

RSI: The Complete Guide

Chart # 2 - Basic Retracement Theory - using a 3-minute chart of S&P futures

ES:J2 LAST:3 min 06/14/02 C=974.75 -47.00 -4.60% O=975.00 H=979.75 L=974.50 P=998.5400

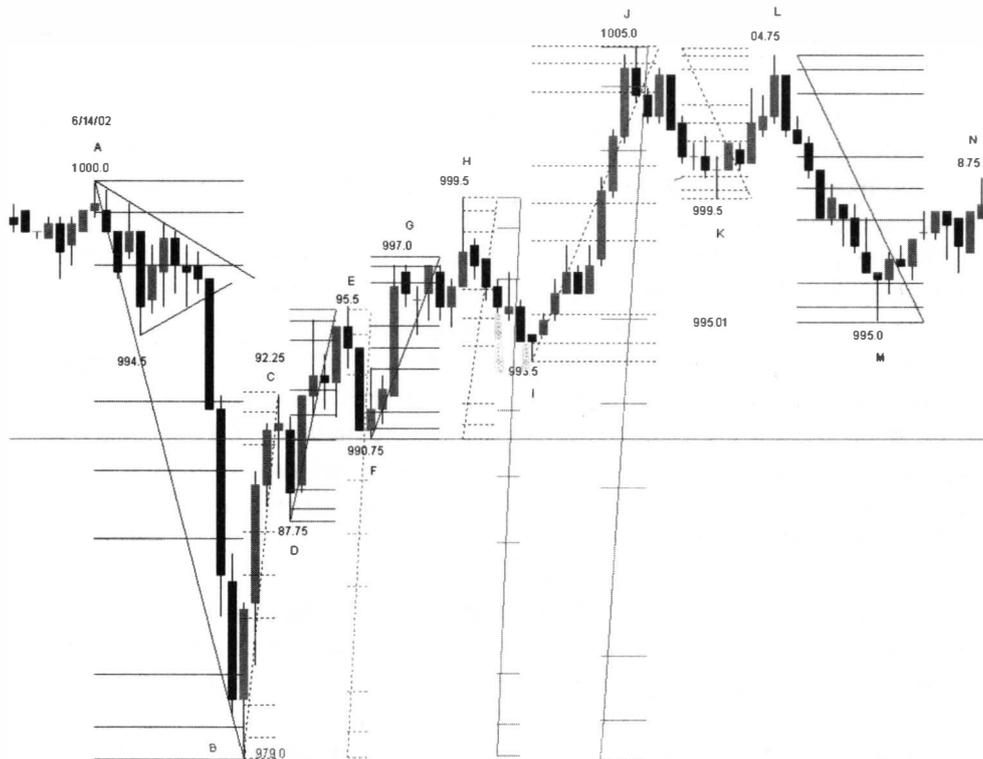


Chart # 2 – Description:

1. At point A, we can see that the high is 1000 just before making a triangle, which isn't visible on the 30 minute chart. The price action falls out of congestion to make a new low. This move from 1000 to 979 shows up in a 30-minute chart just as obviously as on a 3-minute chart. With the low price of 979, we can know that many sell orders were resting just under 980 and that the floor traders were gunning for them. What happens next in a small/short timeframe will tell us what to do.
2. The Bulls rally prices to point C, which is a 61.8% retracement from point A to point B. We know that the Bear trend is "medium weak" to "weak." The indecision comes from the high wave line made at C. This is normally an indication that a top is in, which would make the Bear market "weak" instead of "medium weak." Do we buy, sell, or wait? I would wait to see what happens next as the 61.8% retracement occurs within 3 bars. If the Bulls find support at or above the 31.8% re-test level, we buy.

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Otherwise, we short the market on the next rally. Prices find support at point D at 987.75. 31.8% support is at 987.25. An order to buy at 988.25 or better could have been entered because of the low from 2 bars previous. However, the safer bet would have been to wait or use a smaller timeframe for analysis. We can calculate the upside target at 1001 from $[(992.25 - 979.0) + 987.75]$.

