Artificial Intelligence (AI) for Investments
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Lecture- 40

In this lesson, we will discuss the application of momentum oscillators in determining trend and its oscillation. We will discuss rate of change i.e. ROC indicator as an example of momentum indicators and how to employ it in identifying trend and their reversals. We will discuss overbought and oversold levels, momentum oscillators in bull and bear markets, overbought and oversold crossovers and momentum price divergence. We will discuss the construction of the following very important momentum oscillators.

Introduction

- Ball thrown in the air, Car rolling down the hill

- Various momentum indicators are Rate of change (ROC), the relative strength indicator (RSI), moving-average convergence divergence (MACD), and Stochastics

- The principles or characteristics of momentum interpretation are the same for all indicators, but some are specially constructed to bring out a particular characteristic

These are relative strength indicator, stochastics i.e. % k % d indicator and trend deviation indicator also called as price oscillator. Introduction to momentum oscillators.

In this video, we will introduce the concept of momentum and discuss the application of momentum oscillators. The concept of upside momentum is illustrated with the following example. When a ball is thrown into the air, it begins its trajectory at a very fast pace, its trajectory at a very fast pace, it possesses a very strong momentum. The speed at which the ball rises gradually diminishes and finally, it comes to a temporary standstill. The force of gravity then causes it to reverse the course.

This slowing down process is known as loss of upward momentum is a phenomena that is also experienced in financial markets. The flight of the ball can be equated to a market price. The price rate of advance begins to slow down noticeably before the ultimate peak in the price is reached. On the other hand, if a ball is thrown in a room and it hits the ceiling while

its momentum is still rising, the ball and the momentum will reverse at the same time. Unfortunately momentum indicators in the marketplace are not dissimilar.

Momentum signals

- The momentum signal performs the act of supplementary "witness" in our weight-of-the-evidence approach
- Momentum and sentiment are closely aligned
- Momentum indicators have two major applications
- Momentum indicators are often useful in identifying overbought and oversold conditions, and divergences
- Also, momentum indicators can be used for identifying trend reversals: assumption here is that if momentum is reversed, prices will follow in sometime

This is because there are occasions on which momentum and price peak simultaneously either because a ceiling of selling resistance is met or because buying power is temporarily exhausted. Under such conditions, the level of momentum is often as helpful as its direction in assessing the quality of a price trend. Thus, the use of momentum indicators can warn of latent strengths or weaknesses in the indicator or price being monitored often well ahead of the final turning point. The idea of a downward momentum can be well understood by comparing it to a car that is pushed over the top of a hill. The car begins to roll down the hill and as the gradient of hill steepens to accelerate at the bottom it reaches the maximum velocity.

Although its speed then begins to decrease as it moves above and continues to travel, but finally it comes to a halt at the other height of the top. Market prices act in a similar fashion. The rate of decline or loss of momentum often slows ahead of the final loop. This is not always the case. However, since momentum and price sometimes as at peaks turn together as prices meet a major level of support or resistance.

Nevertheless, momentum leads price often enough to warn of a potential trend reversal in the indicator or market average that is being monitored. Examples of important momentum indicators include rate of change ROC, the relative strength indicator RSI, moving average convergence divergence and stochastic oscillators among others. Price momentum can be computed using price data for an individual series such as a currency, commodity, stock or a market average and manipulates it in a statistical form that is plotted as an oscillator. We

call this price momentum. The principles or characteristics of momentum interpretation are the same for all the indicators, but some are specially constructed to bring out a particular characteristic.

Rate of Change (RoC)

- Divide current price by the price 10-week/Day ago (or any period that is more suitable) to obtain RoC

- For example, if the current price is 100 and the price 10-week ago was 105, then RoC= 100/105=95.2

- The subsequent price will be divided by the price 10-week ago

- The resulting series will oscillate around some central point

- Instead of using exact value, we can use mean and median of the period

In this discussion, we will start with ROC indicator and show the applications. Maintaining the oscillator may change some properties, but broad interpretations and contours of discussion remain the same. Momentum signals have some important properties. First and foremost, these momentum evidences act as supplementary witness in the overall weight of evidence approach with other indicators such as trend line, volume among others. Often momentum and sentiment are considered to be closely aligned.

There are two major applications of momentum indicators. First, momentum indicators are often useful in identifying over-watt and over-sold conditions and price divergences. Also, momentum indicators can be used for identifying trend reversals. Assumption here is that if momentum is reversed, then prices will follow in some time. To summarize, in this video, we introduced the concept of momentum in the context of financial markets.

We also discussed how it can be applied in identifying over-watt and over-sold conditions and identifying trend and trend reversals. In this video, we will introduce rate of change ROC oscillator, which is one of the momentum indicators. For discussing momentum oscillation or properties of momentum, we will use ROC as one case. There are multiple other oscillators, however, the discussion will remain similar. The simplest way of measuring momentum is to calculate the rate at which a security price changes over a given period of time.

This is often known as rate of change or ROC indicator. If it is desired, for example, to construct an ROC using 10-week time span, then the current price is divided by the price 10-week ago.   If the latest price is 100 and the price 10-week ago was 105, then ROC momentum indicator will or can be easily computed by dividing 100 from 105, which is equal to 95.2. The subsequent reading in the indicator will be calculated by dividing next week's price by the price 9 weeks ago.

10 Week ROC calculation

Date	Index Price	Seq	10 Weeks Ago (2)	10 Week ROC (1) divided by (2)	10 Weak ROC (Median)	10 Weak ROC (Mean)
Jan-01	985	1				
8	980	2				
15	972	3				
22	975	4				
29	965	5				
Feb-05	967	6				
12	972	7				
19	965	8				
26	974	9				
Mar-05	980	10		Simple	Median	Mean
12	965	11	985	98.0	99.2	99.1
19	960	12	980	98.0	98.8	98.8
26	950	13	972	97.7	98.0	98.0
Apr-02	960	14	975	98.5	99.4	99.2
9	965	15	965	100.0	100.0	99.9
16	970	16	967	100.3	100.5	100.4
23	974	17	972	100.2	100.9	100.8
30	980	18	965	101.6	101.6	101.4
May-07	985	19	974	101.1	101.8	101.8

The result is a series that oscillates around a central reference point.   The horizontal equilibrium line represents the level at which the price is unchanged from its 10-week reading ago. If an ROC calculation, if an ROC calculation was made for a price that remain unchanged, the momentum index would represented, would be represented by a straight line. When an ROC indicator is above the reference line, some reference line, then the market price that is measuring, that it is measuring is higher than its level 10 weeks ago. If the ROC indicator is also rising, the difference between the current reading of the price and its level 10 weeks ago is growing.

10 Week ROC calculation
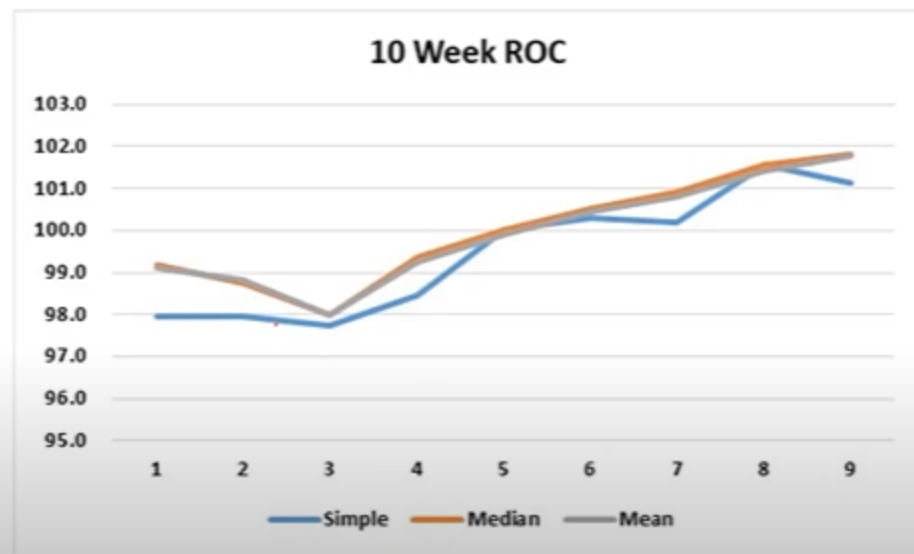
If an ROC indicator is above the central line but is declining, the price is still above its level 10 weeks ago, but the difference between the two readings is shrinking. When the ROC indicator is below the central line and falling, the price is below its level 10 weeks ago and the difference between the two is growing. If the ROC indicator is below its center line but rising, the price is still lower than its 10 weeks ago level but its rate of decline is slowing. To summarize, us rising our ROC indicator implies expanding velocity and the falling one implies a loss of momentum. Rising momentum should be interpreted as a bullish factor and declining momentum as a bearish one.

Rate of Change (RoC) Oscillator

- This horizontal equilibrium line represents the level at which the price is unchanged from its reading 10 weeks ago
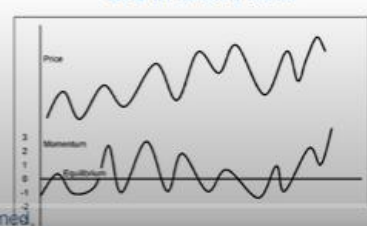- When an ROC indicator is above the reference line, the market price that it is measuring is higher than its level 10 weeks ago
- If the ROC indicator is also rising, the difference between the current reading of the price and its level 10 weeks ago is growing



RoC with % scaling
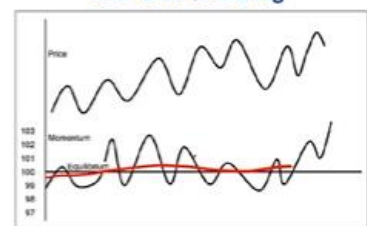
RoC in return form

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

Rate of Change (RoC) Oscillator

- If an ROC indicator is above the central line but is declining, the price is still above its level 10 weeks ago, but the difference between the two readings is shrinking

- When the ROC indicator is below its central line and falling, the price is below its level 10 weeks ago, and the difference between the two is growing

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

RoC with % scaling

RoC in return form
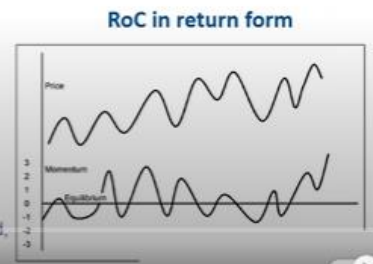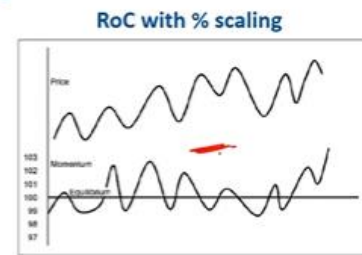
Also, instead of using the exact 10 weeks ago value, we can use mean and median as well. Let's see this with the help of an example. Here we have weekly index price data is given. For each week, the index price value is given starting from number 1, 2, 3, 4, 5 and 10. Now let's say if I want to compute the values for 10 week ROC, what I can do is I can simply divide the 10 week ago price by the latest price.

