

Using Fibonacci Ratios And Momentum

Do any of these samples of sage advice sound familiar? “Don’t buy it here, but wait for a pullback.” “I would wait and sell on a bounce.” What does this really mean? Where and when do you act? Here’s one technique for calculating retracement levels using that tried-and-true favorite, Fibonacci ratios, as well as using momentum to define the trend.



arkets trend in a zigzag manner: rallying, leveling off, and surging again, only to be hit by a wave of profit-taking before settling into a trading range, await-

ing the next reason to advance or retreat. This activity carries on in the general direction of the trend, easily seen on a price chart. Technically, the trend should be considered up as long as the market unfolds with a series of higher lows and higher highs. Similarly, the trend is considered down if the price action is a series of lower lows, with lower highs before each new low. A market is considered not to be in a trend if the price movement manifests itself in a series of fits and starts or if it fails to sustain levels beyond the previous extreme points, often reversing and forming the range.

During an uptrend, good traders will buy the pullbacks, positioning themselves with the trend, taking advantage of the market’s tendency to ebb and flow. When the market is in a downtrend, however, the strategy is to sell rallies, awaiting for the downtrend to resume.

So what is the appropriate strategy to calculate

price levels for buying pullbacks or selling rallies? One popular technique is to calculate and project a percentage retracement of the prior swing and use that as an entry level. But what percentage retracement is suitable? One popular set of retracement levels is based on a mathematical series discovered by an Italian mathematician more than 700 years ago.

SON OF BONACCI

Fibonacci ratios, which are used by traders, is based on the work of the 13th-century Italian mathematician Leonardo of Pisa, better known by his nickname, Fibonacci (an abbreviation of *filius Bonacci*; *filius* is Latin for “son of”). Fibonacci, through the process of solving a mathematical riddle, discovered a unique mathematical sequence or series wherein the ratio of any two consecutive numbers approximates 1.618 or its inverse, 0.618. The Fibonacci sequence is the sum of any two adjacent numbers that forms the next number in the series. The first 14 terms in the sequence are 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377. The ratios of each two consecutive numbers from the series are 1, 0.50, 0.666, 0.60, 0.625, 0.615, 0.619, 0.618, 0.618..., and between alternate numbers, the ratio is 2.618 and its inverse, 0.382. The Fibonacci ratio is also referred to as the *Golden Ratio* or the *Golden Mean*.

These ratios or proportions are often noted to be the mathematical basis for various aspects of nature, music and art. Recently, in a television interview, a reconstructive plastic surgeon detailed how he set out to understand what the attributes of the facial features of physically attractive people were. He studied different cultures to see if he could find any consistencies of those attributes among them. Eventually, his research led him to using Fibonacci ratios for proportioning facial features. He even designed a computer

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template using Fibonacci ratios as an aid during reconstructive surgery.

Technicians use the Fibonacci ratios for percentage retracement measurements for establishing positions and Fibonacci-based multiples of trends to set profit objectives. Is this paradigm for modeling nature and art appropriate for trading the markets? Perhaps. If you look on a chart, markets *do* appear to resemble the path of a river, meandering from periods of stillness and apparent apathy to swiftly moving ahead, only to suddenly reverse, leaving investors with the sense that their favorite stock has just gone over a waterfall. Whether or not you accept the premise, using Fibonacci ratios can provide you with price levels to trade off of, as well as profit objectives.

TREND AND COUNTERTREND

An advancing market will often run a quick series of daily bars, three or four days in a row, with the high of each day exceeding the previous day's high and the low of each day holding above the previous day's low. Then the market will spend a few days in congestion, perhaps retracing the previous advance, then again trending upward (Figure 1). Ideally, you should see this retracement as an opportunity to place a position in the direction of the trend, trading like the pros — buying a pullback, not chasing the market.

But first: To calculate a retracement, you have to identify the beginning and ending points of the trend to be retraced. One technique for labeling these points is known as an *isolated high* or *low*, which I first read about in Charles Drummond's *How to Make Money in the Futures Markets*. Drummond defines an *isolated high* as a day with a lower high one bar before and after; an *isolated low* is a day with a higher low one bar prior and one bar following. These patterns, which make up three bars, represent a support area for the isolated low and a resistance level for the isolated high (Figure 2).

