanding Treasuries for reserve purposes, by definition those investors would not hedge their currency exposure. Movements in the US Treasury market over the month therefore do not require FX hedge rebalancing.

Conversely, there is no evidence that US investors hedge non-US stocks and bond exposure heavily enough to generate rebalancing flow at month-end. This comes from our results for a trading rule that assume asymmetric hedging but in the form of US investors hedging non-US stocks and bond exposure. The trading rule replicates the transactions of US investors at month-end: they would sell foreign currency and buy dollars if foreign stock and bond markets rose, and buy foreign currency if foreign stock and bond markets fell. Applied to equity exposure, the rule generates negative returns and sub-50% success rates over all three sample periods. Applied to bond market exposure, success rates are higher, but only meaningfully so for the five-year sample period.

Two dynamics explain these results. First, US investors may apply low hedge ratios to their foreign exposure because they expect USD weakness. Thus any rebalancing at month-end is trivial compared to other flows in the foreign exchange market. Second, US investors may apply high hedge ratios but are far smaller holders of foreign stocks and bonds than are non-US investors, since the US is a net debtor and therefore a capital importer. With US portfolio claims on the rest of the world smaller than the rest of the world’s claims on the US, US-related hedging flows are unlikely to dominate at month-end.

Multiple flows (Assumption 3): The third hypothesis, that a combination of investor and corporate flows create a consistent currency move at month-end is not borne out by the data. The simplest way to test this theory is to measure the profitability of a simple trading rule which buys or sells the dollar on the last day of the month. If some combination of flows – portfolio hedges, dividend payments, profits repatriation – were consistent and reliable, the trading rule would generate positive returns and a high success rate. It does not. Our results show that a rule which consistently sold the dollar at month-end generated returns close to zero and success rate near 50%. (Obviously reversing the rule to buy dollars would not improve performance).

For completeness, we tested several permutations on the baseline models to answer the following questions: 1) does a quarterly model, which assumes less frequent hedge rebalancing, outperform a monthly one; 2) do larger equity and bond moves generate larger FX moves at month-end; and 3) does combining signals from bond and stock markets generate a higher return. In all cases the answer is no. A monthly model based on equity movements alone provides the most reliable signals. No doubt this hedging behaviour will change over time, particularly as shifts in relative cash rates over the next year alter the incentives of US and non-US investors to hedge. Since the timing of this switch is imprecise, one signal that a change is afoot would come from a shift in the relative performance of the trading models described above. At the time of writing (late 2009) there are no signs that such a shift is occurring, even at cheap levels for the dollar versus some currencies.

John Normand is Managing Director, Head of Global FX Strategy, with JPMorgan in London (john.normand@jpmorgan)
CANDLESTICKS AND THE DOW

Assessing the effectiveness of candlestick chart signals during the recent market turmoil

By Steve Bigalow

Where is the market going to go in 2010? This is a question most investors concern themselves with during the early weeks of a trading year. However, is that a viable question? Candlestick analysis provides a much more accurate approach for making money in the coming year. Obviously nobody knows where this market is going to go. It was the anticipatory projections of where the market was heading, starting in 2008, that lost most investors huge percentages in their portfolio.

Candlestick analysis does not try to project where prices might move in the future. The information built into candlestick signals and patterns provide valuable insights into how you should be investing now. They provide the ability to project market moves, sector moves, and individual stock price moves for the near future. That may be a three week to three month time frame versus a 12-month outlook. Fortunately, the analytical capabilities of candlestick signals and patterns does allow for the contiguous analysis of price trends.

What was the general investment prognosis for 2009? Most professional money managers, after closing out positions in the first quarter of 2009, remained in cash, waiting for the next shoe to drop before recommitting to the market. Their confidence was so devastated that they needed to sit in cash until the markets gave them an opportunity to get back in.