So in this case, the latest price is 965, the price 10 weeks ago is 985. So we can divide 965 by 985 to get a value close to 98. Instead of dividing by 98, I can divide it by the median of previous 10 week values which results in a value of 99.2 or I can use the mean of this which results in 99.

Similarly, as we roll on one week ahead, the value is 960 and the 10 week previous value is 980. Again, using similar procedure, we can either compute with simple 10 week ago old value or we can use median or mean and then we can keep on rolling over and over. This way we get three readings for simple, median and mean. These can be plotted here. For example, these can be plotted here.

The figure suggests that broadly they indicate similar rising trend in ROC whether we are using simple ROC based on mean or median. To summarize, in this video, we discussed how to compute ROC which is an important momentum oscillator. In this video, we will recap some of the important ROC characteristics. Please note, this horizontal line represents the level at which the price was 10 week ago. If the price is at or the ROC is at this horizontal line that means price is unchanged from its reading 10 weeks ago if this is constructed for 10 weeks.
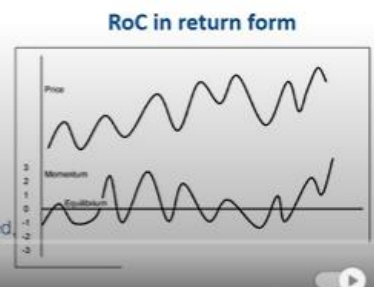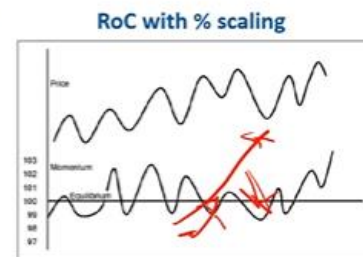
If ROC indicator is above this reference line, then in that case the price that it is measuring is

higher than its level 10 weeks ago. Please also note that ROC can be presented in two forms with percentage scaling that means current price PT upon price 10 weeks before or return form which is Ln of PT upon PTW. So the bottom was in the return form, the above one is in the scaling form. So if ROC indicator is rising like this, then the difference between the current reading of price PT and its 10 week ago level is also growing. So PT is moving ahead or growing as compared to its 10 week before level.

Rate of Change (RoC) Oscillator

- If the indicator is below its central line but rising, the price is still lower than its level 10 weeks ago, but its rate of decline is slowing

- In short, a rising ROC indicator implies expanding velocity, and a falling one implies a loss of momentum

- Rising momentum should be interpreted as a bullish factor, and declining momentum as a bearish one

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

If ROC indicator is above the center line above the center line and it is declining, the price is still above PT, price currently is still above the price 10 week ago, but the difference between these two is shrinking. When ROC indicator is below this line and falling, the price is below its 10 week ago level and the difference between two is growing because PT 10 week ago level is much greater than PT now. Also if indicator is below its center line, here the price still lower than 10 week ago, but if the momentum indicator is rising, that means this gap is declining or rate of decline is slowing. In short, an ROC indicator implies expanding velocity that means if ROC is rising, that velocity is increasing like accelerating and a falling ROC implies loss of momentum, sort of deceleration. Rising momentum should be interpreted as a bullish signal.

So rising momentum is interpreted as a bullish signal, while a falling momentum or declining momentum is a bearish signal. Please note that analysis of any technical situation can be enhanced by the calculation of several momentum indicators, each based on a different time span. In this way, the trend line price patterns or divergences which may not be apparent in one period are more apparent in other. The discovery of signs of a trend reversal in several indicators constructed from different time spans add further fuel to the weight of evidence. Another example of ETF price and 12 month MA as shown here, this ETF price and 12 month MA, MA is more smoother, the fluctuating one is the price, are plotted with three different period ROCs that is 9 month, 12 month and 18 month here.

RoC: Use of different time-spans

- Calculation of momentum indicators (e.g., ROC) for different time span helps

- E.g., trendlines, price patterns, or divergences, which may not be apparent in one period, are more apparent in another

- 12 month MA along with 9, 12, and 18 month ROC are provided here

- Notice the 12 month MA trend line violation
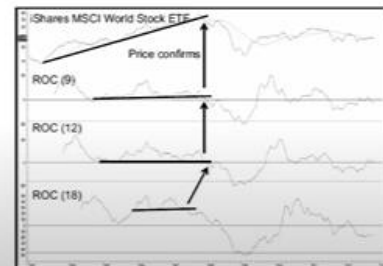
iShares MSCI World Stock ETF
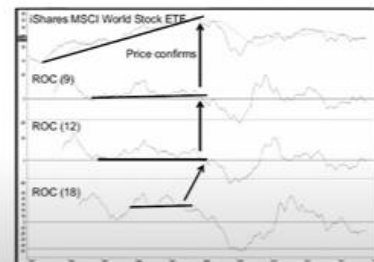Price confirms
ROC (9)
ROC (12)
ROC (18)

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

ROC is provided here. Price and 12 month MA are plotted together. Note that the price trend line is violated. This price trend line is violated here. It moves simultaneously with the 12 month MA crossover. So there is 12 month MA crossover and trend line violation.

RoC: Use of different time-spans

- The trendline was violated with 12 month MA along with loss of momentum in all the three ROCs (9, 12, 18)

- Momentum typically reverses along with price, often with a small lead, but just because oscillators change direction, doesn't always mean that prices will too

- Normally, a reversal in the momentum trend acts as confirming evidence of a price trend reversal signal

iShares MSCI World Stock ETF
Price confirms
ROC (9)
ROC (12)
ROC (18)

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

So there is number of evidences. At the same time, all the three ROC also witness loss of momentum. So you find that there is a loss of momentum in all the three ROCs and they cross zero line in some time, the equilibrium line is also crossed. So basically trend line was violated that is one evidence and loss of momentum in all the ROCs is another indicator. So this is a good indicator or signal that now the price has lost its momentum and there may be reversal in the trend. Now momentum typically reverses along with price often with a small lead, but just because oscillator change the action does not mean that price will also change.

Price will also change the direction too. So that is not a guarantee. Normally a reversal in momentum trend act as a confirming evidence of a price trend reversal. So it is sort of confirming evidence in the weight of evidence approach. The final action or final signal will come from the price action itself.

To summarize in this video, we examined the relationship between ROC momentum oscillator and prices. We also saw how ROC is constructed with multiple time spans or different time spans can add value and fuel to the weight of evidence approach. Increasing momentum is a bullish sign while falling momentum is a bearish sign and to be read in conjunction with actual price action or price trend. We will discuss the two very important properties of momentum characteristics that is overbought and oversold levels. Perhaps the most widely used method of momentum interpretation is the evaluation of overbought and oversold levels.

Overbought and oversold levels

- Perhaps the most widely used method of momentum interpretation is the evaluation of overbought and oversold levels

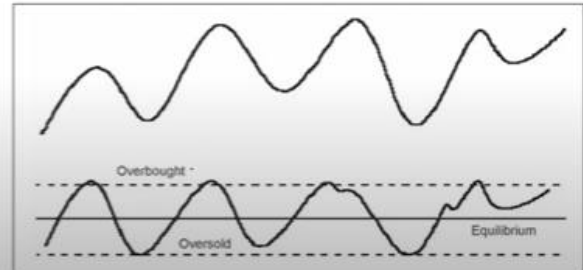- Consider the price as a stone tied to an elastic band, oscillating up and down
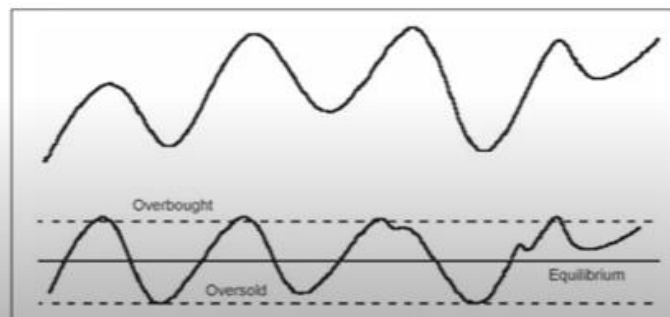
Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Marylan

This concept can be compared to a person taking an unduly dog for a walk on a leash. The leash is continually being pulled from one side of the person to the other side as the dog struggles to get free. Despite all this activity, however, the dog can move no further away from the length of the leash. The same principle holds true for momentum indicators in the marketplace except that the market's leash should be thought of as made of rubber so that it is possible for particularly strong or weak price trends to extend beyond the normal limits known as overbought and oversold levels like these levels here. You can see that from one end at overbought to other end which is oversold.

Overbought and oversold levels

- A particularly strong or weak price tends to extend beyond the normal limits, known as overbought and oversold levels

- These areas are drawn on a chart at some distance above and below the equilibrium level

- The actual boundaries will depend on the volatility of the price being monitored and the time period over which the momentum indicator has been constructed

Source: From Martin Pring, Trading Systems Explained, Maryland, 2008.
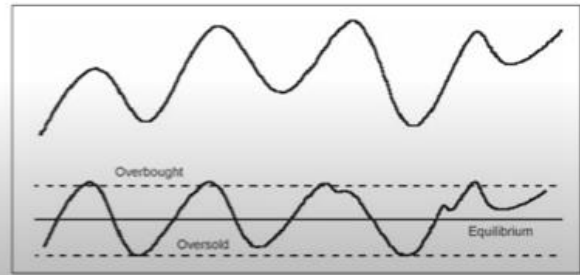
Overbought and oversold levels

- When a price reaches an overbought or oversold extreme, the probabilities favor but, by no means guarantee, a reversal

- An overbought reading is a time to be thinking about selling, and an oversold one warns that the current technical position may warrant a purchase
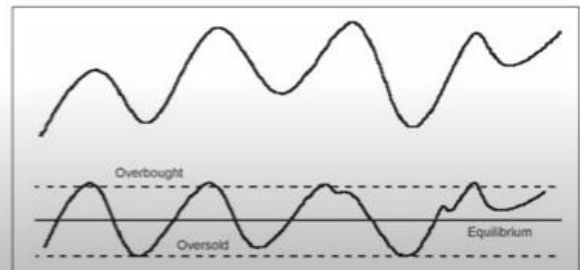
Overbought and oversold levels

- On the other hand, an oversold reading is usually associated with a negative news background

- Most of the people are fearful (at oversold level) and it takes a lot of courage to buy but mostly likely that is the right thing to do

Overbought and oversold levels

- However, where to draw these lines of overbought and oversold can only be determined by studying the history and characteristics of the security being monitored

- They should be drawn such that they will act as pivotal points, which, when touched or slightly exceeded, are followed by a reversal in the oscillator
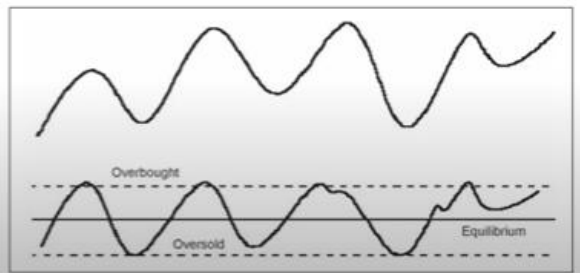
These areas are drawn on a chart at some distance above, the overbought is some distance above and the oversold is some distance below the equilibrium level which is here as shown in the figure here. The actual boundaries will depend on the volatility of the price being monitored and the time period over which the momentum indicator has been constructed. For example, an ROC indicator that has a tendency to move to wider extremes over a long period than over a shorter one. It is highly unlikely that a price will move 10% over a 10-day period. Yet over the course of a primary bull market extending over a 12-month period, a 25% increase would not be uncommon.