The isolated low for an uptrend would be the beginning point of a short-term uptrend or the market only entering a simple sideways trading range before a downtrend continued. Because the market has held support for up to three days, price action indicates that demand was strong enough or the abatement of selling stopped the decline, which could in turn lead to higher prices. Likewise, an isolated high would be the end point of



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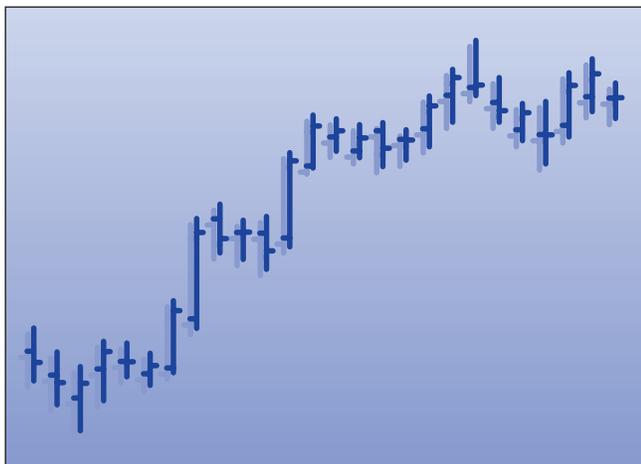


FIGURE 1: TRENDS. An advancing market will often run a quick series of daily bars three or four days in a row, with the high of each day exceeding the previous day's high and the low of each day holding above the previous day's low. Then the market will spend a few days in congestion, possibly retracing the previous advance, before trending upward again.



FIGURE 2: ISOLATED HIGHS AND LOWS. An isolated high is a day with a lower high one bar before and after; an isolated low is a day with a higher low one bar prior and one bar following. These patterns, which make up three bars, represent a support area for the isolated low and a resistance level for the isolated high.

the short-term uptrend, leading to a possible reversal or a trading range.

THE RATIOS

Having established criteria for beginning and ending points of trends, you can now determine the percentage retracement levels to buy if in an uptrend and to sell if in a downtrend. The percentage retracements are 38.2%, 50% and 61.8%. Most trading software have a drawing tool that will automatically measure these points by a mouse click on the beginning and ending points of a trend.

Let's look at some examples. Figure 3 is the June 1997 Treasury bond contract. On April 28, the market formed an isolated low at a price of 106-30, advanced for four days and formed an isolated high on May 2 at 110-10. A 38.2%

retracement would be 109-03. Four days after the isolated high the market opened at 108-31, slightly below the 38.2% retracement level. The low for the day occurred on the opening and, as you can see in the chart, the market rallied from the retracement level to new highs.

An example of a retracement in a downtrend can be seen in Figure 4. Here, March 1997 T-bonds formed an isolated high on December 3, 1997, at a price of 116-17 and then fell to 112-22 on December 6, forming an isolated low. The next day, the retracement rally reached 114-19, hitting the 50% retracement level. This was a short-term retracement against the trend, as the market fell to new lows within three days.

GUIDELINES

These two examples show a short-term retracement of a short-

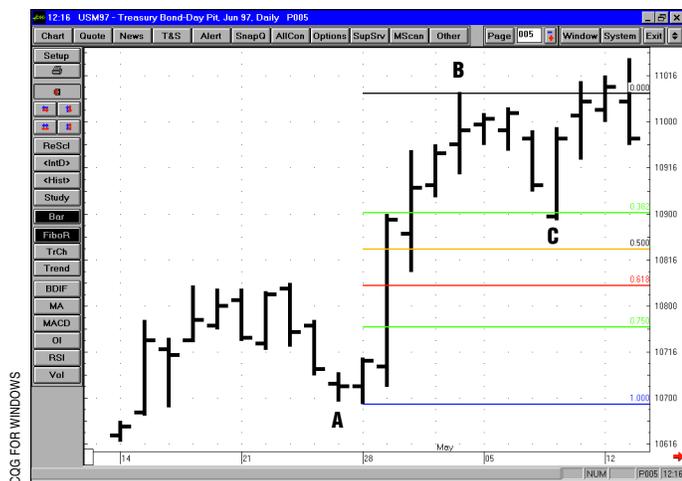


FIGURE 3: JUNE 1997 T-BONDS. On April 28 (A), the market formed an isolated low at a price of 106-30, advanced for four days and formed an isolated high on May 2 at a price of 110-10 (B). Four days after the isolated high, the market opened at 108-31, slightly below the 38.2% retracement level (C).