The candlestick trader, however, has a completely different perspective of the markets. When the Dow was trading at 14,000, it was still projected that it would go much higher. However, the candlestick trader witnessed a different prognosis based upon candlestick signals; Q1 of 2007 revealed candlestick sell signals. This produced a portfolio strategy that was oriented toward the short side. The introduction of short funds, and leveraged short funds, allowed for consistent profits as the market continued to move lower. The Dow Jones chart (Figure 1) clearly illustrates candlestick sell signals upon retesting major moving averages, after they had been breached to the downside.

Another valuable confirming indicator, the 8-period exponential moving average, known as the T-line, continued to act as a resistance until Q1 of 2009. The T-line (known as the trigger line) is an excellent trend indicator when used in conjunction with candlestick signals. As a general rule, upon seeing a candlestick ‘buy’ signal and a close above the T-line, the uptrend will continue until the appearance of a candlestick

Figure 1
‘sell’ signal and a close below the T-line. During the downtrend, although there were periods where a bullish reversal could occur, the movement in and out of the short funds made the long decline a reasonably profitable time frame. There were not any candlestick sell signals in Q4 of 2007 that would have provided the insights to project the Dow pulling back to the 6600 level. The profits exploited from the markets were the results of analyzing progressive sell signal conditions during the whole downtrend.

The Dumpling pattern
The summer of 2008 showed signs of a potential bullish reversal. But as time went on, the slow curvature of the trading revealed the potential of a Dumpling Top pattern. A Dumpling Top pattern is created by slow indecisive trading that produces an extended rounded top formation. Having the ability to recognize that pattern produced valuable information for the candlestick trader.

There are two options one can take in a Dumpling Top pattern market condition: the indecisive trading is going to warrant extremely short-term scalping, or taking funds out of the market completely and taking a break. Taking a break was the appropriate strategy especially during the slow late summer months. However, the Dumpling Top pattern has a high probability expected result. There is going to be a strong down draft in the price trend at the end of a Dumpling Top. This information allows a trader to make profits by shorting the next price move. It also adds more confirmation that the downtrend is still in progress.

The Dumpling Top in Q3 of 2008 (Figure 1) indicated more downtrend and the Pennant formation in Q4 of 2008 revealed more potential downside. The Dow finally bottomed out in March of 2009 with a small candlestick Cradle pattern (Figure 2). When the signal appeared, the candlestick trader had a different perspective of what should be done with portfolio positions. They were coming off of a very profitable downtrend and the bullish Cradle pattern instigated closing the short positions and starting to establish new long positions. A bullish Cradle pattern is visually easy to identify. It consists of a large dark candle at the end of a downtrend. It is then followed by a flat trading period, (3 to 6 trading days on average) consisting of a combination of Doji’s, small hammer signals, inverted hammer signals, all indicating indecisive trading. The bullish signal is then confirmed with a strong bullish candle at the end of flat trading. The signal looks like a cradle hanging down between two trends (branches). The resulting price move from this signal is a strong uptrend.

Candlestick analysis makes analyzing a trend very easy. Utilizing the fact that signals represent investor sentiment, it becomes much easier to analyze what is occurring at support and resistance levels. 2008 clearly demonstrated that each time down-trending moving averages were touched, candlestick sell signals would appear. The simple assumption is that a downtrend will continue until a candlestick ‘buy’ signal appears and prices can close above specific moving averages. This combination did not occur until March of 2009.

While most professional money managers maintained heavy cash positions during 2009, the candlestick trader was heavily invested in the markets in long positions. The Cradle pattern, witnessed in March of 2009, provided an excellent buying opportunity. But going long in March of 2009, did not involve extensive research as the bullish signal told traders what was going on with market sentiment.

So, what is the market going to do in 2010? The market is still moving in a slow consistent uptrend. Until a strong candlestick sell signal is created AND the markets close below the influential moving averages, the trend has to be considered still in an uptrend.

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TA: Your fund is a short-term intraday fund. Why did you choose to trade on this time-frame?

