

## CHAPTER 3

### TREND DETERMINATION USING RSI

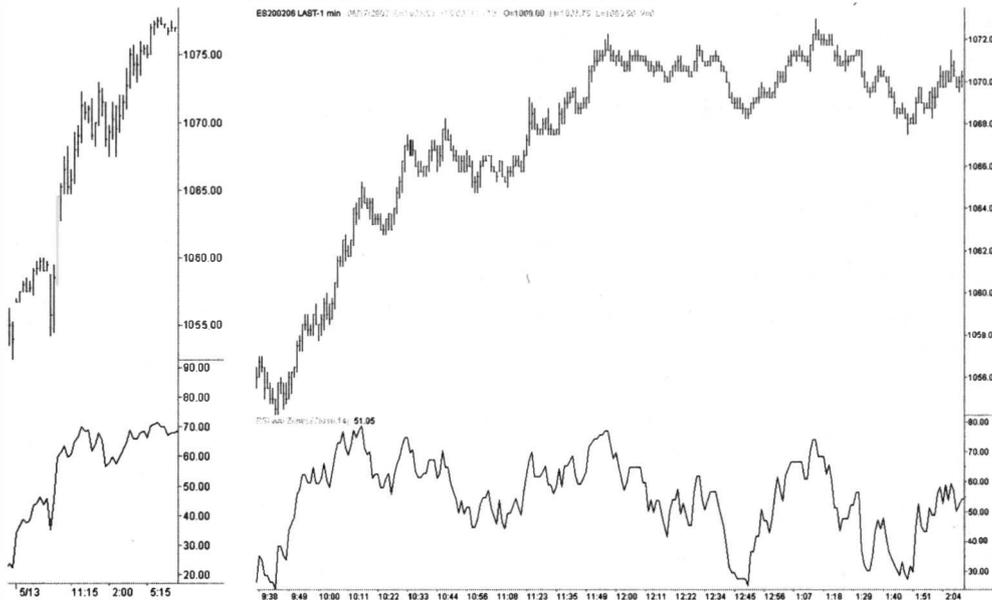
The traders' eternal question of "What is the trend?" is easily answered when a trader knows how to interpret the RSI. A trend is supposed to be easy to describe, but for many traders it is very difficult to identify in real time. Up trends are defined as prices making higher highs, and retracement lows or troughs are higher as well. A downtrend is the inverse.

Just as an uptrend, downtrend or sideways price action is visible on a price chart, the same behavior can be seen on the RSI chart. You can see chart examples of the RSI making a higher top, retracing to make a low that does not exceed the previous low, followed by a rally to a new high establishing the pattern of an uptrend.

There are many times that the RSI will show an uptrend or downtrend that is not obvious on the price chart. The chart below on the left will illustrate this concept. It is a slice from a 15-minute chart of the E-Mini S&P on May 13, 2002. We can see that the RSI is making higher highs and higher lows. Looking at the price bars, it is easy to see that prices are rising. However, it isn't so easy to see the market retracements. Clearly, the market is trending higher.

*John Hayden*

**CHART # 8 – 15 MINUTE CHART & CHART # 9 – 1 MINUTE CHART E-MINI S&P**



Using this concept will identify the trend *using the RSI in a timeframe that is shorter than the one you are studying*. In the 15-minute chart to the left, the price is trending up, but placing a trade based on this 15-minute chart using the RSI would be difficult because there is no clear place to buy unless you are using a breakout strategy. One of the problems with breakout strategies is that they often experience considerable price slippage. Our goal is to enter our trades on limit orders when the market retraces some of the previous move. In this example, if we were 1-minute timeframe traders using the 15-minute chart for confirmation, we would be able to find multiple entry points on the 1-minute chart on the right. The 15-minute chart on the left serves as a trend confirmation tool.