Some indicators such as RSI and stochastics have been specially constructed to move within definite predetermined boundaries as we will discuss later. When price reaches an overbought or oversold extreme, the probabilities favor but no means guarantee a reversal. An overbought reading is a time to be thinking about selling and an oversold one wants that the current technical position may warrant a purchase. In many cases, when a price reaches

an overbought extreme, the news is good. Participants are optimistic and human nature tells us to buy.

Unfortunately, the opposite is more likely to be the case. On the other hand, an unsold reading is usually associated with a negative news background. It is difficult to make a buy decision, but very often that is the most right and opportune time to make a buy decision. In view of the variability of indicators such as ROC, there is no hard and fast rule about where to draw the overbought and oversold lines. This can be determined only by studying the history and characteristics of the security being monitored.

They should be drawn such that these oversold and overbought lines should be drawn such that they will act as pivotal points, which when touched or slightly exceeded are followed by a reversal in the oscillator. Unfortunately, when a particularly sharp price movement takes place, these boundaries will become totally ineffective. The market leash that we discussed earlier is made of rubber and can remain in overbought and oversold territory for long periods like this. Consequently, it is essential to get confirmation from a reversal in the trend of the price itself or some other price patterns, price formation, trend line violations and other signals before taking any drastic action. To summarize, in this video, we discussed the interpretation of overbought and oversold levels.

Introduction

- Oscillators behave in different ways, depending on the direction of the primary trend
- In a bull market, oscillators tend to move into an overbought condition very quickly and stay there for a long time
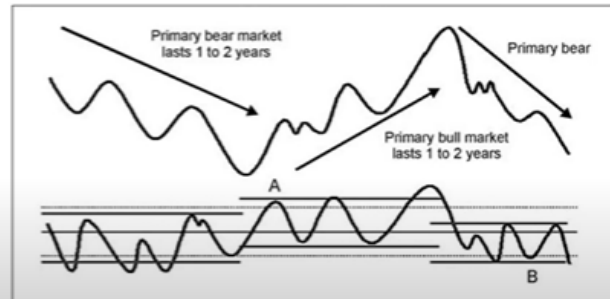- In a bear market, they can and do remain in an oversold condition for a long time
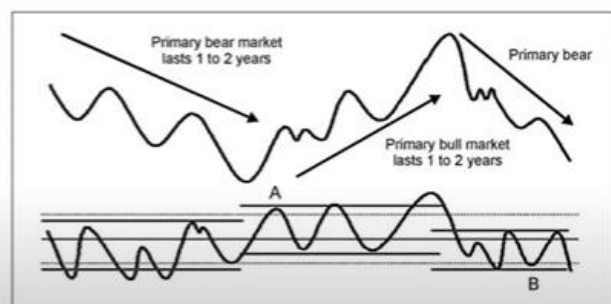
Source: From Martin Pring, Trading Systems Explained, Marketplace Boc Columbia, Maryland, 2008.

Often, these overbought and oversold levels exhibit extreme conditions after which some kind of trend reversal is expected or due. However, the actual confirmation or actual action should be confirmed from price action and some other weight of evidences, for example, volume, trend line violation and other signals as a weight of evidence approach. In this video, we will discuss momentum or oscillator characteristics in primary bull and bear markets. The character of an oscillator alters according to the price environment. In a bull market, oscillators tend to move into an overbought condition very quickly and stay there for a long time.

Introduction

- In a bull market, the price is extremely sensitive to an oversold condition

- The reason for this sensitivity lies in the fact that the oversold reading very likely reflects an extreme in short-term sentiment
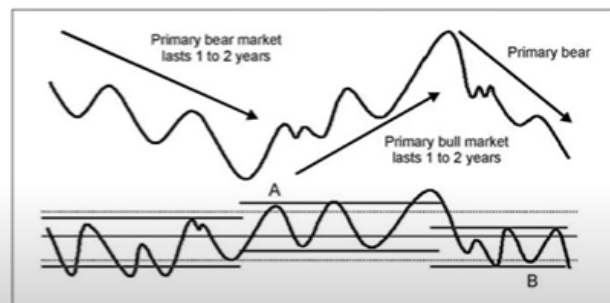

Source: From Martin Pring, Trading Systems Explained, Marketplace Boo Columbia, Maryland, 2008.

For example, here in the bull phase, the oscillator may remain at the top overbought level for a long time. In a bear market, it can and do remain in an oversold condition for a long time. For example, in a bear market, it may remain in the oversold level here for a long time. Please note the behavior of momentum indicator in a bull and bear market.

Introduction

- Market participants are focusing on the latest bad news and using that as an excuse to sell

- Since this is a bull market, they would be better served by remembering the positive long-term fundamentals that will soon emerge and using this weakness as an opportunity to buy
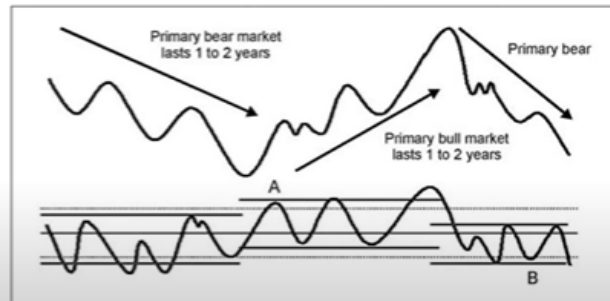

Source: From Martin Pring, Trading Systems Explained, Marketplace Boo Columbia, Maryland, 2008.

Introduction

- The same thing happens in reverse during a bear market

- Traders are focused on bad news, which sends the price down; then, some unexpectedly good news hits the wires and the price rallies

Source: From Martin Pring, Trading Systems Explained, Marketplace Bo
Columbia, Maryland, 2008.

This is a useful information itself. So we need to examine that because if it is possible to draw parallel or horizontal lines like these against an oscillator, it provides very valuable information and clue as to whether the primary trend is a bullish or bearish because depending upon bearish or bullish trend, the oscillator will hover around oversold or overbought level. Oscillators behave in very different ways depending upon the direction of primary trend, whether it is a bull trend or bear trend. Another very important point here is that if you have an idea of the direction of the primary trend, whether it is bull or bear trend, you can anticipate what price action might follow from a specific overbought or oversold reading. In a bull market, price is extremely sensitive to an oversold condition. That means in a bull market, if price is at here, oversold condition, you would expect it to rise very sharply or jump if it is at oversold condition, price to rise or some kind of reversal to take place from here.

Oscillator Characteristics in Primary Bull and Bear Markets

- However, when it is fully digested, most people realize that things really haven't changed at all and the price declines again

- Thus, the overbought reading more often than not will correspond with the top of a bear market rally

- Looking at it from another perspective, during a bull market, the price will be far less sensitive to an overbought condition

- Often, it will be followed by a small decline or even a trading range

In a bull market, the price is extremely sensitive to oversold condition. Similarly, in a bear

market, like this price is very sensitive to overbought condition. So if it is hovering around here or any touching at the overbought condition, you may expect short rewind to the downside. That means when you are lucky to see such kind of condition where prices at overbought at bear market and oversold at bull market, if you are lucky to see this kind of situation, look around for some other confirming signals that the price is able to rally.

An example might be the violation of downtrend line. The reason for this sensitivity lies in the fact that oversold condition in a bull market is very likely reflects an extreme in the short term sentiment and similarly for overbought condition in the bear market. In such scenarios, market participants are often focusing on the latest bad news and using that as an excuse to sell. Since this is a bull market, they would be better served by remembering the positive long term fundamentals that will soon emerge and using this weakness as an opportunity to buy. The same happens in reverse during a bear market.

Oscillator Characteristics in Primary Bull and Bear Markets

- In such cases, the overbought readings tend to give premature warnings of declines

- During the early phases of the bull cycle, when the market possesses strong momentum, reactions to the oversold level are much more responsive to price reversals, and such readings, therefore, offer more reliable signals

- It is only when a bull trend is maturing, or during bear phases, that overbought levels can be relied upon to signal that a rally is shortly to be aborted

- The opposite is true for a bear trend

Traders are focused on bad news which sends the price down. Then some unexpectedly good news hits the wires and the prices rallies. The same thing happens in reverse in a bear market. Traders are focused on bad news which sends the prices down. Then some unexpectedly good news happens and it hits the wires and prices rallies. However when it is fully digested, the news is fully digested, most people realize that things really haven't changed at all and the price declines again.

Thus, the overbought reading is more often than not will correspond with the top of a bear market rally. Looking at it from other perspective, during a bull market, the price will be far less sensitive to overbought condition. That means if it is a bull market like this, the price is moving like this, then the oscillator would rather hover around the overbought level. While if it is a bear market, the oscillator may hover around the oversold level lot of times. And the

price, looking at from other perspective during a bull market, the price will be far less sensitive to an overbought condition.