AR: Firstly, because, as both an academic and a market practitioner, I believe the financial theory of market efficiency remains impressive, despite its weaknesses. But finance is a human activity and the markets cannot instantaneously be efficient, i.e. there is some “inertia” in market behaviour before it can reach an equilibrium in prices. So I considered it worthwhile to take advantage of this inertia and to work on the very short-term, that is, on an intraday basis. Second, when I was an options trader, I was confronted by the necessity of being delta neutral by the end of the day at latest. And of course, I was concerned by intraday underlying price fluctuations. So very early on I tried to develop some decision-making tools to optimize my delta operations. At that time (in the mid-eighties), it was a first tentative step towards my current approach but was not successful enough to be used as a trading activity per se. However, I continued to search in this way until I had developed what I thought was a good enough quantitative model for trading.

TA: Are all your positions closed at the end of each day?

AR: Yes, systematically. I’ve also noticed that an investor appreciates being in cash every evening.

TA: What are you models typically looking to exploit? For example, short-term intraday trends, mean reversion and/or arbitrage opportunities?

AR: Actually, I think it makes no sense to dream of a trading model that works for all market situations. Charts show that markets exhibit a very heterogeneous behaviour over time. But I have to cope with the parsimony principle. So my trading model is made up of four “sub-models”: over-reaction, mean reversion (the contrary of the previous one), jump (from the previous day close), and trend. In my approach, a trend situation is determined by default: if the current market situation does not fit with either over-reaction, mean reversion or jump conditions, than I treat it as a trend.

TA: Your fund concentrates on just four futures contracts (DJ Euro Stoxx 50, DAX, Bund, EUR/USD). Why just these?

AR: First, since I make many in and out trades (nearly one thousand a year), I must only trade on instruments with the narrowest possible bid-offer spread. Second, my trading model makes sense on very liquid markets only (the behaviour of illiquid markets cannot be modelled properly), which restricts the number of futures contracts I may use. Third, I obviously diversify my underlyings, but given the current small amount of AUM, there is no need to diversify more. When I eventually need to trade a bigger size, I will have to trade on more futures contracts so as not to come into the market with too big numbers in one shot. I have computed that by restricting trading to very liquid futures contracts, my fund cannot exceed an AUM of 500 to 750 million euros.

TA: How do you decide on allocation between these four instruments?

AR: For various reasons (e.g. correlation among performance on different contracts, and volatility), I feel comfortable with an allocation of 50% in stock indexes, 25% in currencies and 25% in bond futures.

TA: What are the typical correlations between these four futures contracts and how do you deal with changing correlation?

AR: I am not affected by the correlation between price moves, but rather by the correlation exhibited by my performance on each of the traded contracts. On a given day I can win or lose on two different contracts, whether they are correlated in prices or not, depending on the output of my trading model and the buy or sell decision taken, along with their respective stop loss and take profit rules.

TA: How many trades do you typically make a day?

AR: On average I trade about 3 INs and 3 OUTs a day. This is based on the fact that I work on four contracts and I trade 70% of the time (my model imposes a “No Trade” signal if and when the market goes out of the parameters I work with, which happens about 30% of the time). If a contract has been closed earlier during the trading session, I do not reopen a second position.

TA: How long on average does a position stay open?

AR: On average, and in rounded numbers, once a position has been opened early in the trading session, there is a 50% chance that it remains open until the end of my trading session (about 10 hours). The balance will have been closed earlier for take profit or stop loss reasons. So a position stays open for about 5 hours on average.

TA: How many open positions do you tend to have at any one time?

AR: Given the previous answer, I have on average three open positions at any one time.

TA: How much leverage do you employ on a trade?

AR: Given margins requested for the contracts I am trading, I could theoretically (but it would be crazy) leverage by 20. But I strictly restrict leverage to between 3 and 4 →
It makes no sense to dream of a trading model that works for all market situations.