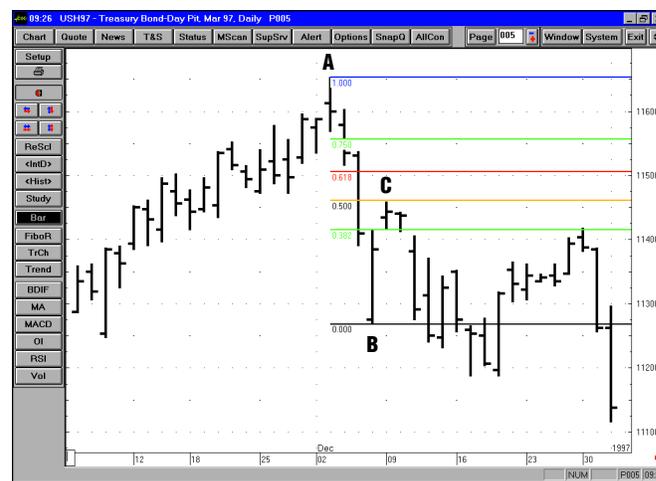


FIGURE 4: MARCH 1997 T-BONDS. T-bonds formed an isolated high on December 3, 1997, at a price of 116-17 (A) before falling to 112-22 on December 6 (B), forming an isolated low. The next day, the retracement rally reached 114-19, hitting the 50% retracement level (C).

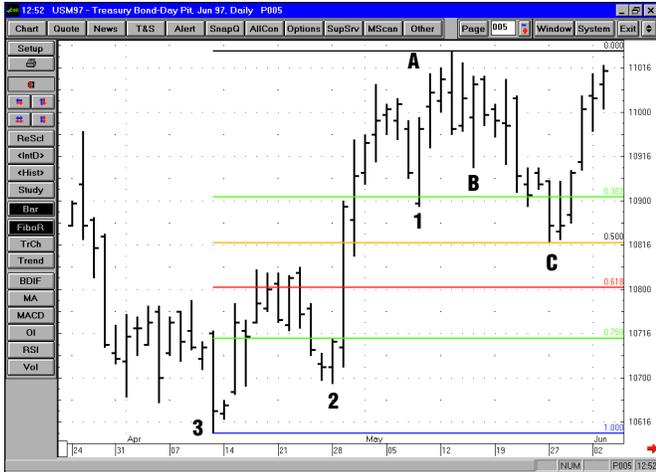


FIGURE 5: JUNE 1997 T-BONDS. The contract peaked on May 13 at a price of 110-22 (A). Over the next two weeks, the price fell to 108-17 on May 27. Therefore, the isolated low established on May 8 at 108-30 (1) was broken as well as the isolated low established on May 15 (B). Either of these events would have indicated that short-term levels of support were broken and a correction was under way. Count back three consecutively lower isolated lows for calculating the retracement percentages. That isolated low is 106-12 from April 11 (3). As you can see, the retracement to 108-17 on May 27 leveled off at the 50% retracement level (C).

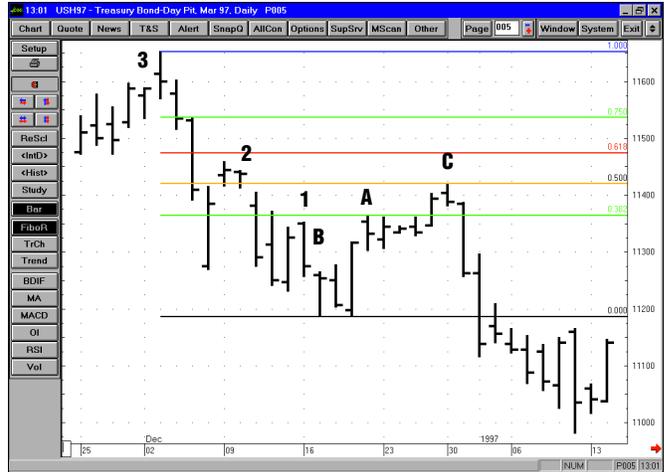


FIGURE 6: MARCH 1997 T-BONDS. On December 20, the contract reached a high of 113-21 (A), passing the isolated high of 113-18 established on December 16 (B). Counting back three isolated highs results in the December 3rd high at 116-17. Calculating the Fibonacci retracement levels, we see that the high of 114-06, which traded on December 30 (C), touched the 50% retracement level.

term trend. Often, a retracement will take out a former isolated high or low, creating a countertrend movement that is correcting a longer-term trend. Another condition that suggests a larger retracement is under way is if the retracement trend itself is marked by isolated lows or highs being surpassed. In this case, as a simple guideline, count back three isolated highs or lows to determine the appropriate points to measure the support or resistance levels.

