CRYPTO CURRENCIES TRADING
A Beginner's Guide

PRICE ACTION TRADING

The indicators in this book are based on buy-long mechanism, while to the sell-short investors, part of them need to be operated oppositely.

FOREWORD

How Can We Succeed in Crypto Market?

For the crowd in the midst of crypto market, the reasons of their failure are different, while the reasons of success are the same: success focusses on decision making; decision making focuses on analysis; analysis focuses on discovery; discovery focuses on learning; learning focuses on change.

Change

It refers to the change of ideology, the process of self-denial and the breaking from the false investment modes.

Learning

It is the learning of the right investment philosophy and method, the process of absorption and digestion, the process of improving through studying, practicing, and summarizing.

Discovery

There is no creativity but discovery. We can only discover the opportunity and market risk during the process of constant changing, through observing, thinking, and knowledge accumulation. We can discover anything that others cannot see through chart.

Analysis

It refers to the application of comprehensive quality and skill, the synthetic judgement of discoverable phenomenon and problem.

Decision Making

It refers to the decision of transaction after the risk and return judgement. In all, success, which needs the repeating study and practice, is not as taking candy from a baby. We will succeed only if we can persevere.

Contents

Chapter 1

Technical Analysis Fundament and Trend Theory

I am more and more impressed with the possibilities of history's repeating itself on many different counts. You do not get very far in Wall Street with the simple, convenient conclusion that a given level of prices is not too high.

Ben Graham

1.1 Summarization of Technical Analysis

We usually hear the Useless Theory of Technical Analysis in the crypto market. It maintains that the crypto messages determine everything. Maybe it is the most typical opinion in crypto market and the exact reason why crypto market is filled with high speculation and risk and the investors act according to hearsay.

I do not want to deny the importance of news to crypto market. Indeed, a piece of good news will cause the huge change in the crypto market. For example, there is the economic impact of Covid-19 and governments pumping massive amounts of money into economies. With investments such as property, savings, and bonds are less attractive, investors have been looking to assets with better prospects such as cryptocurrencies. Furthermore, China's Digital Currency Electronic Payments system will have some level of support for Ethereum applications. PayPal already allows US users to buy Bitcoin through their PayPal accounts, and will enable PayPal payments with Bitcoin too. Besides, a growing number of institutional investors are piling into Bitcoin in January 2021 caused the price of Bitcoin rocket up to $58500 (Trading View, 2021). The price of Ethereum, the second-largest cryptocurrency by market value, has also surged over the past few months, up from less than US$250 in July 2020 to about US$2,000 in February 2021 (Trading View, 2021). Crypto markets are notoriously volatile, so perhaps by the time you read this, the value might have gone up or down again. Almost all the investors have all made a fortune off their investment during this period. Such stories can be found here and there. Can we easily operate in such crypto market? When we get the good news and buy crypto after a period of rise, the price may climb too high and it will be too late to sell after a piece of bad news appears. We may earn little even lose a lot. Why does it happen? That is because both the depressed market and the market with mood surging upward have a characteristic that most of the investors have similar bearish or bullish outlook. Such coincident mood drives the crypto market move in one direction.

Crypto market is like a calm river and retail investors are like fishes in it. Once a piece of news about crypto market emerges, the river of market is aroused and billows heave on the river. However, the retail investors never feel any billow and stand far away from the decision-making unit. We can only know the news through all kinds of medium means. Nevertheless, many investors have already sold out their cryptocurrencies before we know the news. What is to be done then? Shall we buy winners or sell losers? What we mentioned above is only one of the shortcomings of operating according to the news.

What is more, macro-economic analysis can make a forecast through the research of reasons resulting in the changes of market. However, the strengths of the reasons are different. And the comprehension of the reasons will directly affect the operation. So, it is very difficult to operate well when we trade only according to macro-economic analysis or news.

And we may meet problems and may fail over and over when we want to seek for the market entry and exit if we only rely on fundamental analysis. After the failures, we must find another qualitative and quantitative analysis methods and must make a research on the historical information. Upon that many tools are developed to analyze the market trend and the utilization of technical analysis software to seek for the market entry and exit becomes the revolution of crypto operation. And what is the basis of technical analysis? The basis is the following three (3) axioms:

Axiom 1: Price action in the market discounts everything. Price change must be caused by some reasons.

Axiom 2: Prices move in trend which is the most fundamental concept in technical analysis.

Axiom 3: History tends to repeat itself.

That is to say, technical analysis is used to find the track of crypto development through the change of historical price. Namely, we try to predict the future through the analysis of the outcome. This method is opposite to fundamental analysis. As we mentioned above, the factors resulting in the price change are innumerable so that it is complicated to analyze. However, it is different when we use technical analysis to make a research on the future trend based on the price movement which is the only outcome all the factors finally form. So, we can see that technical analysis is obviously easier than fundamental analysis.

When we mention about the technical analysis, we should clarify a mistake area. That is, what the crypto experts or securities professionals say from day-to-day, such as 5-day MA, 10-day MA, 30-day MA, 9-day KD, MACD, 9-day RSI, 14-day RSI, Momentum Indicator, creates an illusion that these kinds of words are everything of technical analysis. The investors lose money with no doubt when they operate only according to the indicators mentioned above.