3. Prices run up to 995.5 at point E making a double top in a 1-minute chart where they encounter resistance. Prices correct down to 990.75 at point F where we enter into a long trade. A buy order should have been placed at 991.5, which was a 50% retracement of point D to point E and a double bottom in a smaller timeframe. Our stop would have been just under the 61.8% retracement level at 990.5. At point F, we know that the point A to point B Bear plunge is probably over as prices have retraced more than 61.8%. This makes the Bear trend in the longer timeframe “weak.” We know that the current bull rally is “strong” as measured by point B to point E. We also know that the swing point at point E is significant because there are 2 lower highs on either side of point E. We also know that with the Bulls closing prices at 995.5, they negated a minor swing point the Bears had made earlier at 994.5. Therefore, we are able to rest easy in placing our limit order at 991.5. We can predict that the upside rally should take prices to 1007.25 based on $[(995.5 - 979.0) + 990.75]$

4. Prices rally to point G at 997.5 before encountering more resistance. Once again, we draw retracement levels and see that the Bears are unable to push prices lower than the 31.8% re-test level, so we know that the up trend is still strong.

5. When the market spikes to point H, we know that the Bulls are in trouble. We know this for several reasons. First and most important is that prices consolidate at point G for 5 bars before breaking out of the consolidation pattern. If the Bulls are firmly in charge, as basic retracement theory tells us, the market should close the bar near the high. Second, we can see that at point A the high was 1000; we have a double top and should encounter resistance there. Third, the reason the floor didn’t push it higher was because there were probably a lot of buy orders and the floor would become net short. If the floor thought that prices would ultimately trade above 1000, why would they want to generate a lot of buy orders making them short? It would be better for them to establish major long positions and trigger the buy orders, allowing them to either establish shorts or go flat. In any case, with the close at point H or 995.5, we must sit tight and see what the next bar tells us.

6. The next bar is black with the closing price under the open and below the close of point H. It is at this point that we have to decide whether to take profits or move our stop order up to breakeven? The safer course of action in this case is to take our profits and look for another opportunity. If so, our trade made 5.50 points.

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7. As the rally to point H created a new high, we must re-draw our retracement levels from point F to point H. We can see that the 50% retracement level is within the lower part of the consolidation pattern. If the floor wants to panic the novice traders and make them sell, they will have to take out these lows. We know that for the up trend to remain intact the retracement should not exceed 61.8%, which corresponds to 994. If we did exit our position or if we want to add to our long position, we should place our limit order to buy at 994. The question is, "Where do we place our stop?" Generally, I like a 1-point stop, but where is support? We know that point C was at 992.25. As long as the Bulls keep prices above 991.5, which is 38.2% of point B to point H, the longer term up trend remains "very strong." I would place the stop order at 993 because everything else is too far away.

8. After making a low at 993.5 at Point I, we can re-calculate the upside target to 1014 from $[(999.5-979.0)+993.5]$. Prices rally to point J making a high at 1005 before encountering resistance. Do you remember the upside target levels? We have targets at 1001, 1007.25, and 1014. As prices rallied up through 1001, we would move our stop to 996.25, which is the 61.8% re-test level. If prices hit our upside target of 1007.25, we would have taken our profits. However, that was not the case as 1005.0 at point J was the high. We can tell that prices hit resistance. The question is "Where do we exit our trade?" We know that the 38.2% re-test level on the point I to point J move is 1000.5. Since big money is made by hanging tough with a winning position, we cannot exit until there is proof that the trend strength has changed. After making the high at point J and closing down for the bar, which itself is a bad sign. Prices sell off for a second day. The low of this second bar becomes the low of the third day making a double bottom in a smaller timeframe. The close of the third day is near the daily high. It is here that we can clearly identify support on the three-minute chart - the lows of the last two bars. We are able to move our stop order to just under these lows at 1002.25. We would exit the trade with a stop order at 1002, giving us an 8-point profit, if the Bulls fail to defend 1002.25.