Overbought/Oversold Re-crossovers

- Buy and sell alerts are generated when the momentum indicator exceeds its extended overbought or oversold boundary and then re-crosses back through the boundary on its way to zero
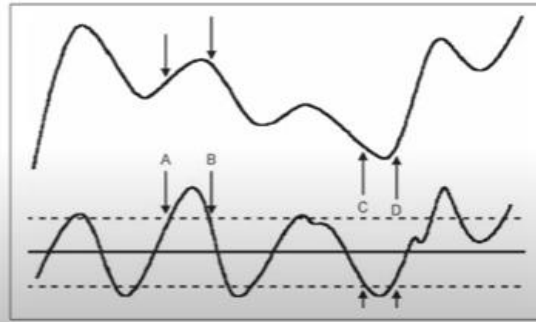
Often it will be followed by a small decline or even a trading range. Therefore, the rule in these scenarios is don't count on a short-term overbought condition to trigger a big decline because the odds do not favor it in bull phase and vice versa situation in bear phase. An oversold level is a good buying signal in bull phase in a bear market, though a market or stock is far less sensitive to an oversold reading, often failing to signal a rally or possibly being followed by a trading range, as we saw earlier at point B here. The maturity of the trend, whether primary or intermediate, often has an effect on the limits that an oscillator might reach. For example, when a bull market has just begun, there is a far greater tendency for it to move quickly into overbought territory and to remain at very high readings for a considerable period of time and similarly for bear run.

In such cases, the overbought readings tend to give premature warnings of declines during the early phases of the bull cycle. When the market possesses strong momentum, reactions to the oversold levels are much more responsive to price reversals and such readings therefore offer more reliable signals. It is only when a bull trend is maturing or during bear phases that overbought levels can be relied upon to signal that a rally is shortly to be aborted. The very fact that an indicator is unable to remain at or even to achieve an overbought reading for a long, itself a signal that advance is losing momentum, the opposite is true for a bear trend. To summarize, in this video, we discussed overbought and oversold characteristics.

For example, we noted that it is normal for oscillator to remain at overbought levels when there is a bull run. However, during a bull run if momentum is at oversold level, then it is a sign that there may be a rebound. Similarly, in a bear run, when prices are going down, the oscillator may it is normal for oscillator to go around oversold levels. However, if it is at overbought level, it may be extremely sensitive and a rebound may take place. However, such the existence of such signals should not be taken as confirmation but rather some other

evidences such as trend line violation or price patterns may be used as confirmatory signals to take a trading action.

In this video, we will discuss overbought and oversold recross-overs and signal generation. In many cases, excellent buy and sell alerts are generated when the momentum indicator exceeds its extended overbought or oversold boundary and then recrosses back through the boundary on its way to zero. For example, this kind of cross-over and then reversal back towards the zero level. The figure shown here demonstrates this possibility. This approach filters a lot of premature buy and sell signals generated as the indicator just reaches its overextended boundary.

But why should wait, still wait for a trend reversal in the price itself before taking action. For example, price itself should also reverse here. It reaches the oversold level, crosses and recrosses back to zero but after this recross-over, we can also see the price itself being reversing. There is a close connection between market sentiment indicators and the characteristics of oscillators. Since market sentiment differs widely during a bull and bear market, it follows that such variations are occasionally reflected in changing characteristics of momentum indicators as well, often referred to as mega overbought or mega oversold levels.

Mega Overboughts

- A mega overbought is the initial thrust in a bull market following the final low
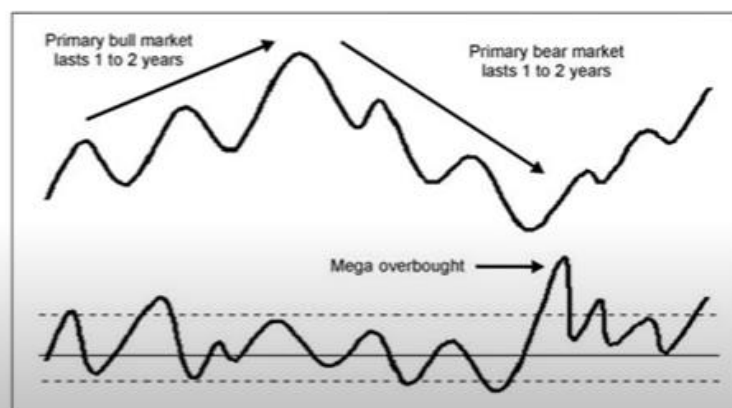
A mega overbought like this is an initial thrust in a bull market following the final low. So, there is a bear market following, there is a bear market, this is the bear market and this is the final thrust in the bear market and then this is the first initial thrust in the bull market which is captured and this mega overbought just captures this dynamics. This kind of mega overbought, it's a reading the momentum indicator that it takes well beyond the normal overbought condition witnessed in the preceding bull or bear market. So this reading exceeds any preceding overbought level reading. It should be, for example, represent a multi-year high for the oscillator concerned, perhaps even a record overbought reading.

Mega Overboughts

- It's a reading in the momentum indicator that takes it well beyond the normal overbought condition witnessed in either a preceding bull or bear market: a multiyear high for the oscillator concerned

- Such conditions are usually a sign of a very young and vibrant bull market
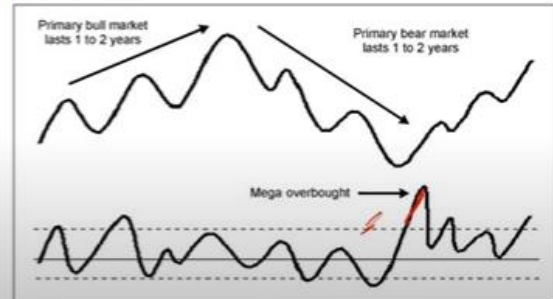
Such conditions are usually a sign of very young and vibrant bull market that is starting. The very fact that an oscillator is able to rise, even rise to such a level can be used with other evidence, for example, some kind of trend reversal or trend line violation evidence to signal that a new bull run is begin as we can see here. A new bull run is begin. This is the starting point as a overbought signal, mega overbought in fact with the oscillator. It represents a sign that the balance between buyers and sellers has unequivocally shifted in favor of buyers.
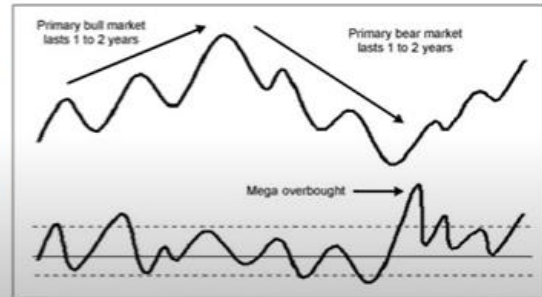
Mega Overboughts

- Mega overbought the only instance when opening a long position from an overbought condition can be justified

- Whenever an oscillator experiences a mega overbought, higher prices almost always follow after a short-term setback or consolidation
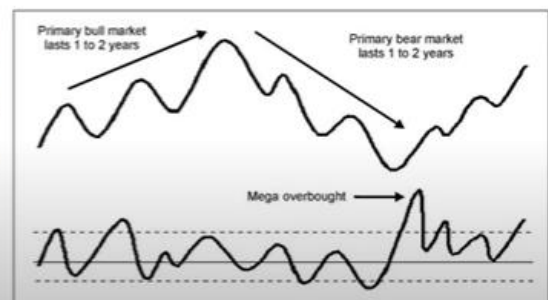
It's something like a person using all his strength to crash through a locked door. It takes a tremendous amount of energy to achieve. But once the door is finally showed open, there's nothing to hold that person back any longer. In the same way, a mega overbought removes the prices from its bear market constraint, leaving it to experience new bull market and vice versa for bear market or mega oversold also which may be a first thrust in the bear market after a prolonged bull run. We can say that this mega overbought is the only instance when opening a long position from an overbought condition can be justified.

Mega Overboughts

- Since a mega overbought is associated with the first rally in a bull market, it's a good idea to check and see if volume is also expanding rapidly

- If it takes the form of record volume for that particular security, the signal is far louder because record volume coming after a major decline is typically a reliable signal of a new bull market


Even so, it can only be rationalized by someone with a long term time horizon. This is due to the fact that whenever an oscillator experiences a mega overbought, higher prices almost always follow after a short term setback like this. So once there is a mega overbought, higher prices will follow, there is a short term setback but then prices will move up. This is due to the fact that whenever an oscillator experiences a mega overbought, higher prices almost always follow after a short term setback or consolidation has taken place. In most instances, you will find probably that the correction has taken place following the mega overbought in a sideways rather than downward. But there are just enough exceptions to cause the overleveraged trader a lot of sleepless nights.

Since a mega overbought is associated with the first rally in a bull market, it is a good idea to check and see if the volume is also expanding rapidly. If it takes the form of a record volume for that particular security, the signal is far louder because record volume coming after major decline is typically a reliable signal of a new bull market. Expanding volume is more or less a necessary condition since it is constrained with the idea that buyers now have the upper hand and the psychology has totally reversed. The same also appears in reverse for oversold extremes.

Mega Oversold

- Expanding volume is a more or less necessary condition since it is consistent with the idea that buyers now have the upper hand and that the psychology has totally reversed

- Consequently, when a price decline following a bull market high pushes a momentum indicator to a new extreme low, well beyond anything witnessed either during the previous bull market or for many years prior to that
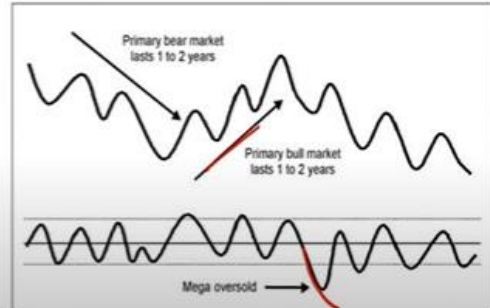
Source: From Martin Pring, Trading Systems Explained, Marketplace Columbia, Maryland, 2008.

So oversold condition appears like this. After a prolonged bull market, this is the first thrust in the bear market and there is a mega oversold. Consequently, when a price decline following a bull market high pushes a momentum indicator to its new extreme low which is mega oversold well beyond anything witnessed during the previous bull market or for many years prior to that. So this extreme oversold, mega oversold as compared to anything observed in the history. The implication is that now sellers have the upper hand if it was a mega oversold. The fact that it is possible for the momentum indicator to fall so sharply and so deeply is in itself a sign that the character of the market has changed.

Mega Over- Bought/sold

- The implication is that sellers now have the upper hand

- Mega and extreme conditions represent preliminary signals of a primary trend reversal

- Confirmation by the price usually puts the issue beyond reasonable doubt
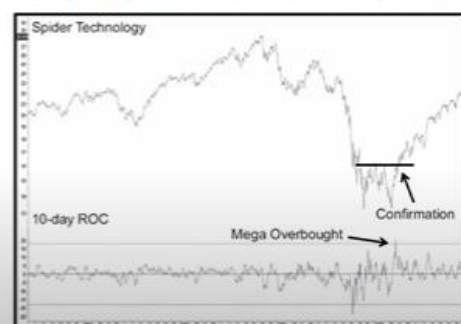
When you see this type of action, you should at the very least question the bull market scenario. Look for tell-tale signs that all new bear market may be underway. What are the volume configurations on the subsequent rally? Does volume now trend lower as the price

rises compared to previous rallies that were associated with trends of rising volume and so forth. You can look for multiple evidences.