(depending on the AUM amount, and the fact that contract sizes for stock index futures vary with the underlying spot index). In fact, I determined this leverage level in a recursive way: considering an objective of a 2-digits performance, I placed it at 15% so that I have some safety margin (between 10 and 15%). Based on backtesting, and confirmed by four years of real trading, I computed that I therefore need to leverage by such 3 to 4. I consider it is wiser to determine the leverage in such a recursive way instead of fixing it arbitrarily or at an excessive level.

TA: What is the ratio of long to short positions that you take?

AR: My trading model is as likely to lead to a buy or a sell in an upward market move as in a downward market move. So in the long run my ratio is about 50/50.

TA: Do you think the markets behave differently intraday (short-term) than they do in the longer-term?

AR: Definitively yes. On an intra-day horizon of time, successive market prices can do absolutely everything (market micro-structure), and there is much less apparent trend: instead of the forest, you only see a group of trees. But, at least, you are much less concerned by global moves (rallies, crashes, etc). In other words, there is a kind of permanent disorder in the very short-term, but this disorder is almost similar over the years. However, it’s still necessary to periodically revise/reset the parameters of the trading model, for safety reasons.

TA: To what extent is your trading automated? How important is automation to your trading?

AR: My trading is almost fully automated. I am like the pilot of a Boeing: most of the time the plane is run by an automated system. But like for the pilot, it is better to stay at the controls for safety reasons (internet breakdowns, troubles with the trading platform, troubles with the data providing system, etc). In a technical trading system like mine, I consider it very important that everything is objective in the trading process. There is absolutely no room for subjectivity in any trading decision.

TA: What were the main challenges you faced when you looked to automate your trading strategies?

AR: Integrating certain features of the trading platform and of the data providing system with my model calculations in Excel.

TA: What is the essence of a good trading system?

AR: A good trading system is based on objectivity, repetition (generating a lot of different trades, not waiting for luck), and reliability (trading decisions being determined without ambiguity).

TA: What systems/software do you use for developing ideas and backtesting models?

AR: I only use Excel, so that I command everything myself (I am not competent in programming with sophisticated languages). This works OK, even if it means that for backtesting over long time series I have to work with files of more than 50 megabytes. This requires powerful computers that can cope with the calculus.

TA: What ongoing research do you carry out for your existing systems and/or new systems?

AR: I am looking for a good, non-linear optimization software (for revising my parameters), one that is more powerful than the Excel Solver function, which is tedious to use at a large scale.

TA: What basic rules do you follow when backtesting a strategy / system? What are the most common mistakes made when backtesting?

AR: For quantitative/technical trading systems, the biggest danger for backtesting is overfitting. In my case, what has →
proved crucial is what I have determined as rules for trading on one given future contract must work well for any other futures contract: if not, the rule is rejected. Another key point for successful backtesting is the length of time series used (or sample size); fortunately, in the case of intra-day trading, long data series are easier to access.

**TA:** How much of a problem is model performance decay? Why does this happen and what action is usually taken if a system’s performance starts to decline?

**AR:** I am very sensitive to this point, and I have adopted a proactive approach: the parameters of my “sub-models” are revised twice a month, and the ones for my stop loss and take profit rules are revised at each future contract change (March, June, September and December). Nonetheless, I think the “sub-models” and trade management rules are robust enough in their structure. I have also developed an analysis of past performance, on a moving history of three years: if for any reason in the future the performance drifts from that history, with a lag of about 1 week, I will have to stop trading (which is not difficult since I am in cash every evening) and look for appropriate solutions.

**TA:** How does your model decide on which of the four “sub-models” it should apply?

**AR:** Historically market models have been single models, which often cope inadequately with changes in market behaviour. Switching processes or “regime switching models” were introduced several years ago to cope with significant market shocks, like a central bank decision to modify its key rates: in such specific circumstances, the model switches into another one, until the time when the market returns to its normal regime.

In the very short time, I believe the market is subject to changes day after day, so I developed a regime switching model involving four different sub-processes (‘over-reaction’, ‘mean reversion’, ‘jump’ and ‘trend’). To start a trading day on a given futures contract, the system first selects the most appropriate of the four sub-models based on recent price evolution, then applies it in order to give a Buy or Sell signal for opening the position.