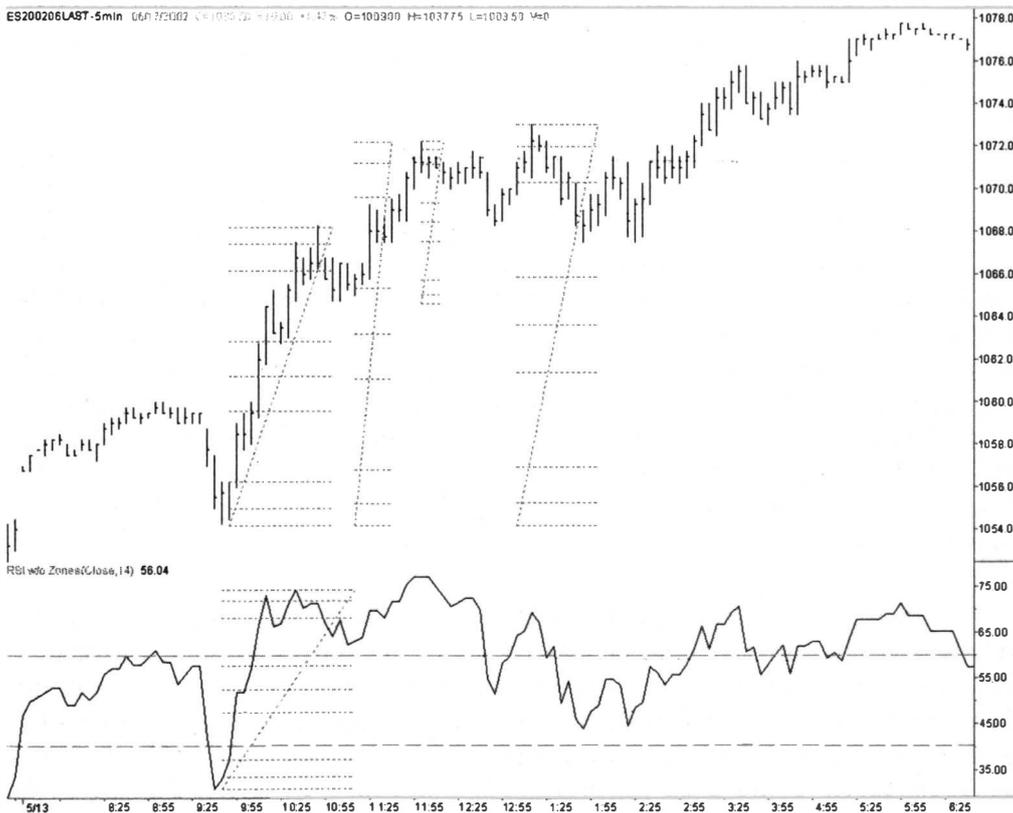
There is a better way to use the RSI. In the mathematical chapter of Section 1, we discussed how the ratio between the up average and the down average affects the RSI value. The RSI behaves like a logarithmic function. This causes the largest changes in the RSI value to occur when the up/down average stays in the range of ratios between 1:2 to 2:1. This range of ratios corresponds to RSI values from 33.33 to 66.67. Do you recognize the Fibonacci number? It is in this band of values that we see the largest movement of the RSI value versus change in price. This is why the conventional knowledge states that tops typically occur around an RSI value of 70 and bottoms will occur around 30.

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Looking at any chart with the RSI, we can see multiple times when tops were around 70 and bottoms were around 30. Within that overall chart picture, the price behavior may have been trending up, down, sideways or some combination. A very well established fact is that markets can become very emotional causing prices to exceed a “fair” level before retracing. The RSI will also push too high or too low before retracing.

Chart # 10 demonstrates an up trending market that is being dominated by 5-minute traders. The price and RSI are moving steadily higher. The retracements are clearly visible in both the RSI and price. The RSI value is easily exceeding the 70 level and is staying well above the 30 level. Closer examination reveals that the RSI is staying above 40 once the trend begins.

**CHART # 10 – 5 MINUTE S&P E-MINI 5/13/02—UPTREND**



## John Hayden

Chart # 11 shows a market that has started to trend lower being dominated by 5-minute traders. The chart shows the RSI often falling below the RSI value of 30 and that it is not exceeding the 70 level on rallies. Closer examination of the chart reveals that the RSI is not getting over the 60 level and at times is having a hard time moving above 40. This is a great indication that the market is going much lower.

**CHART # 11 – 5 MINUTE S&P E-MINI 6/25/02—DOWNTREND**



This chart reveals an interesting observation. In an uptrending market (Chart 10), the RSI value does not go under the 33.33 level and often stays above the 40 level while routinely exceeding the 70 level. In downtrends (Chart 11), the RSI doesn't go above the 66.67 level and often stays under 60 while routinely going under the 33.33 level. At this point, we can make a general observation that in an uptrend 33.33 is support and 66.66 is resistance in a downtrend.

Referring back to the ratio Table # 3 on page 10, once the up/down ratio climbs to 4:1 or 1:4, the incremental increase or decrease of the RSI value has rapidly decreased. We can observe that the majority of the RSI movement will fall within these

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boundaries. Significant mathematical resistance is encountered at an RSI value of 80 and significant support is encountered at a value of 20. This is not exactly what everyone else says!

As we can see in an uptrend, support is 33.33 - not 20. In a downtrend, resistance is 66.67 - not 80. By combining everything and knowing that prices and the RSI can become “hysterical,” we can come up with the following rules:

### Rule #1

1. In uptrends, the RSI will find support at 33.33 and resistance at 80.
2. In downtrends, the RSI will find resistance at 66.67, and support at 20.