In summarizing basic retracement theory, the level of the retracement is a strong indication of the trend strength. Retracement theory categorizes the psychological strength of the Bulls versus the Bears using Fibonacci ratios. For example, a retracement that is less than 38.2% is a strong indication of strong bullish beliefs. Before we can use retracement theory, we must have a valid move higher or lower. The easiest way to measure or determine a valid move is to use the average range in a timeframe that is 13 times longer than the timeframe we are using. We can use this average range or some fixed percentage of that range, to tell us when the shorter-term traders are probably getting tired and prices should

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retrace. Put another way, we can only apply retracement theory after prices have moved enough where the traders in the smaller timeframes are probably tired. Once prices have either rallied or declined to where these shorter timeframe traders are overextended, we can apply basic retracement theory. This helps us determine price levels that we can use to enter or add to our positions and levels where we might want to exit our positions. We are using the contra-trend to tell us what we should do. We will use these retracement levels as key numbers for our stop placements. A thorough understanding of basic retracement theory will help us tremendously in using Momentum Discrepancy Reversal Points.

CHAPTER 7

SUMMARY OF SECTION I

The primary concepts from this section are:

1. Prices reflect the perceptions of all traders who are actively buying and/or selling.
2. The current price might reflect reality or it could reflect a mass delusion.
3. There is no way to tell from the price what type of trader is bidding to buy or offering to sell.
4. Sometimes the small producer has a better feel for the price of corn than a large institution – sometimes not.
5. The market consists of marginally capitalized to very well capitalized traders.
6. The better a trader is capitalized the more contracts they must trade in order to obtain an adequate return on their investment.
7. Because larger capitalized traders must trade more contracts, they are forced to look at the “big” picture, i.e., a longer timeframe.
8. In order for the large institutions to avoid a lot of slippage, they must adopt trading strategies that fade the current move.
9. The real battle in the market place is between traders of different beliefs and time perspectives.
10. The one universal difference in beliefs is over what timeframe is the most advantageous to trade in. However, the larger the capitalization the longer this timeframe must be.
11. The largest struggle is which timeframe has the most accurate information concerning future events.
12. There is no “reality” of the market place – prices can and will behave in the most unexpected manner.

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13. Price itself is nothing more than a number with the only semblance to reality being that one buyer and seller have agreed upon a price in an instant of time. One or both of these traders might have been under duress in making the transaction.
14. In order to trade effectively, we must identify not only which force (Bulls or Bears) are stronger, but also what timeframe is the dominant timeframe. If this dominant timeframe requires more capitalization than we have, we must have an alternative trading strategy that will enable us to enter the trade or stand aside.
15. One of the best “off the shelf” indicators that reveals the dominant timeframe is the Relative Strength Index.
16. By examining the price action in whatever timeframe you prefer, you can see that there are certain *price patterns* (not bar patterns like triangles, pennants, etc) that repeat semi-randomly and only occasionally fail.
17. As we shall see, when we combine these price patterns with an understanding of retracement theory and RSI analysis, we can have a high probability of creating trading profits.
18. Fibonacci numbers, when divided into preceding Fibonacci numbers, will generate decimal products (or ratios) that quickly approach equilibrium. These ratios are used in retracement theory.
19. Retracement Theory tells us the strength of the current trend, indicates prices where we may enter or add to a position, and once the previous peak/trough is exceeded, these retracement levels may be used for our stop placement.

SECTION II

USING RETRACEMENT THEORY TO TRADE

CHAPTER 1

CONVENTIONAL USES OF THE RELATIVE STRENGTH INDEX

Before continuing, here is a brief review of the published literature regarding how to conventionally use the Relative Strength Index. This information is important because it serves to highlight the reasons why so many people fail to make money in trading. Since most of the published literature has little value, it serves us to show us what NOT to do or believe in. In this section, my comments are indented.