Momentum and price divergence

- Prices in financial markets usually reach their maximum level of momentum ahead of the final peak in prices

- If the price makes a new high, which is confirmed by the momentum index, no indication of technical weakness arises

Let's have a look at this figure here shown here for spider technology. On the top we have price movement, here fluctuating prices and bottom we have 10 day ROC. Notice that at this juncture there is a mega overbought level which is preceded by a long bear rally. So there is a bear market which is falling and then there is a overbought. On the top in the price action we can see there is a very sharp price up move.

Momentum and price divergence

- On the other hand, if momentum fails to confirm (point B), a negative divergence is set up between the two series, and a warning of a weakening technical structure is given

- Such discrepancies normally indicate that the price will undergo a corrective process. It can take the form of either a sideways or a horizontal trading range, or (more likely) a downward one
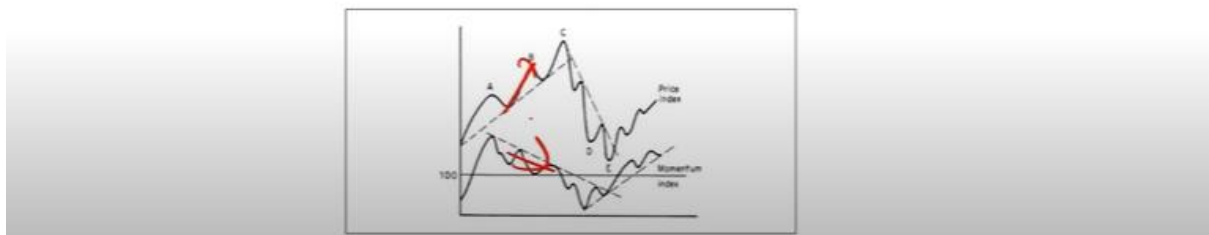

Also some kind of trend line has been violated towards upside. So there are number of signals which suggest that this mega overbought indeed indicates that some kind of bull run is about to take place which is also confirmed by this inverse or reverse head and shoulder pattern and also trend line or neckline valuation towards the upside. To summarize in this video we noted that overbought and oversold crossovers offer important signals. Often following a prolonged bull or bear market these overbought and oversold levels in fact are so extreme that they result in mega overbought or oversold levels. After a prolonged bear market a mega overbought or vice versa that is after a prolonged bull market and oversold level indicates trend reversal and once confirmed by some other signals such as price

formation, price patterns, trend line violations they should offer a very solid signals for trend reversal.

Momentum and price divergence

- The Fig. also shows a positive divergence. In this instance, the price makes its low at point E, but this was preceded by the oscillator, which bottomed at D
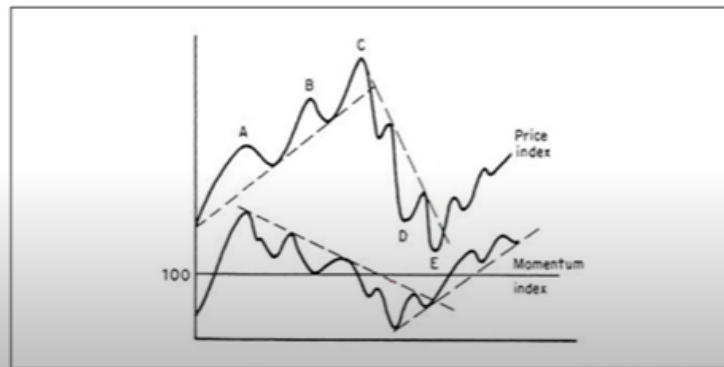

Momentum and price divergence. In this video we will discuss the role of momentum and price divergences in identifying price trends. The ball example used at the beginning of the chapter showed that maximum velocity was obtained fairly close to the point at which the ball leaves the hand. Similarly prices in financial markets usually reach their maximum level of momentum ahead of the final peak in prices. If the price makes a new high which is confirmed by the momentum index no indication of technical weakness arises. On the other hand if momentum fails to confirm for example here at point B notice that price movement upwards do not agree with the momentum downwards so there is a divergence which is set up.

Momentum and price divergence

- It is extremely important to note that divergences only warn of a weakening or strengthening market condition and do not represent actual buy and sell signals

- Whenever any divergence between momentum and price occurs, it is essential to wait for a confirmation from the price itself that its trend has also been reversed
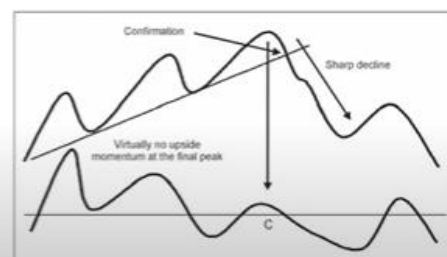

A negative divergence is set up between the two series that is price and momentum and a

warning of weakening technical structure is given. Such discrepancies normally indicate that the price will undergo a corrective phase, a corrective process. It can take the form of either sideways movement like a horizontal trading ring or more likely a downward movement as we can see here a downward movement. However the price will sometimes continue upward to another top and be accompanied by even greater weakness in the momentum index for example at point as you can see the divergence further increases at point C. Occasionally the third peak in the momentum index may be higher than the second but lower than the first.

Momentum and price divergence

- This confirmation can be achieved by: (1) the violation of a simple trendline, (2) the crossover of a moving average (MA); or (3) the completion of a price pattern

- At point C, the price moves to a significant new high, but the momentum indicator is barely able to remain above the equilibrium line

- When accompanied by a trend break, it is usually a sign of extreme technical weakness and is often, though certainly not always, followed by a very sharp decline.
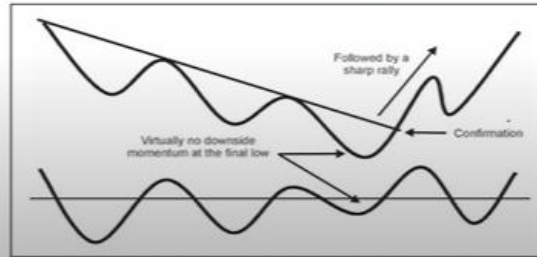
Extreme Bearish Divergence
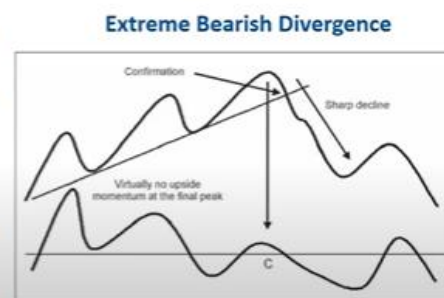
Source: From Martin Pring, Trading Systems Explained, Marketplac Columbia, Maryland, 2008.

Either circumstance requires some degree of caution since the characteristic is a distinct warning of a sharp reversal in price or long corrective phase as we can see here. Also we can see here a positive divergence where momentum and price are moving towards each other so we can see price falling and this is the momentum price going here. So there is a brief period of positive divergence both of them moving together. So this is a brief period of positive divergence as we can see which indicates strengthening of prices and prices actually show upward movement after that. So here we can observe the positive divergence in this instance price makes it low at point D but this was preceded by the oscillator so oscillator was also showing an upward increase here and before that there was a downward movement.

Momentum and price divergence

- The opposite type of situation in a bear market should be viewed as a very positive characteristic, especially if the upward trend break in price is accompanied by high volume. The more explosive the volume, the more reliable the signal is likely to be
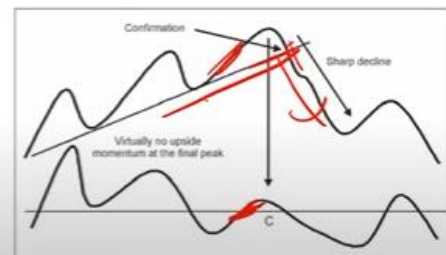
Extreme Bullish Divergence

Momentum and price divergence

- This confirmation can be achieved by: (1) the violation of a simple trendline, (2) the crossover of a moving average (MA); or (3) the completion of a price pattern

- At point C, the price moves to a significant new high, but the momentum indicator is barely able to remain above the equilibrium line

- When accompanied by a trend break, it is usually a sign of extreme technical weakness and is often, though certainly not always, followed by a very sharp decline.

Extreme Bearish Divergence

Source: From Martin Pring, Trading Systems Explained, Marketplace Columbia, Maryland, 2008.

Oscillator in fact bottomed at point D after which it was rising so there was sort of positive divergence between prices and oscillators as we can see here. Now please note it is extremely important to note that divergence is only one of a weakening or strengthening market condition and do not represent actual buy or sell signals. Whenever any divergence between momentum and price occurs it is essential to wait for some confirmation from the price itself that the trend has been reversed. For example here notice there is an upward price movement but the momentum oscillator does not agree here so oscillator is going down which indicates a negative divergence and some kind of trend reversal may happen which is further confirmed by this trend line break here so these are confirmatory evidence and after which indeed prices fall and trend is reversed. For such confirmations as we discussed earlier we can achieve that by looking at the violation of simple trend line as we saw here some kind of violation of trend line or the crossover of moving average MA the completion of price pattern as we can see here in the figure.

Momentum and price divergence

- In the Fig., Nikkei Index violating an important 3½-year secondary trendline after the 13-week ROC indicator had negatively diverged several times with the index

- A very timely signal is generated by a confirmation in the form of a trend break in the index itself through a negative 65-week EMA crossover

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

Complex divergence

- It is always a good idea to compare several different momentum indicators based on differing time spans

- Different time-spans capture the influence of different cyclic phenomenon

- One approach is to plot two momentum indicators of differing time spans on the same chart
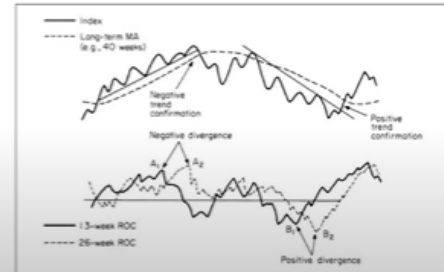
Complex divergence

- When the longer-term indicator reaches a new peak and the shorter one is at or close to the equilibrium line, they are clearly in disagreement or out of gear (A2)
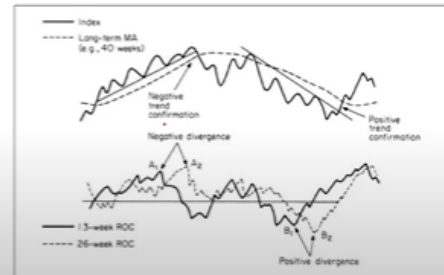
- It is very important to make sure that any such divergence is confirmed by a reversal in the price trend itself

- Complex divergences also occur in a positive combination, as indicated later on at point B1

- This indicates that a reversal in trend will take place, and it is usually an important one

Source: From Martin Pring, Trading Systems Explained, Marke Books, Columbia, Maryland, 2

As a general rule the greater the number of negative divergences the weaker the underlying structure. At point C here in the figure as we can see here the price is most to a new significant high here but the momentum indicator is barely able to remain the above equilibrium line so it is barely at equilibrium line. Such a situation demands utmost caution when accompanied by a trend line break as we can see also see here the trend line break is there which is usually a sign of extreme technical weakness and is often though but may not be always but often followed by sharp decline as we can see here. Same situation can occur in a bear market and should be viewed as a very positive characteristic especially if the upward trend break in the price is accompanied by high volume the more explosive the volume the more likely or reliable the signal is. For example here we can see virtually no downside momentum in the final loop so when there is a final loop it does not have much momentum and then it shows some kind of upward momentum shows upward sign which leads the upward price momentum so before prices start moving up there is a momentum which shows some kind of mega overbought this is sort of mega overbought which is the first thrust in the bull phase and we can see there is a sharp rally in prices. Another confirmation is that violation of this trend line so number of signals are available to us this is like extreme bullish divergence which is as compared to this was extreme bearish divergence this is more of a bullish divergence.