Let's walk through an example of using this guideline. In Figure 5, the June T-bond contract peaked on May 13 at a price of 110-22. Over the next two weeks, the price fell to 108-17 on May 27. Therefore, the isolated low established on May 8 at 108-30 was broken as well as the isolated low established on May

15. Either of these events would have indicated that short-term levels of support were broken and a correction was under way.

However, if you were *still* bullish, then count back three consecutively lower isolated lows for calculating the retracement percentages. The isolated low found in this fashion is 106-12 from April 11. As you can see, the retracement to 108-17 on May 27 leveled off at the 50% retracement level. This is a level that you could have identified when the 109-12 level was broken on May 21.

Figure 6 is an example of a bear market rally where the previous isolated high is surpassed. This example is a continuation of the market activity illustrated in Figure 4. On December 20, the March 1997 T-bond contract reached a high of 113-21,

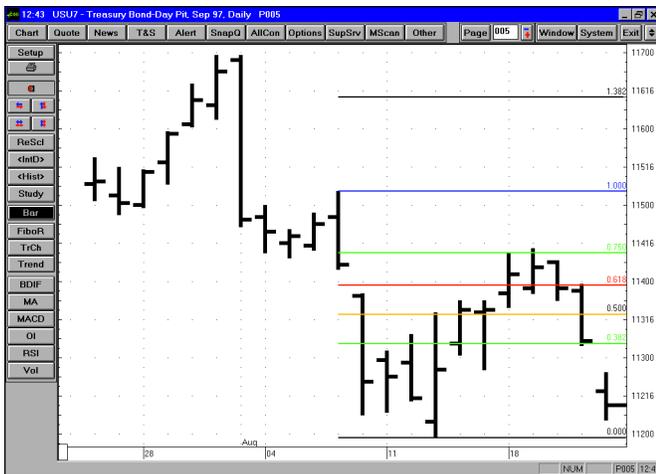


FIGURE 7: SEPTEMBER 1997 T-BONDS. Here, the contract peaked at 116-31 on August 1, 1997, and fell to 111-31 on August 13. Next, the market formed an isolated high on August 14 at 113-24, and the next day, the low was surpassed; however, the market rallied to a new high, forcing anyone who shorted the selloff to cover.

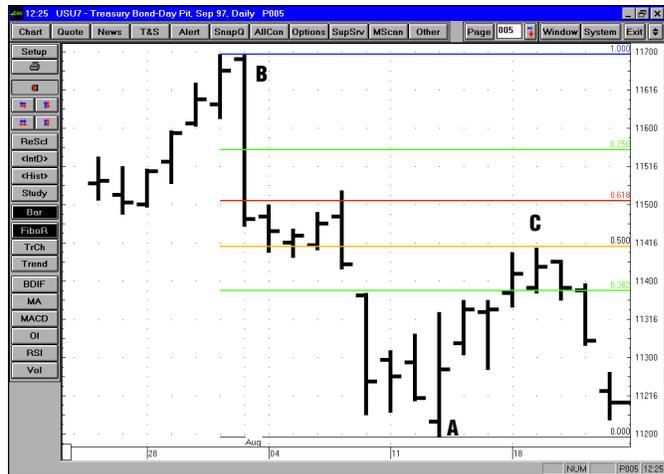


FIGURE 8: SEPTEMBER 1997 T-BONDS. If we measure from the August 13th low of 111-31 (A) back to the high of August 1 at 116-31 (B) and calculate the retracement levels, we can see that the 50% level nearly matched the 75% level (C).



FIGURE 9: SEPTEMBER 1997 T-BONDS. The bars are colored green when the RSI is above 50 and red when the RSI is below 50. During three months between late April and mid-August, the majority of the bars are green, indicating that the RSI has not moved below 50, a very strong sign of strength. In addition, when the RSI did move below 50, it stayed above 40, indicating the decline was within the context of a bull market.



FIGURE 10: SEPTEMBER 1997 T-BONDS. Market momentum is positive, indicated by the green bars, and the market traded back through the previous isolated low. Therefore, we count three isolated lows back and measure our retracement points. On June 30, the market hit the 61.8% retracement point. The next day, the market rallied above the previous day's high as well as violated a downtrend line (A), signaling a point to go long the market. The trend was up, a corrective retracement ended and the market moved to a new high.

passing the isolated high of 113-18 by three ticks, a high established on December 16. Counting back three isolated highs results in the December 3rd high at 116-17. Calculating the Fibonacci retracement levels, we see that the high of 114-06, which traded on December 30, touched the 50% retracement level.