When Welles Wilder introduced the RSI, he recommended using a 14-period look-back when using daily data. The RSI is actually a momentum indicator that follows the price activity of an underlying security. Because of the structure of the formula, the RSI value is contained between a minimum value of 0 and a maximum value of 100. The RSI formula was developed almost 30 years ago. As a result, certain beliefs have developed over the years as to how to best use this versatile indicator. Welles Wilder described some of these beliefs in his original work and different traders through their collective experience with the indicator have developed other beliefs. There are 9 basic beliefs concerning the best way to use the RSI:

1. Indication of Tops and Bottoms
2. Divergence
3. Failure Swings
4. Support and Resistance Levels
5. RSI Chart Formations

6. Altman Modified - Smoothed RSI
7. Morris Modified RSI
8. Modification of Look Back Period
9. Modification of the Data Source Used

1. Indication of Tops and Bottoms

In many cases, the RSI value will “top out” in the range above 70 and “bottom out” in the range below 30. RSI tops and bottoms often precede price tops and bottoms. The RSI begins making tops and bottoms before they become obvious on a price chart. Many traders use the 30 level as a buy zone and the 70 level as a sell zone. Some traders have modified these values to make the buy zone 20 and the sell zone 80.

In the past few years, this concept has been expanded. This method generates a buy or sell signal only when the RSI leaves the zone. In other words, if the RSI is 73 on Monday, 71 on Tuesday, and 68 on Wednesday, Wednesday is now a bearish indication, telling us to go short on the open Thursday. If the RSI in the last bar is under 30, we would get an indication to buy when the current bar closes with the RSI rising above 30. This is now a bullish signal to get long on the open of the next bar.

The top and bottom levels recommended by Wilder are 70 and 30. However, there is published information that advises modifying these RSI levels if the price is trending higher or lower. While some traders consider an RSI value of 70 a sell signal, the number would be revised to 80 if prices were in an uptrend. If the prices are trending lower, the buy zone would be changed from an RSI value of 30 to 20.

JH: Basing a trading methodology on this principal will only lead to losses.

2. Divergence

This is the most popular use of the RSI. Bearish Divergence occurs when the RSI value fails to make a new high as the price is making a new high. A Bullish Divergence occurs when a new low in price is made while the RSI value is not making a new low. The price action is diverging from the RSI action. Whenever price action is trending up and the RSI values are trending down, you are seeing a “Bearish Divergence.” Whenever you see prices trending lower and the RSI values trending higher, you are seeing a “Bullish Divergence.”

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When a divergence is encountered on a chart, the accepted belief is that a reversal in price is imminent. Published literature also states that the most powerful divergence occurs when many time periods or bars have elapsed. The time period number for these strong divergences is anywhere from 30 to 90 bars.

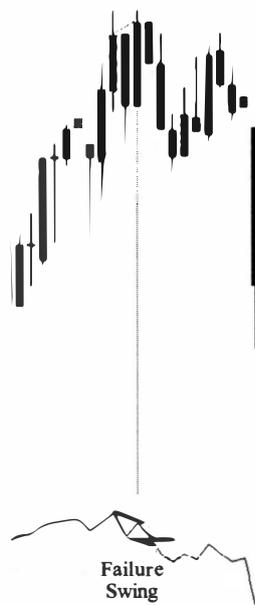
JH: Going long when a bullish divergence makes its appearance is a certain way to make small profits and generate large losses!

3. Failure Swings

This concept is actually a part of divergence. A failure swing occurs when there is either a bearish or bullish divergence. By looking at Chart #3, you can more easily see a failure swing. As the price makes a new low, the RSI fails to make a new low so a bullish divergence is formed. The next day prices rally causing the RSI value to also rally. When the RSI value exceeds its previous peak, it is called a “failure swing.” It typically indicates that prices will continue to move higher. A failure swing with a bearish divergence is the same type formation only the RSI moves lower than the previous trough. This is a failure swing down. The failure swing is believed to “confirm” that a market reversal is valid.