Rule # 1 is illustrated in Charts # 10 and 11.

Careful examination of thousands of charts reveals that support in an uptrending market is closer to 40 than to 33 and resistance in a down trending market is closer to 60 than 67. However, these levels are only valid when the majority of traders in the marketplace all are focusing on the same timeframe. If there are traders focused on a different timeframe, they may cause these significant levels to be momentarily negated without destroying the trend.

Using the 80/40 and 60/20 range rules, we can instantly identify the trend the majority of the time. If the RSI is staying within the 80/40 ranges, we know that the trend is up, and the majority of the “other” traders are also looking at this same time frame. If the RSI is staying within the 60/20 ranges, we know that the Bears are in control and the trend is down. Just understanding this one rule allows us to quickly determine the trend without looking at a price chart! Then, by adding our knowledge of basic retracement theory, we can confirm the RSI behavior by observing the depth of the retracements on the price bars. Should traders in a longer timeframe take interest in our timeframe, then the RSI levels will not be respected and we can expect to see deep retracements. RSI and price “behavior” will tell us if the preceding trend is still in effect or if the trend has in all probability changed. Before we can discuss this price behavior, we must first understand some more RSI concepts. In Chart #4, the 40 level did not prove to be support as it was negated by a longer timeframe, but the bull market was still intact.

### Rule #1 – Modified

1. In an uptrend, the RSI finds resistance at 80 and support at 40.
2. In a downtrend, the RSI finds resistance at 60 and support at 20.

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**CHART # 12 – BULL MARKET WHERE 40 WAS NEGATED AND  
BULL TREND REMAINED INTACT.**

OCM2LAST-10 min 08/14/2002 C=319.7 -6 -0.18% H=321.5 L=317.0 V=0

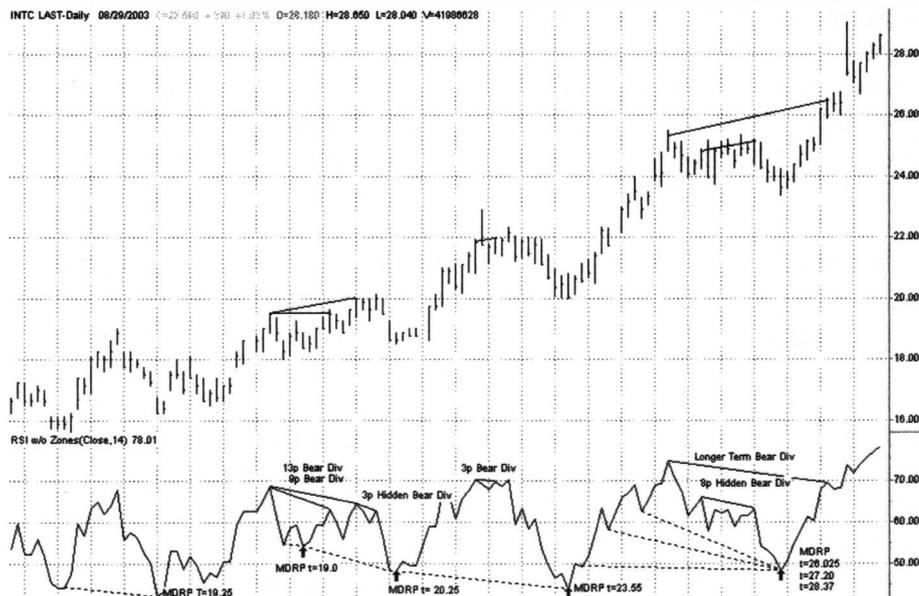


## CHAPTER 4

### THE TRUTH ABOUT DIVERGENCE

One of the first things that every trader learns early in his or her career is the concept of divergence. Whenever divergence is discussed, it seems that the majority of examples used to illustrate the concept use the Relative Strength Index. Divergence occurs in any momentum-based indicator and occurs when price and an indicator are doing different things, i.e., price is moving higher and the indicator is moving lower or vice versa. These types of divergence are classified as simple divergence. There are also examples of multiple long-term divergence and hidden divergence.

#### CHART # 13 – THE RISE OF INTEL – WHERE IS THE BULLISH DIVERGENCE?



#### **Chart # 13 Note:**

Don't worry about what a MDRP is for now. Focus on finding the Bullish Divergence in this bullish chart. There are none! We shall see that they only occur in bear markets, not bull markets!

## *John Hayden*

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### **Let's examine the concept behind a bullish divergence.**

First. What is the price behavior doing just before a bullish divergence occurs on a chart? Price is declining. As more traders realize that the price is heading lower, they are attempting to get short or exit their longs by selling. The majority of these orders are "at the market," and the floor brokers and traders continue to lower their offers to buy since the majority of the order flow is "at the market." In other words, the sellers are hitting the buyers offer price causing the floor traders who are buying to continually lower their bid. Each time a new trade is executed the bid price drops.