**TA:** What technical strategies (e.g. moving averages, momentum, RSI, breakouts, reversal patterns, chart patterns etc) are most commonly employed in your systems?

**AR:** For several reasons – mainly the very short-term horizon – I prefer to develop my own indicators than use existing ones. These are based on similar inputs to those used in traditional indicators, namely Open, High, Low and Close prices, plus intraday volatility which is not the same as usual volatility.

**TA:** Do you pay any attention to chart patterns such as double tops, head-and-shoulders etc?

**AR:** Although I do not use chart patterns, I look at them just for information purposes (just to know how the situation appears within the framework of traditional trading), but it does not affect my positions at all.

**TA:** Does market sentiment and/or volume play a part in your trading models? If so, how do you measure and use them?

**AR:** I haven’t found any way to model market sentiment, but I have tested the role of transaction volumes without finding any successful way to incorporate it into the model. So I abandoned this parameter, though with some regret.

**TA:** Do you take account of longer-term trends or market conditions for your short-term trading decisions? For example, if equities are in a long-term bull market, does that affect how your model deals with your intra-day trading choices?

**AR:** Not at all, because opened position are based only on local/recent market moves and unavoidably, in the case of a long-term bull market for example, there will be days of consolidation.
TA: Do you think that some markets are more susceptible to intra-day trending/mean-reverting than others?

AR: In my opinion, short-term moves happen almost similarly in all (very liquid) markets, but the amplitude of such moves, hence the intra-day volatility, differs considerably from one market to another. The reasons for diversifying among various instruments is therefore not only for strict diversification purposes (i.e., several chances to capture profits), but also to smooth daily performance: there is a high intra-day volatility on stock index futures, a medium one on currencies and a lower one in bond futures. In the case of commodities, it is more mixed. In the long-run some periods exhibit very high intra-day volatility, whereas it can be very low during other periods.

TA: What do you think is the main cause of inefficiencies in markets?

AR: It is insufficient liquidity. Nevertheless, I think a “globally” liquid and therefore efficient market may show inefficiencies in the very short-term, which is what I call inertia.

TA: How do you measure the strength of an intra-day trend (or tell when a trend is going to reverse)?

AR: Paradoxically, in my case, I do not determine what the conditions for a trend are. It is rather the situation by default of having anticipated (and rejected) other movements (overreaction, mean reversion or jump). In addition to that, I restrict the forecast for a given market situation to once a day, at the opening of the market; this situation is not revised later on during the trading session; if it was right, I will most probably make a profit. Conversely, if it was wrong I will most probably make a loss.

TA: How do you decide when to enter a trade and when to exit it?

AR: I enter at a fixed hour (a bit later than the market opening). The time for exit depends on if a stop loss or a take profit is activated, in which case the position may be closed at any time during the day. If not, there is also a fixed hour for closing. The selection of these fixed hours has been optimized over the past three years. Although there is no real need for such fixed hours for entering and closing the position, it is mainly a case of process objectification.

TA: Are there any times when you do not use the output from your trading model?

AR: Based on past performance (historically it was first based on backtested performance, but progressively becoming realized performance), I found that abnormally huge intra-day moves didn’t allow the model to perform satisfactorily the next day. I thus tested, on about two years of performance data, a hurdle of a huge High-Low for the previous day giving a “no trade” signal. This improved the global performance. The hurdle is:

- Computed on model performance in the absence of any stop loss and take profit rules, just to check the performance of the model itself if the position is held until the end of the daily trading session. This avoids the bias caused by trade management rules which cannot be modelled perfectly.
- Specific to each underlying future traded (in terms of high-low range)
- Revised every 3 months

Understandably, banning trading if the hurdle is reached leads to both avoiding too risky (losing) trades but also banning potentially profitable deals. Such filters cannot pretend to be 100% efficient. Practically speaking, in the long-run this leads me to reject trading in about 30% of cases.