JH: A failure swing only confirms that the divergence is real. Waiting to go long until a failure swing occurs after a divergence makes its appearance is a sure way to make small profits and generate large losses!

CHART # 3 – FAILURE SWING



4. Support and Resistance levels

The RSI chart can be used to more clearly see support and resistance levels. In addition, many traders use the 50 level as support and/or resistance. When the RSI rallies from under 50 to above 50, it is considered a bullish confirmation. When the RSI crosses from above 50 to below 50, this is seen as bearish confirmation.

JH: It pays to notice when the RSI crosses 50, but this should not be our main focus while trading! We know that the RSI crosses the 50 level when the ratio of up days to down days averages reverse.

5. RSI Chart Formations

There are many times when RSI values make triangles, pennants, double tops and bottoms, or head and shoulders patterns that are not visible on a price chart. The RSI lends itself to the use of trendlines and horizontal support and resistance lines on the chart. The validity of these lines is the same as that on a price chart.

JH: This is absolutely true! The most common pattern is the triangle formation, which often indicates a pending explosive move. However, there is often a false breakout before the real move!

6. Altman Modified RSI (commonly called RMI)

Roger Altman modified the RSI formula to reflect more of a momentum aspect. He believed that the RSI oscillated inconsistently between overbought and oversold levels. While the RSI calculates the change in gain/loss “bar to bar,” Mr. Altman modified the formula to calculate the change from the “n’t h” bar in the past (where n is more than 1). This modification is referred to as the RMI or Relative Momentum Index. Some traders like it because it smoothes the zigzag appearance of the RSI. This defeats the purpose of using the RSI to obtain an early indication of important price behaviors as it introduces time lag into the calculation. When I want to smooth the RSI, I like to use a smoothing constant of 3 with a look back period of 14. The literature recommends using 7, 9, 14, or 25 as a smoothing constant.

JH: We will not use this method in creating trading rules. There is a lot that can be done with this concept and it might be a good idea to explore some variations once you understand the concepts in this book. By using a smoothing constant, we are introducing time lag into our analysis, which we do not want for the purposes of this book. However, once we learn about Momentum Discrepancy Reversal Points, RMI

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can be used as a filter. By applying a smoothing constant of 3, many of the more "fine" distinctions such as a 2-period Bear divergence would be eliminated. The appearance of either a Momentum Discrepancy Reversal Point or divergence will have added significance and validity with the RMI. Once you have mastered the RSI, come back to the RMI and compare its performance in real time versus the RSI. I suspect that you may like what you find.

**CHART # 4 – COMPARISON OF RSI (BOTTOM) VS. RMI
(TOP - WITH A SMOOTHING CONSTANT OF 3)**



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7. Morris Modified RSI

This derivative of the Wilder RSI was introduced in the 1998 Bonus issue of *Stocks & Commodities Magazine*. The Wilder formula uses an exponential moving average on the second bar after the look back period. The Morris RSI continues to calculate the average gain and average loss on the last “n” bars but it calculates the indicator with a simple moving average. Changing the calculation in this way increases the volatility and generates more buy and sell signals because it crosses the 70 and 30 levels more frequently.

JH: For the purposes of this book, we will not use this modified RSI. Perhaps the best use for this modified formula is in detecting hidden signals. As the smoothing component of the RSI has been eliminated, the signal line will be much more “jagged” generating more hidden divergence signals and Momentum Discrepancy Reversal Points and simple bullish and bearish divergence.

CHART # 5 – COMPARISON OF MORRIS MODIFIED RSI (MIDDLE PANEL) VERSUS RSI (BOTTOM PANEL)



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8. Modification of the Look-Back Period

By modifying the look-back period used in the RSI calculation, it is possible to make the RSI more or less volatile. Decreasing the look-back period increases the RSI volatility while increasing the look-back period reduces the volatility. As the volatility changes, the RSI “the range” of top and bottom value also changes. Some traders change the look-back period causing the RSI to oscillate within a certain band. Should the trader want the RSI value to be very sensitive to price change, then they want to use a shorter look-back period. Many traders use a 9 and 25-bar look-back period plus a 14 period look-back.