As an example of overlapping retracement points, Figure 7 shows that the September 1997 T-bond contract peaked at 116-31 on August 1, 1997, and fell to 111-31 on August 13. Next, the market formed an isolated high on August 14 at 113-24, and the next day, the low was surpassed; however, the market rallied to a new high, forcing anyone who shorted the selloff to cover.

At this point, the market continued higher to the 75% retracement level, which is unusual for a downtrend. However, if we measure from the August 13th low of 111-31 back to the high of August 1 at 116-31 and calculate our retracement levels, we can see that the 50% level nearly matched the 75% level (Figure 8).

MOMENTUM

So far, I have alluded to using Fibonacci retracements for trading with the trend. But trading with the trend of momentum is the real key. There are many technical indicators for measuring momentum; my personal favorite is J. Welles Wilder's relative strength index (RSI). Most people think of the RSI as an overbought/oversold indicator, used to spot divergences and market reversals.

Let me introduce another technique that uses RSI as an indication of the direction of the trend. To do this, I use a 14-period RSI and look at its current reading. As a rule of thumb, if the RSI is greater than 50, then the trend of the momentum will be up and I look for higher prices. Likewise, if the RSI is below 50 and the trend should be considered down, and I look for more falling prices. But I should note here that this is only a guide; there are times when a bear market rally will edge

above 50, but very rarely will it surpass 60.

During bull markets, the RSI may drop below 50, but the 40 level will be coincident with an upward turn in prices. The standard notion that 20 is oversold and 70 or 80 is overbought should be modified. Consider that during bear markets, the overbought reading is 60, while during bull markets, the oversold reading is 40.

There is one drawback to using RSI for determining the trend. As the market peaks or troughs, the RSI will have sustained high or low levels, but the signal, a crossing of 50 indicating that the trend has changed direction, will be *very* late. Thus, another method should be considered for exiting a trade to avoid a disastrous loss of profits.

As an example of good and bad, let's look at Figure 9, which has the bars colored green when the RSI is above 50 and red when the RSI is below 50. During three months between late April and mid-August the majority of the bars are green, indicating that the RSI has not moved below 50, a very strong sign of strength. In addition, when the RSI *did* move below 50, it stayed above 40, hinting — that is, not as a rule but as an indication — that the decline was within the context of a bull market.

Of course, by the time RSI *did* move below 50, a generous portion of the rally had been retraced, which is why I recommend using an additional tool for exiting trades. One trick to determining whether any single day is going to flash a change by closing below or above 50 is to calculate for each day a range of closing values and determine what the RSI will be for that day if the market closes at this level. In that way, you will know the price level you need to consider for positioning in anticipation of the closing price.

THE GENERAL APPROACH

So how can you combine these guidelines into some semblance of a plan?



First, for a buy, look for the RSI to be in a bullish mode — persistent readings greater than 50, indicating a bullish trend. Next, establish retracement levels of 38.2%, 50% and 61.8%. It is not advisable to simply place resting orders at these levels. One trading approach is to place a buy stop over the high of the bar that penetrates the retracement level; then, if the market moves higher (that is, through your buy stop), place your stop-loss order below the low of the same bar. A second approach is to draw a tight trendline along the highs of the bars of the correction for a decline, and along the lows for a rally in a bear market. Enter into a position at the violation of the trendline.

For example, in Figure 10 you can tell by the green bars that the market momentum is positive; the market traded back through the previous isolated low. Therefore, we count three isolated lows back and measure our retracement points. On June 30, the market hit the 61.8% retracement point. The next day, the market rallied above the previous day's high and violated a downtrend line, signaling a point to go long the market. The trend was up, a corrective retracement ended and the market moved to a new high.

FINISH

Developing technical skills that enable you to trade with the

trend, but placing positions after the end of a countertrend movement, can aid you in your overall performance. I presented one set of guidelines for this style of trading. Developing a similar set of guidelines, something specifically designed to meet your own needs, and reviewing the technique on a historical basis on your favorite market can take you to the next level of trading. Whether this takes into account the Fibonacci series or momentum is up to you.

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†See *Traders' Glossary* for definition