TA: How does your model deal with non-trending (range bound) markets?

AR: My trading model is not concerned with directionless markets, provided there is a significant amount of price movement (intraday volatility). A succession of daily price ranges which are not clearly directional does not affect my performance per se. It is rather the lack of price difference between opening and closing prices which affects my performance: the market being clearly trending or not, volatile or not, if at the end of the day the price moves back towards its opening level, and no take profit level has been attained meanwhile, there is much less opportunity to achieve a profit than if there is a significant difference between the opening and the closing price. I haven’t found any solution to this problem (at least, up to now). It’s of course hard to anticipate at the beginning of a trading session.

TA: How does your model deal with excessive market volatility?

AR: Again, I am only concerned with intra-day volatility, especially the Parkinson volatility, based on intra-day highs and lows. Clearly, the higher this intra-day volatility, the better my performance. Because of their respective contents, there is no correlation between conventional volatility and intra-day volatility evolution over time (which is positive for me in terms of investor’s diversification).

TA: How do you measure the most likely range (maximum and minimum) of market prices over a given horizon of one day?

AR: The range is determined by each of the four sub-
models. For example, in an overreaction mood, this range will be higher in an upward move than for an upward trend, but lower in a mean-reaction mood. Regarding the size (width) of the range, it is simply a moving average of past realized prices ranges; indeed, I cannot anticipate if the current day will show a wider or a narrower range than previous ones, but it is clearly the level of this range which determines the performance for the day.

**TA: How do you decide on which position size to take?**

AR: I use a fixed size, one for all, based on the AUM, spread over the traded contracts in the proportions stated earlier and in accordance with the fixed leverage. The output from the trading model does not affect exposure size. Also, until the size of the fund prevents it, closing a position is done 100% in one shot.

**"ABNORMALLY HUGE INTRA-DAY MOVES DIDN'T ALLOW THE MODEL TO PERFORM SATISFACTORILY THE NEXT DAY."**

**TA: What are the key performance measures you look at apart from return?**

AR: Of course, volatility of returns. I noticed that, by comparison with other funds, the volatility of my monthly performance can be somewhat higher. My explanation is that for a more conventional fund, that is, a fund exhibiting monthly performance combining realized and unrealized (MtM) performance, the mark to market component of position holding over several months acts as a cushion in the monthly performance level, so that it reduces their volatility. If you consider a vanilla fund, and extract its MtM component of performance and take only its successive realized performance components, their volatility will be higher than their global volatility. This applies of course on funds presenting enough in & out operations over time. I look also at maximum drawdown and the like, but much more because it is considered by potential investors.

**TA: What is your approach to backtesting? How much emphasis do you place on backtesting results for your model?**

AR: The trading model, specifically the parameters of the four sub-processes and the rules used to select the most probable one for the current day, are definitely based on backtesting: all these parameters being optimized over a time series of previous trading days, from a couple of hundred up to several thousand, depending on the parameters. As mentioned previously, I try to escape the backtesting pitfalls by, first, working on very long data series, and second, more importantly, by only considering model rules which are equally successful when applied on different instruments, which reduces the probability of overfitting.

**TA: Can you explain your approach to risk and money management?**

AR: As regards market risk management, I essentially rely upon stop loss and take profit rules. Stop loss parameters have been optimized on very long time series and are revised every three months. The actual stop loss level is the nearest of both a static level (maximum loss) and a dynamic level, re-adjusted during the trading session. Take profit parameters are also dynamic. To determine these stop loss rules, I spent almost the same hundreds of hours that I spent on developing the trading model!

For money management, the AUM is on a regular deposit account. To this extent, I feel concerned (especially since last year) with counterparty risk, namely my custodian and my broker, given trading of listed futures is itself riskless to that extent. I am also very concerned with operational risk – mainly IT – which is typical for an engineer like me. Not surprisingly, my “due diligence” document (for potential professional investors) involves an unusually long chapter on Sofis risk management.
TA: What level of drawdown are you prepared to tolerate?