JH: The common reason to do this is to gain a perspective of a different timeframe. This is better accomplished by using a 14 period look-back RSI on charts that use different units of time.

CHART # 6 – COMPARISON OF RSI (3 BAR LOOK-BACK) AND RSI (14 BAR LOOK-BACK)



Chart 6 Comments:

This chart illustrates how much easier the RSI 3 bar look back (middle panel) can be driven to overbought or oversold levels.

9. Modification of the Data Source

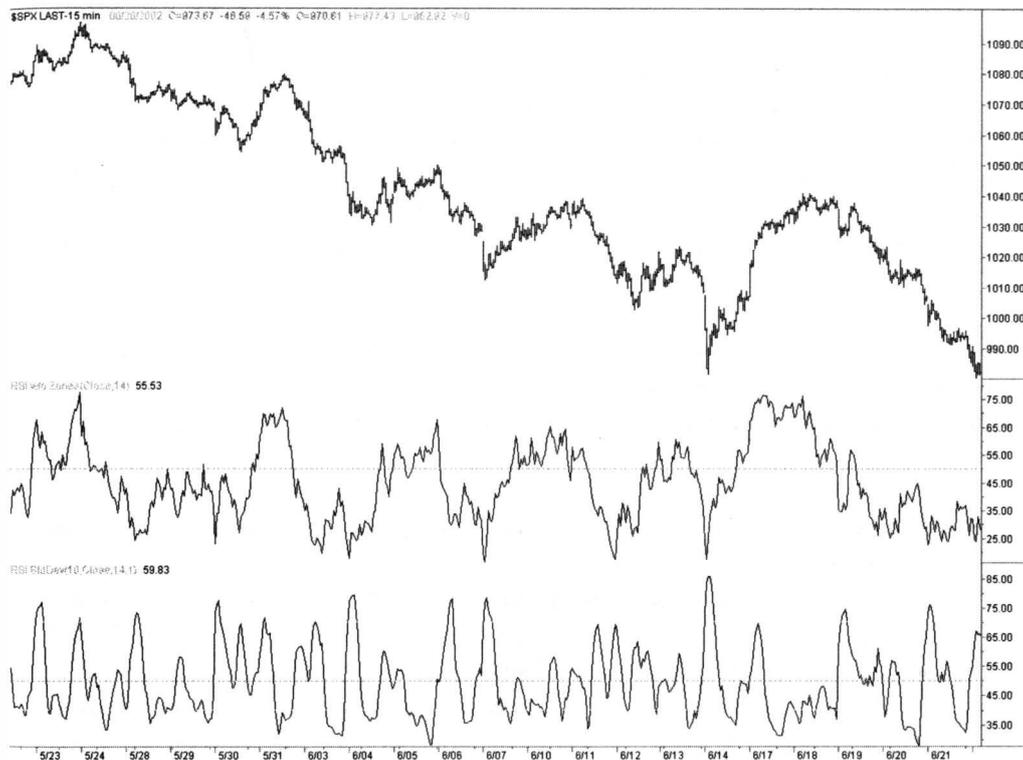
Traders have also used the RSI formula by using the change in the open, high or low price rather than the closing price in the calculation. An alternative to using the closing price is to apply a formula that manipulates the price in a certain way and applying the RSI formula to this synthetic number. Some of the price modifications are to determine the average of the High/Low, Open/Close, Open Yesterday/Close Today or any other variation of range.

One of the more novel approaches is to determine the standard deviation of the close over the previous 10 days and base the RSI upon how the standard deviation changes each day. This variation is an alternative way to measure market strength.

JH: I like this concept. It is an alternative and very effective way to measure market strength. However because the purpose of this book is to gain a thorough understanding of the RSI, it will not be discussed further. Once you understand the concepts included in this book, take some time to play with this idea. As you will see in Chart #7 below, whenever the RSI modified value exceeds 70, the internal strength of the market is overextended. To use this indicator, it is easiest to think that when the value is over 70, the "Duracell Bunny" has no energy left to push prices higher or lower. For the "Duracell Bunny" to push prices, he must retreat to under 40 to recharge his batteries!