Another interesting example here in the chart we can see the Nikkei index movement and we can see the violation of a three and half year trend line so there is a violation of three and half year almost three and half year trend line here which gets violated here the trend line violation occurs. And we can also examine the movement of ROC. ROC is going down side so there is some kind of negative divergence being set up 30 week ROC is plotted which is almost crossed here the equilibrium line anyway it was falling earlier. So there is a strong negative divergence with the index as a result the final rally was accompanied by very little in the way of upside momentum it would have been a mistake to sell in on any of the prior divergences but a very timely sell signal was generated by waiting for confirmation in the

form of trend line break as we said earlier in the index itself and also there is a 65 week MA which is plotted so the EMA chart is also there which is also crossed over so another signal is from EMA crossover this notice this dotted line which is 65 week EMA so along with trend line that EMA is also crossed over. A divergence that set up very close to equilibrium line is often followed by a sharp price move when confirmed by price we can see here the divergence is set up ROC the 13 week ROC is closer to equilibrium line which shows lot of weakness and then price all this is confirmed   by actual price action here.

With respect to complex divergence it is always a good idea and it is always widely recognized   that price movements are simultaneously influenced by several cyclical phenomena because a single momentum indicator can monitor only one of these cycles it is always a good idea to compare several different momentum indicators based on different time spans. One approach is to plot two momentum indicators of different time spans on the same chart as we can see in the figure here since this method tries to monitor two separate cycles it is wise to choose two different time periods for example not much can be gained from a comparison of 12 and 13 week ROC since they would be very close to each other so in contrast for example as we can see here 13 and 26 week spans would clearly differentiate and reflect different cycles most of the time the two indicators are moving in gear as we can see most of the time these two indicators 13 week and 26 weeks indicators are moving in gear so this study does not give us much information on the other hand when the long term indicator reaches a new peak and short term is close to the equilibrium line that is long term indicator reaches its new peak and short term is close to its equilibrium line or below it they are clearly in disagreement and out of gear for example at A2 in the figure they are clearly in disagreement and out of gear this normally but not necessarily indicates that a reversal in the trend may take place and usually an important one and this is further confirmed by here trend line violation and also we can see the long term EMA there is a long term dotted EMA plot for T weeks EMA plot which is crossed over by the index so there are number of evidence violation of trend line EMA cross over and then there is a negative divergence that was set up between long term and short term ROC so this is normally but not necessarily indicates a trend reversal may take place a very important one even so it is very important to make sure that such divergence is confirmed by reversal in the price itself as we can see here these are often referred to as complex divergences and they occur in a positive combination also as we can see here in point B1 in the figure we can see here some kind of complex divergence is set up as we can see here a short positive divergence the short term is moving above while the long term is still moving down so a sort of positive divergence is set up which indicates some kind of positive trend expected positive trend or strengthening of the price as we can see here which is further confirmed by the trend line violation so this positive divergence is confirmed by the trend line violation and also the EMA is crossed over towards upside but the ultimate confirmation should be taken from the price action which reverses to the upside so number of signals here confirming that the price reversal has taken place on the upside to summarize this video we examined momentum and price divergences and how they can be employed to understand the price trends and trend reversals we also noted that in order to capture different time cycle influences of different cycles or influences that have different time periods or cyclical in nature we can employ momentum oscillators of different horizons

for example 13 week and 26 week horizon horizons and often they provide us with complex divergences like negative and positive divergences negative divergences indicate some kind of reversal on the downside while positive divergences indicate strengthening of price and movement expected movement towards the upside in this video we'll discuss momentum trend reversal techniques basic concepts such as trend line moving average crossovers price patterns can be applied to momentum indicators as well occasionally it is possible to construct a trend line on the momentum indicator by connecting a series of peaks or troughs an example for an uptrend reversal is shown here in the figure notice in this figure when the trend line when the line this trend line is violated a trend reversal signal for the oscillator is generated so this is the trend line with the momentum indicator this is the trend line with the price so here the signal is generated which is slightly leading as compared to the actual price signal so this is a bearish momentum trend week because it predicts some kind of downward movement also the cross at double a indicates that bearish movement which is sort of confirmation and leading indicator is the momentum trend line violation on the downside and it is confirmed by the price section as well this type of momentum weakness mud must be regarded as an alert and action should be taken only when confirmed by the price trend itself as indicated at point double in the figure in effect the momentum trend break is reinforcing the price turn break and it offers an additional piece of evidence that the trend has reversed these momentum indicators can also be smooth by incorporating moving averages here we have already seen the example of uptrend reversal the warning of trend reversal in the price should be offered by a reversal in the smooth momentum index cell or penetration of a moving average by a designated overbought or oversold levels for example here we have signaling a new uptrend is featured in the figure it is possible for momentum trend break to proceed that of a price by some time as we can see here so the momentum trend break is on the upside price and back is also on the upside but is slightly lagging the momentum trend break as we can see here and then there is an overbought signal possibly a mega overbought it is possible for the momentum trend break to proceed that of price by some time yet it does not generally lose its potency because of this as a general rule it does appear that if both lines are violated more or less simultaneously or if the price trend is violated first strength of the signal is enhanced it should also be noted that momentum trend line break like as we can see here the momentum trend line break momentum trend line breaks can be confirmed by any legitimate trend reversal technique in the price need a moving average crossover price pattern peak end of progression reversal etc often it is useful the momentum changes they are often useful in predicting prices in terms of diagonal changes so smooth momentum index like the one shown here notice that it leads the price movement so whenever there is advance in momentum it leads or indicates that in future the price may go up so it indicates some kind of a momentum in leading manner often this can be further improved by adding overbought and oversold levels for example here we have overbought and oversold levels whenever there is a crossover re-crossovers with smooth momentum index so this momentum index is smooth by some moving average measure and whenever there is a crossover it indicates some kind of signal generation in a more leading manner before the price itself moves so it gives us leading signals before that there is a change in price direction of price movement however this should only be considered as one evidence in the overall weight of evidence approach the final action or confirmation should

be taken from the actual price movement itself please note that momentum indicators are also capable of tracing price patterns because of the shorter lead times normally associated with reversal of falling momentum a breakout from accumulation pattern when accompanied by a reversal in the downward trend of the price itself is usually a highly reliable indication that a worthwhile move has begun it is important to use a little common sense in interpreting the momentum price patterns for example have a look at the figure here it shows a breakout from a reverse head and shoulder so there is a reverse head and shoulder in the momentum index it's a reverse head and shoulder pattern that takes place from an overbought condition so there is an overbought condition from where the head and shoulder pattern appears this is not to say that such signals will never be valid but it stands to reason that a breakout from an extreme level is very unlikely to result in a sustainable price move remember technical analysis deals with probabilities and the odds of a favorable outcome in this case are low if you want a tip of this type of failure typically develops in a contraturing way as a false upward breakout in a primary bear market or a false downside move in a primary bull market so we can see here this breakout is not sustained as soon as it breakouts then again it falls and then falls further and further so there a bear market trend starts this also indicates here some kind of neckline or you can say reverse head and shoulder price also some kind of neckline or trend line violation happens price moves to the downside here you can see the momentum is providing some sort of leading signals it breaks and then goes down since the break was already it was already coming from such a high position chances were high that it will be under this direction rather than going up it will be on the this direction already there was a sustained bear bull market phase so chances were of falling prices were more and therefore we expected this reverse and shoulders not go up but to go down by now it is apparent that all the trend determining techniques used for price are also applicable to momentum interpretation of momentum indicators as described earlier depends to a considerable extent on judgment one method of reducing the subjectivities to smooth the ROC index by using an MA warnings of a probable trend reversal in price being monitored or offered by momentum moving average crossovers as indicated in the figure here for example have a look at this momentum index momentum and it's moving average so the smooth one is moving average and the fluctuating one is the momentum itself notice that there are number of WIPSA signals however instead of using the momentum itself if you use a short term MA of momentum and a long term MA those WIPSA signals are eliminated and signals are more solid for example here you can see a downward breakout by the short term MA crossing down the long term MA and this signal is further confirmed by the price section here on the downside similarly here there is an upside breakout which is also confirmed by the price moving up and again the downside breakout which is further confirmed by the price going down so the WIPSA signals are less here as compared to here where we are actually using momentum and it's MA so momentum in because momentum is much more fluctuating it gives us lot of WIPSA signals here in the earlier approach using this this approach just using momentum not a smooth smooth version of it the problems is there are number of problems with this approach is that the momentum indicator is very jagged like this WIPSA signals then the price index that it is trying to measure causing the generation of an acceptable number of WIPSA signals that we saw now we can filter out some of these WIPSA by using a combination of two one short term and one long term MA