AR: This hurdle is not that significant in my view, since a monthly performance is the sum of about 20 daily realized profits and losses. I have not found any useful trading rule to improve the performance by a constraint on this maximum drawdown. I suppose that, over time, I would not go lower than the level I reached a couple of years ago (−9%, monthly), at a time when my past records were less complete than today for optimizing the stop loss rules.

TA: What is the best way to measure the risk of any trading strategy?

AR: In my view it much depends on the number of different trades per year. Risk of loss as well as risk of gain can only be reasonably assessed on a huge number of trades, so as not to confuse risk with good or bad luck. Beyond this, volatility of performance remains the most robust indicator, statistically speaking.

TA: What is your trading performance to date?

AR: 2006 8.18%; 2007 27.05%; 2008 14.25%; 2009 YTD (end of October) 8.48%

TA: Why do you think your model performed well during the recent market turbulence in 2008?

AR: It performed better than 2009 and 2006 (although 2007 was even higher). It is definitely the magnitude of intra-day volatility which played to my advantage.

TA: What are your views on current market conditions and the outlook for the year ahead?

AR: In general, markets have been more directionless since the beginning of October 2009 – which doesn’t affect me – but there has also been less intra-day volatility, which is not good for me. As regards an outlook for next year, I hardly have any ideas about the long-term ahead, since I am concerned with the very short term only.

TA: Which strategies are likely to be most effective over the next couple of years?

AR: I definitely prefer quantitative, technical approaches, and my current research is on another quantitative model, using other (liquid) instruments, but not on an intraday basis, where there appears another kind of market inertia (too early to unveil...). Other than this, as an academic researcher, I am deeply concerned by the dream of developing a good correlation model.
ALGORITHMIC TRADING IN THE FX MARKETS

What impact has algorithmic trading (i.e. computers directly interfacing at high frequency with trading platforms) had on price discovery and volatility in the foreign exchange market? A team of researchers from the US’s Federal Reserve Board have looked at this issue for three major currency pairs in 2006 and 2007, using data which contains precise observations of the size and the direction of the algorithmic and human-generated trades each minute. Their analysis provides several important insights. First, they find evidence that algorithmic trades tend to be correlated, suggesting that the algorithmic strategies used in the market are not as diverse as those used by non-algorithmic traders. Second, they find that, despite the apparent correlation of algorithmic trades, there is no evident causal relationship between algorithmic trading and increased exchange rate volatility. If anything, the presence of more algorithmic trading is associated with lower volatility. Third, they show that even though some algorithmic traders appear to restrict their activity in the minute following macro economic data releases, algorithmic traders increase their provision of liquidity over the hour following each release. Fourth, they find that non-algorithmic order flow accounts for a larger share of the variance in exchange rate returns than does algorithmic order flow. Fifth, they find evidence to support the idea that liquidity providers in limit order books are not passive.


INSIDER TRADING PATTERNS IN TAKEOVER TARGETS

Takeover announcements typically result in large increases in stock prices of target firms, providing a tempting opportunity for insider trading. Surprisingly, no prior study has examined whether the level and pattern of profitable insider trading before takeover announcements is abnormal for a broad cross-section of targets of takeovers during modern times. A paper by Anup Agrawal and Tareque Nasser of the University of Alabama examines insider trading in about 3,700 targets of takeovers announced during 1988-2006. They analyze open-market purchases, sales and net purchases of five groups of corporate insiders during the one year pre-takeover period. They find an interesting and subtle pattern in the average pre-takeover trading behavior of target insiders. While insiders reduce both their purchases and sales below normal levels, their sales reduce more than purchases, leading to an increase in net purchases. This pattern of ‘passive’ insider trading is confined to the six-month period before takeover announcement, holds for each insider group, for all three measures of net purchases examined, and in certain sub-samples with less uncertainty about takeover completion, such as deals with a single bidder, domestic acquirer, and less regulated target.