Second. The RSI very accurately reflects the change in the average gain or loss for a time period. As prices continue to fall, they very often begin to accelerate lower. This acceleration is reflected in the RSI. The RSI value falls below 40, below 33.33, then below 30. At this point from our previous study of the ratios, we know that the ratio of average loss to average gain is badly extended. As the RSI moves lower, it is encountering increasing mathematical resistance. Remember that the RSI is a logarithmic line and for it to move lower when it is below the 30 level is much more difficult than when it was at 50.

Third. As prices continue to fall, one or two things will happen. The more perceptive traders in the existing timeframe realize that prices are becoming overextended. These are the traders who got short early in the decline. They begin buying to exit their positions and help to slow the plunge. As the plunge slows, the somewhat less perceptive traders also realize that prices are overextended and they also begin to exit, which typically stops the decline. Concurrently, traders in a longer timeframe may have realized that prices are too low and step in with their buy orders. As soon as the plunge stops and prices begin to rally, even the dumb (but not proud) traders realize that the plunge is over and begin buying propelling prices higher.

What was the cause for prices to accelerate downward in the first place? The answer to this question is simple; there were no buyers in the market. In order for the sell "at market" orders to be filled, someone had to be willing to buy. If there are many sell orders and no buyers, then prices can only go down. If there are no sell or buy orders entering the pit, prices will stagnate.

In any case, prices stop declining and begin to rally at some point. Just as an air bubble expands in size as it ascends in liquid, the RSI expands upward as it moves up from its extremely compressed state at the 30 or lower level. This is ordained because

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of its mathematical formula. As prices rally, there will be traders who begin to think that prices are “too” high and begin to sell; pushing prices lower thereby making new lows.

Because the RSI uses a ratio of average gain to average loss over “N” periods of time, it will be forced lower, *but at a lesser rate than its previous rate of increase*. Consequently, we will see a new low price, but the RSI value will not see a lower value than its previous low. This is a divergence between price and the RSI. At some point, the Bulls will overpower the Bears and the market will see another rally. Because the RSI value is so compressed, it will begin to increase its acceleration higher. As the RSI rises from levels below 30 towards 40, it begins to incrementally increase more than the price increases, giving the illusion of a new low.

The important question is, “Did the RSI rally above the 66.7 level or more generally the 60 level?” If not – the trend is still down. Let me ask you, “When does a bullish divergence make its appearance on the RSI chart?” The answer is only when prices have been declining. If divergence is considered within the context of trend, what is the existing trend when we see a bullish divergence? A downtrend! What can we use as an indication that the trend is down? We know we are in a downtrend when we see a bullish divergence. This is why in the above Intel chart there are no Bullish Divergences – the market is trending higher, NOT lower!

I realize that the published trading literature states that a bullish divergence is an indication that prices are about to rally. The “implication” is that a bullish divergence is an indication that an uptrend is about to commence. As you are now realizing, a bullish divergence only appears when the existing trend is down. If the trend is clearly down, why are we even thinking of buying? Wouldn't it be more prudent to be looking for a place to get short?

A bullish divergence signifies that the existing trend is down and the Bears are exhausted. We should be expecting a rally to sell into. If we have short positions, then we should exit some or all of the shorts, but not reverse to become long! Prices should rally or reverse to some degree before falling to new lows.

Inversely, when we see a bearish divergence, the trend is up and we should probably expect a retracement to lower prices because the Bulls are exhausted. It is time that we should begin looking for a reason to buy.

A simple divergence means that prices have encountered enough resistance that they need time to consolidate their previous move. Once this has occurred, prices will resume their downward or upward march.

**John Hayden**

The price that generated the divergence often becomes a key number used to identify temporary support or resistance. Once this price is negated, it becomes a resistance or support point and can be used for a stop price.

**CHART 14—DIVERGENCE PRICE BECOMING FUTURE RESISTANCE OR SUPPORT**



**Chart 14 Notes:**

This chart contains 2 bullish divergence and one bearish divergence. The price where the divergence was made became future support/resistance. Remember that support once negated often becomes resistance and vice versa.

The strength of a divergence formation can be determined by observing the number of time bars that have elapsed between the RSI peaks and troughs that are creating the divergence. This is called **Divergence Strength** and is a method that is used to rank divergence as strong or weak. Generally, if the number of time intervals is less than 4, then there is strength in the divergence and an immediate retracement should occur. As the number of time intervals increases, the likelihood of a retracement decreases. In Chart #14, from point C to point A there are 6 bars. This is called a 6 period