as we saw in the analysis and figure here and buy and sell alerts are given when the short term MA crosses above or below like here crosses from above to below or below to above the long term counterpart as you can see the price also went down and went up confirm the actual momentum signal generator it which is confirmed by the price action itself to summarize in this video we discussed that momentum indicator itself can be used in a similar manner with other evidence like we did price for example trend line violations or application of multiple moving averages for example we discussed that like price where we use short term moving average and long term moving average with momentum also we can apply the same approach by using moving averages with momentum and generate signals momentum generally offers leading signals because it moves in advance as compared to the time is as compared to the actual price action itself in this video we'll discuss relative strength indicator that is RSI the computation of RSI is very simple with this formula RSI equal to 100 minus 100 upon 1 plus RS where RS is the average of X days up close prices divided by the average of X days down prices one can also compute difference or a return form for RS here X is the number of days for example 28 days or 30 days 45 days whatever suitable period for the analysis which is justified by the price movements the indicator has several advantages for example the erratic price movements are smooth because of the averaging these movements would have affected the ROC computation also it ranges from 0 to 100 so this measure offers a constant band of 0 to 100 within which the RSI indicator would fluctuate in this fashion RI becomes extremely useful for making comparison between different securities on the same chart for example if you have the hundred and zero levels constant for both the securities and both the securities will fluctuate in between and we can establish universal standards of overbought and oversold for example 70 30 or 80 20 overbought and oversold levels as we discussed in the previous videos about overbought and oversold levels extreme values here for example if the overbought and oversold levels are too extreme like 90 10 these value would mean less violations because these are extreme moves so these values would mean less violations but if there is a valuation the signal would be very strong also the choice of these overbought and oversold levels and violations would be determined by the time span as well for example if the time span is too short like a few days or something then it may cause wider as RSI oscillations while as compared to that larger time span would cause narrower swings narrower swings and the breakout points can be adjusted for depending upon the time span whether it is larger or smaller when we can adjust the overbought and oversold level or break points anytime RSI is above its overbought or below its oversold level overbought or oversold if it is above or if it is below the oversold level it means the current trend is about to reverse there is a high chance and the security in question is ripe for a turn whether it is if it is going up it may go down or if it is here it may go up the significance of this turn depends upon the time what is your time horizon short for short time horizon span RSI the moves may be more frequent while for a long term RSI the moves may be less frequent and the significance may be more consider this diagram here where we have 70 30 bands and RSI is fluctuating here now this these are consistent swings above overbought level indicating that some kind of movement may happen these are like failure swings the momentum tries to cross the overbought level this is a 14-day RSI for example points A and point B offer good alerts that now the security in question may fall and such divergences are set up for example here the price is still moving up while at this time the

momentum is going down and it has witnessed a failure swing as well at B and is going down so this kind of negative divergence is set up between momentum price and there is a high probability that price may fall down we can also use RSI in conjunction with trend line violations and price pattern completions for example here we can see that this some trend line has been violated on the downside which indicates a high probability of reversal again there is some failure swing happening here at the oversold level price the momentum has tried to cross the oversold level once again again there is a failure swing and therefore on some kind of divergence is set up this is sort of positive divergence and we can expect the momentum to rise up which is a leading indicator that price may also rise up so the rising price and it is also crossing the trend line from below to above so there are number of confirmatory signals first the leading signal is given by the momentum after this failure swing chances are momentum because it was hovering around at the oversold levels it may reverse and it actually is confirmed by the price action itself which crosses the trend line on the way up so there is a strong upside move to summarize in this video we discussed the construction of relative strength indicator that is RSI measure we also saw how to apply it as a momentum indicator or oscillator for understanding that current trend and probability of its reversal in this video we will discuss trend deviation or price oscillator indicator the construction of this measure or trend deviation or price oscillator measure is simple you have on numerator a certain period ma divided by a longer duration ma for example it can be 1 by 10 price oscillator which is one day ma divided by 10 day ma in this figure we have the price of brooklyn bancov and it's 50 day ma this is the 50 sorry 50 day ma within two bands plus 10 percent and minus 10 percent two bands and created and plies fluctuates within these bands on the bottom panel we have the same data but expressed in the form of price oscillator format notice that this is 1 by 50 format 1 day ma divided by 15 50 day ma and top 10 plus minus 10 percent bands around it the interpretation of 10 deviation indicator is very similar and based on the same principle as we have been discussing this method can be used to identify divergences as we did earlier overbought and oversold levels and it's also it appears to come into its own when it is used in conjunction with trend line construction for example notice here that the oscillator indicator witnesses some kind of weakness here it touches the overbought level and this comes down which indicates some kind of weakness in momentum which is confirmed by the price action itself which is on the top of the band of the upper 10 percent band and then starts moving down it crosses the ma level from top to bottom this is another confirmation that down move is there if you look at further at this place there is some kind of price pattern formation like reverse head and shoulder or trend line violation neckline or trend line you can call it the violation occurs from up to bottom to above in the momentum indicator or price and oscillator itself you notice that there is also some kind of violation of reverse head and shoulder pattern trend line or neckline violation and then momentum moves up which is further confirmed by the price here so price also moves from the lower part of the band towards the upper part so there is up movement in the price so this way this is confirmed basically momentum or trend deviation or price oscillator is giving us some leading signals which when confirmed by moving average cross over trend line violations is further confirmed by the price action itself. To summarize in this video we discussed the construction of trend deviation or price oscillator stochastic indicator or percent k percent d indicator in this video we'll discuss the role of stochastic indicator in

predicting price trends theory suggests that prices tend to close near and upper end of the trading range during an uptrend that means if if there is prices moving up if there's an uptrend then prices tend to close to the upper end of the range as the trend matures the tendency for prices to close away from the high and close near to the end of the session low of the end of session becomes more pronounced in a downward moving market the reverse conditions hold true that means when the downward move or bearish face is in strength prices will turn to close on the lower side while when it is maturing then prices will start to close on the higher side or upper side the stochastic indicator attempts to measure the points in a rising trend at which the closing prices tend to cluster around the lows for the period in question and vice versa since these are the conditions that signal trend reverses and this is plotted as two lines percent k line percent d line percent d line is the one that provides the major signals and therefore more important let us see how it works so the formula is simple percentage k is formula is 100 into c minus ln upon hn minus ln where c is the most recent close and ln and hn are the lowest and highest of the low and high price for the last n traded periods and can be five days or nine days or so on depending upon the analysis now percent d is some kind of moving average of percent k can be three day moving average three period moving average or five moving average of percent k since d is the moving average percent k line is more quicker more faster in absorbing the information while d is more slower because it is the moving average of percent k so this results in a momentum indicator with two lines percent k and percent d fluctuating between 0 and 100 so the measure is bounded between 0 and 100 and one can set up overbought and oversold levels at 75 to 85 percent and lower on the upside and 15 percent to 25 percent on the downside let's see how this works so here we have the price on the top five day percent k percent d indicators for five periods percent d is set up and percent k is also for five days this is plotted here so the signals are generated and overbought indication is given when percent d line crosses the extreme band on the outer side but actual signal is generated when a faster percent k line crosses from above to below so when percent k line crosses the percent d line from above to bottom the signal is generated this is a very similar to dual ma system short term and long term ma system that we have seen earlier this can also be modified for example you can set up a 10 5 system where percent k value is based on 10 days and then it is moved by five days the moving average which we use for calculation of percent d line is computed for five days so you can construct that system also you can further slow down the test stochastic by creating a 555 system that means instead of using the percent k line you can further slow down by using percent d line which replaces the percent k and then percent d is further smoothened by using some kind of ma maybe five day moving average of percent d so there is another dual system instead of using percent k we use percent d and it's moving average which is further slowed down stochastic now again signal generation is same we examine points at which the slowed down percent d line crosses the overbought and then see when the more faster percent d line crosses its moving average from above to down or down to above signal generation occurs but the actual final confirmation comes from the price action itself talking about crossovers here so normally the faster percent k line changes direction sooner than percent d line because percent d is moving average of percent k this means that the crossover will occur before the percent d line has reversed the direction for example here the crossover is occurring here so percent k line is crossing percent d line which is slower indicating some

kind of reversal but a more confirmatory signal comes from the percent slower percent d line itself when it turns direction now at this   stage if price is going up above a negative divergence is set up that means even if price is moving above percent k line fails to confirm a new high in the price and vice versa for lows thereby setting a negative divergence so a negative if there is a negative divergence this signals a reversal in trend and it is more it has a higher strength because now the percent k line is turning at overbought level so the chances of momentum falling is much higher and therefore prices are giving prices probably have the current trend is weak so they have less still and chances of reversal is high similar thing is happening here where now crossover has occurred from down to above it is going in this direction and if prices are still fall if let's say prices are still falling again a positive divergence has set up which indicates that now prices may go up to summarize in this video we discussed percent k percent d indicator or   stochastic indicator we noticed that it construction slightly different it's based on the fact that when prices are the maturing or some kind of trend like bull trend is maturing then prices have a tendency to end up at the lower points while if a bear run is maturing then the prices have tendency to more to close more at higher end of the movement it can be employed in a similar manner as any other momentum indicator it has advantage of slowing down the stochastic we construct percent k and percent d line we can further slow down by taking moving average of percent d indicator also it acts similarly to a dual MA system momentum is a generic term embracing many different types of momentum measures and oscillators momentum measures the rate at which prices rise or fall it gives useful indicators of latent strengths or weakness in a price trend this is because prices usually rise at their fastest pace well ahead of their peak and normally decline at their greatest speed before their ultimate low since markets generally spend more time in a rising than a falling phase the lead characteristic of momentum indicators is normally greater during rallies than during reactions oscillators reflect market sentiment and have different characters in primary bull and bear markets there are two basic methods of interpreting momentum momentum characteristics and momentum trend reversals momentum signals should always be used in conjunction with a trend reversal signal by the actual price .
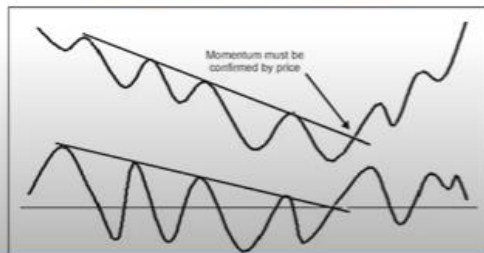
Momentum Trend Reversal Techniques

· Basic concepts such as trendline, moving average crossovers, price patterns can also be applied to momentum indicators

· Momentum indicators can be smoothed by incorporating MAs

· An example for an uptrend reversal is shown in the Figure here. When the line is violated, a trend reversal signal for the oscillator is generated

Bearish Momentum Trend Break

Momentum must be confirmed by price

Momentum Trend Reversal Techniques

- Warnings of trend reversal in the price would be offered by a reversal in the smoothed momentum index itself

- Or penetration of MA by a designated overbought and oversold levels
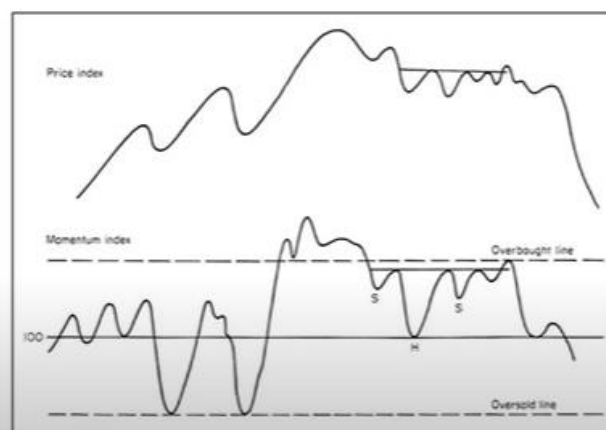
Bullish Momentum Trend Break

Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

Momentum Trend Reversal Techniques

- The fig. here provides (a) Directional Changes of Smoothed Momentum MAs. (b) Overbought and oversold Re-crossovers of Smoothed Momentum MAs
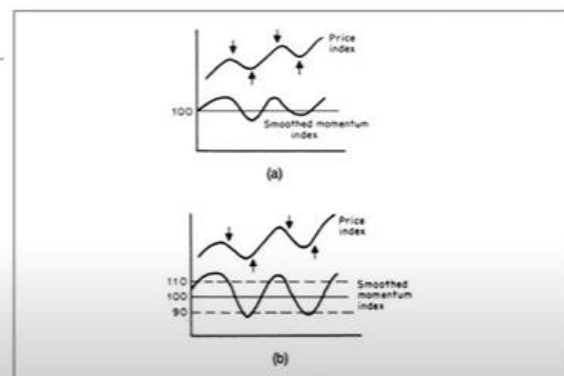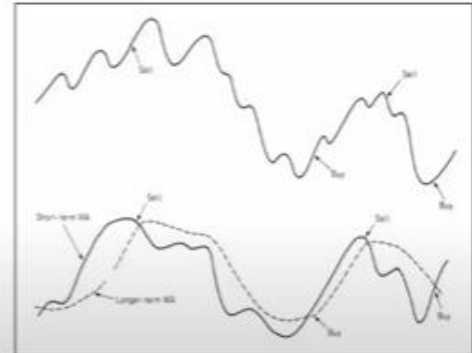

Overbought Momentum Pattern Completion

Momentum and Moving Averages

Momentum MA crossovers
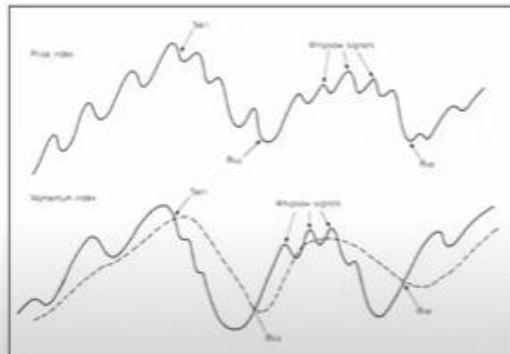
MA crossovers smoothed

Relative Strength Indicator (RSI)

- The formula for RSI is provided below

$$RSI = 100 - \frac{100}{1+RS}$$

- Here RS= the average of x days' up close prices divided by the average of the x days' down prices (can also compute in diff./return form)

- X here can be 28 days or any suitable period (e.g., 30 days, 45 days, 60 days) which is justified by the past price movements

- The indicator helps in the following manner:
  - Erratic price movements are smoothened; these movements would have affected RoC
  - It offers a constant trading band for comparison purposes; the indicator fluctuates within a constant band of 0 to 100

Relative Strength Indicator (RSI)

- The RSI Is Useful for Making Comparisons Between different Securities on the same chart

- Easier to establish universal standard for overbought and oversold benchmarks (e.g., 30 for oversold and 70 for overbough or 20/80, etc)

- Extreme values would mean less violations but strong signal

- Shorter time-span cause wider RSI oscillations and larger time-spans cause narrower swings: the breakout points can be appropriately adjusted

RSI interpretation

- Any time an RSI moves above its overbought or below its oversold zone, it indicates the security in question is ripe for a turn

- The significance depends upon the time

- The second crossover of the extreme level at points A and B usually offers good buy and sell alerts

- These divergences are often called failure swings

- The RSI can also be used in conjunction with trendline violations and pattern completions

RSI Failure Swing
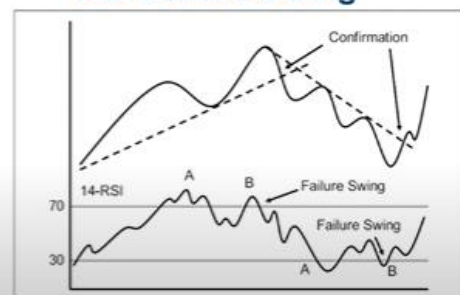
Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.
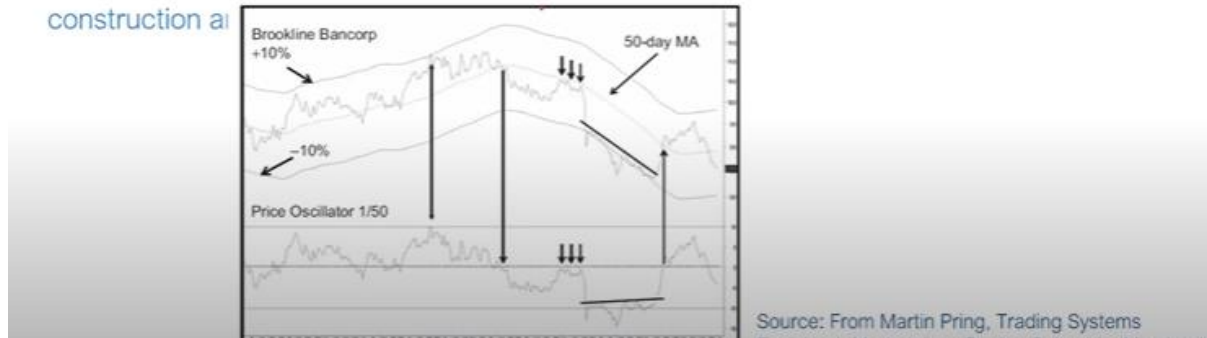
Trend deviation/Price oscillator

- 1/10 Price oscillator: 1day MA (close) is divided by 10-day MA

- The Fig. shows the price of Brookline Bancorp and its 50-day MA. Two bands at +10 and –10 percent of the 50-day MA have been plotted above and below it

- The bottom panel represents the same data but expressed in momentum (price oscillator) format
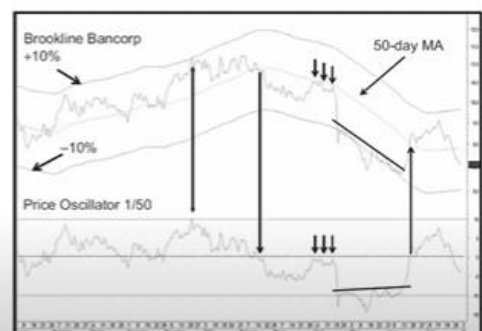
Trend deviation/Price oscillator

- The interpretation of a trend-deviation indicator is based on the same principles described earlier. This method can be used to identify divergences and overbought and oversold zones, but it appears to come into its own when used in conjunction with trendline construction a

Source: From Martin Pring, Trading Systems

Trend deviation/Price oscillator

- The interpretation of a trend-deviation indicator is based on the same principles described earlier. This method can be used to identify divergences and overbought and oversold zones, but it appears to come into its own when used in conjunction with trendline construction and MA crossovers.
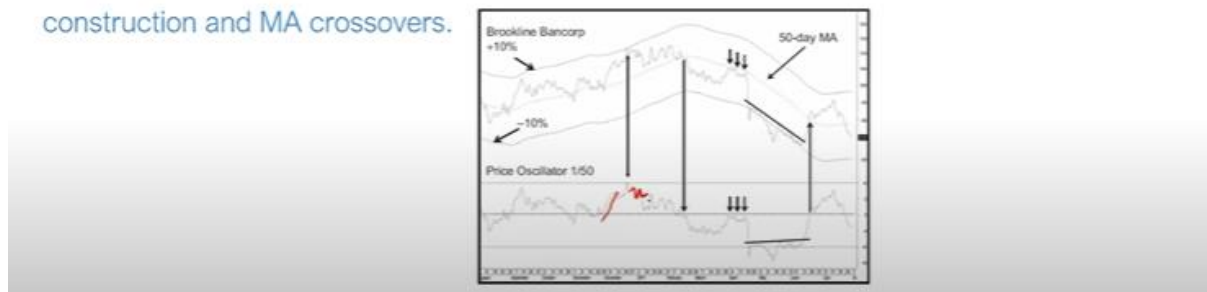
Stochastic Indicator

- Theory: Prices tend to close near the upper end of a trading range during an uptrend. As the trend matures, the tendency for prices to close away from the high of the session becomes pronounced

- In a downward-moving market, the reverse conditions hold true

- The stochastic indicator, therefore, attempts to measure the points in a rising trend at which the closing prices tend to cluster around the lows for the period in question, and vice versa, since these are the conditions that signal trend reversals

- It is plotted as two lines: the %K line and the %D line

- The %D line is the one that provides the major signals and is, therefore, more important

Stochastic Indicator

- $\%K = 100 \left[\dfrac{C - L_n}{H_n - L_n} \right]$

- Where C is the most recent close, and Ln and Hn are the are the lowest and highest of the low and high price for the last n traded periods (can be 5, 9, etc.)

- %D is some MA of % K (may be 3 period, 5 period etc.)

- This results in a momentum indicator with 2 lines fluctuating between 0 and 100

- Overbought and oversold levels can be plotted in 75%-85% on upside and 15%-25% on the downside

Stochastic Indicator

- An overbought indication is given when the %D line crosses the extreme band, but an actual sell alert is not indicated until the %K line crosses below

- When the two lines cross, they behave very similarly to a dual MA system

- 10/5 would represent a value of 10 for %K and 5 for %D

- The stochastic can be further slowed by using %D instead of %K and further using some MA of %D as signal line (instead of %D): 5/5/5 uses a factor of 5 to
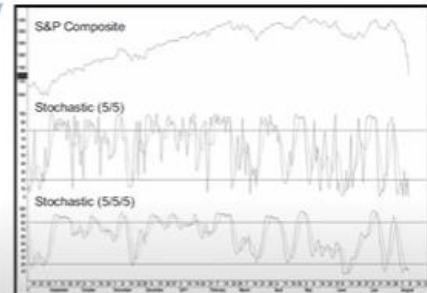
Source: From Martin Pring, Trading Systems Explained, Marketplace Books, Columbia, Maryland, 2008.

General Interpretation

- Crossovers: Normally, the faster %K line changes direction sooner than the %D line. This means that the crossover will occur before the %D line has reversed direction

- Stochastic Positive and Negative Divergences: %K fails to confirm a new high or low in the price, thereby setting up a divergence, which when confirmed, signals a change in trend