Crisis Selling

A US team of researchers have examined institutional trading in US equities during the financial crisis of 2007-08. They found that institutional traders experienced a dramatic increase in trading costs and higher uncertainty in execution price during the crisis. Market quality in 2008 was comparable to market quality observed in 1999, suggesting that liquidity improvements achieved over the last decade are eroded. They observe significant variations in the impact of the financial crisis on individual stock liquidity, and importantly, a more pronounced impact for small stocks. Their results suggest that institutions tilt their selling activity toward less liquidity-sensitive stocks during the crisis.


INFORMATION REVELATION AND EXPECTED STOCK RETURNS

Using two variables (price and volume) Umut Gokcen of Boston College has constructed a new proxy for information and tested its relation to returns in the 1964-2007 period on NYSE-listed stocks. He found that information revelation predicts lower future returns, controlling for beta, size, book-to-market ratio, liquidity, and momentum. A long/short trading strategy based on sorts on the information proxy generates alphas of 3% to 4%.

RETURNS FROM UNDER- AND OVER-REACTION

Motivated by both statistical and psychological evidence on under and over-reaction, Jun Li and Jianfeng Yu of the University of Minnesota propose two proxies for the degree to which traders under- and over-react to news, namely, the nearness to the Dow 52-week high and the nearness to the Dow historical high, respectively. They find that nearness to the 52-week high positively predicts future aggregate-market returns, while nearness to the historical high negatively predicts future market returns. They further show that their proxies contain information about future market returns that is not captured by traditional macroeconomic variables and that their results are robust across G7 countries. In cross-sectional analysis, for stocks that have more likely experienced underreaction (to either good news or bad news) in the past, the momentum effect is about three times stronger. For stocks that have more likely experienced overreaction in the past, the value premium is also much stronger.

Li, Jun and Yu, Jianfeng, Psychological Anchors, Underreaction, Overreaction, and Asset Prices (November 18, 2009).

TREMORS IN THE WORLD’S STOCK EXCHANGES

An international team of researchers have modeled price dynamics for the world’s stock exchanges based on an understanding of plate tectonics, where stresses build up and are periodically released. Nonlinearity enters the model due to a behavioral attribute of humans that means they react disproportionately to big changes. This nonlinear response allows the researchers to classify price movements of a given stock index as either being generated due to specific economic news for the country in question or by the ensemble of the world’s stock exchanges reacting together. The model predicts how an individual stock exchange should be priced in terms of the performance of the global market of exchanges, but with human behavioral characteristics included in the pricing. A number of the model’s assumptions are validated against empirical data for 24 of the world’s leading stock exchanges. They show how threshold effects can lead to synchronization in the global network of stock exchanges.

Vitting Andersen, Jørgen, Nowak, Andrzej, Rotundo, Giulia and Parrott, Lael, Tremor Price Dynamics in the World’s Network of Stock Exchanges (December 18, 2009).

The FEAR Index

A team of researchers has devised a measure of market sentiment that uses internet search volume from millions of households. By aggregating the volume of queries related to household financial decisions and concerns, they construct a Financial and Economic Attitudes Revealed by Search (FEARS) index. They show that the FEARS index strongly predicts next-day volatility across various asset classes during the period from 2004 to 2008, even after controlling for existing predictors of future volatilities such as return, trading volume, the CBOE market volatility index (VIX) and a news-based sentiment index. Their results support the idea that extreme sentiment generates volatility in financial markets. The FEARS index also predicts daily mutual fund flow across various asset classes, consistent with the notion of a "flight-to-quality" in distress times.

Da, Zhi, Engelberg, Joseph and Gao, Pengjie, The Sum of All Fears: Investor Sentiment, Noise Trading and Aggregate Volatility (October 18, 2009).

FUNDAMENTAL CONDITIONS FOR THE CARRY TRADE

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