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**CHART # 7 – RSI 14 PERIOD (MIDDLE PANEL) VERSUS RSI STANDARD DEVIATION
(BOTTOM PANEL)**



Summary of Published Literature

Unfortunately, if a trader relied on these commonly accepted methodologies to trade with the Relative Strength Index, he or she would probably lose all of their money! The most powerful ways to use the RSI are not even described in the published literature!

CHAPTER 2

PROFESSIONAL RSI USE

As discussed in the previous section, these are the nine widely known methods to use the RSI:

1. Indication of Tops and Bottoms
2. Divergence
3. Failure Swings
4. Support and Resistance Levels
5. RSI Chart Formations
6. Altman Modified - Smoothed RSI
7. Morris Modified RSI
8. Modification of Look Back Period
9. Modification of the Data Source

In the beginning of this book, I mentioned that we would use the RSI to identify:

1. The current trend – if any.
2. Best prices to enter or exit a trade.
3. Price levels for probable retracement.
4. The dominant timeframe.
5. When a longer timeframe is negating or overpowering the present timeframe.
6. Price objectives that have a high probability of success.

I understand that many traders who are reading this book are probably confused, especially if they have studied the “conventional” uses of the RSI. The confusion comes because I am telling you that using the RSI as an indicator of tops and bottoms “as described” is wrong. I have said that using the RSI for divergence recognition and

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order entry will generate losses and that using the RSI to indicate a bullish or bearish bias when the RSI is above or below the 50 level will generate further losses. These statements go against the “conventional” trading ideas that are associated with the interpretation of the RSI.

In order to use any indicator correctly, a trader must thoroughly understand it. Once the indicator is understood, it must be accepted as it is. “It is what it is.” For example, it doesn’t matter that “everyone” is saying that tops occur at 70 and bottoms occur at 30, if this rarely happens. Many traders when using an indicator get caught in a trap of thinking “could’ve, should’ve, would’ve.” Traders who use conventional RSI knowledge are often frustrated because they believe that the market “should’ve” done this because the RSI is doing “that.”

The 10 RSI Lies that Traders Believe:

1. A bearish divergence is an indication that an uptrend is about to end
2. A bullish divergence is an indication that a downtrend is about to end
3. The RSI will generally “top out” somewhere around the 70 level. At this point, we want to start thinking of getting short or at the very least exiting long trades.
4. That the RSI will generally “bottom out” somewhere around the 30 level. At this point, we want to start thinking of getting long or at the very least exiting short trades.
5. Whenever the RSI is above 50, it is a bullish indication. If not long, find an excuse to get long.
6. Whenever the RSI is below 50, it’s a bearish indication. If not short, find a reason to get short.
7. A failure swing is a significant event.
8. The RSI is unable to indicate trend direction, because it’s only a momentum indicator.
9. The RSI is unable to indicate trend reversals, because it’s only a momentum indicator.
10. It is not possible to use the RSI to set price objectives.

In this section, we are going to use everything covered in Section I to begin using the RSI to consistently generate profits. The amount of profit and the consistency of the profits are dependent upon the quality of your analysis and your psychological resources. If you are interested, I have written a book devoted to the best ways to increase your psychological resources. It is entitled *The 21 Irrefutable Truths of Trading*. By the end of this book, the quality of your analysis will have improved

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significantly and you will be able to determine the following without looking at the bars on a price chart:

1. The current trend.
2. When the current trend will probably retrace.
3. When the current retracement is no longer a retracement but a trend reversal.
4. The best time and price to enter or exit a trade.
5. Support and resistance numbers for accurate stop placement.
6. High probability price objectives helping to establish risk/reward parameters.
7. When a longer timeframe or traders with more capitalization have entered the marketplace.