What is technical analysis? The meaning of Technical Analysis is far from the classical definition in the utilization. It has its own special meaning, referring specifically to the research of the activity of crypto market itself rather than the commodities traded in crypto market. Technical analysis is a science which records the trading process of a cryptocurrency and predicts the future trend of market with the method of chart.

Four (4) elements of technical analysis are Price, Volume, Time, and Space. The categories of technical analysis are as follows:

i. Category 1 is the analysis of the development direction of crypto market, namely crypto trend analysis. The systems of trendline and the pipeline derived from trendline are the most important analysis system. The breakout of mid long-term trend is especially important so that we should be watchful.

ii. Category 2 is candlestick pattern analysis. It is derived from Japanese rice market which used to measure the daily fluctuation of rice price and then was introduced into crypto market. As candlestick chart produced an obvious result, more and more users adopted it and became a category of technical theory finally. There will be much more detailed introduction in the following chapter.

iii. Category 3 is chart analysis. For convenience, we can divide the charts into two kinds according to their functions. The first kind is reversal pattern, such as Head and Shoulders Top (Bottom) Patterns, Double Tops or Bottoms, Triple Tops or Bottoms, V Top or Bottom, Rounding Top or Bottom. The second kind is continuation pattern, such as Triangle Pattern, Flag Pattern, Wedge Pattern, and Rectangle Pattern.

iv. Category 4 is Wave Theory. Wave Theory reflects the movement law of the states of mind and is extensively used in crypto market, for the behaviors of human group are almost in conformance with it.

v. Category 5 is Cycle Theory. The simple performance is Time Window. Cycle Theory maintains that the price movement displays cyclical change as the march of time. The measure of cycle starts from the bottom to another bottom forever. The repeated emergence of bottoms abides by certain cycle mode. Whatever the market reaction is during the period of time, cycle contracting, expanding, transforming, and disappearing are always granted by history. And these are the most difficult for us to master.

vi. Category 6 is the theory of Moving Average (MA). MA is the fluctuating curve formed by the ranking connection of several average values in chart. MA system quantizes Dow Theory and attempts to predict the future price trend. At the same time, the cost movement can be observed in MA chart.

vii. Category 7 is Market Profile. Every investors and traders should sum up their investment experience and proposed Market Profile which can offers a unique observation and analysis to market price movement. The Market Profile is mainly about price, time, who, and what. It reflects the process of price movement integrally. Trade Logic is mainly about the analysis of the reason, propulsion, method, and other key questions of price movement. Trade Time forms the value area and determines the trade opportunity. The three (3) aspects form the theory framework. A formula is proposed as follows:

Value = Time * Price

The seven (7) categories are the most popularly and widely used. And there are many technical analysis systems besides the categories above. The following will not continue to introduce one-by-one. We can choose certain systems to learn according to our habits.

The points need attention in technical analysis are as follows:

i. Use several technical analysis methods rather than only one to analyze the crypto market at the same time.

ii. The conclusion of predecessors and others should be adopted after our practice verification.
iii. Every conclusion should be revised again and again.
iv. When most of the people share a common outlook, they are usually the false side.
v. Technical analysis is always effective. It is the users themselves, not technical analysis, who show no effect.
vi. Man is the decisive factor.

1.2 Trend Theory

Why does trend exist in society? There are two reasons. First, human are social animals; second, human are advanced animals with thought. People can carry on thought communication through language, word, and information media they invent. They finally reach an agreement through study and struggle and have similar knowledge, mode of thought, rules of conduct, so that they have the sense of direction and act in the same direction to form trend. Let us cite an example to explain it. When we attend a wedding ceremony, we shall never cry without sake, for that all the people are laughing. Why shall we never cry? That is because the trend is full of enjoyment.

The trend exists in economic field as it does in social field, especially in crypto market. Cryptocurrencies price advances forwards in the form of trend. In any chart, we will find that any cryptocurrencies move with the method of trend during a certain time.

For better analysis, according to their function and duration different trends can be classified into three (3) kinds: primary trend (the general trend), secondary trend (the correction or primary trend), minor trend (daily fluctuation); the classifications based on fluctuation are below: uptrend (bullish market), downtrend (bearish market), and level trend (consolidation). The three (3) kinds of trend are not separate, that is, they are the complements to each other.

We have learned three (3) pieces of axiom in the last section. And the second axiom is Prices Moves in Trend. Trend is the most important concept in technical analysis. The trend mentioned in the axiom is main trend of price movement, including descending trend. We can duly judge the trend according to the distinct price motion. Horizontal movement is only one part of main trend and cannot exist independently for a long time. It belongs to midway patterns or reversal patterns. It is one kind of secondary trend to some extent.

Basic Points of Dow Theory:

Average price discounts everything, for it reflects the comprehensive market activities of innumerable investors, including far-sighted and well-informed persons. Average index discounts all kinds of known information, predictable situations that may affect the supply and demand relation, even the natural and man-made calamities.

For retail investors, most of them are office workers who are not suitable for short-term investment. Trading system makes the short-term operation difficult so that many retail investors pay attention to medium long-term investment for better profit. And the method we analyze the main trend is the key of benefiting from medium long-term investment.

How can we analyze the main trend movement? On the premise of constant capital in crypto market, we had better analyze the mood of all kinds of buyers and sellers and the function of their capital in the cycle of market motion by a simple model in the term of psychology (refer to Figure A).

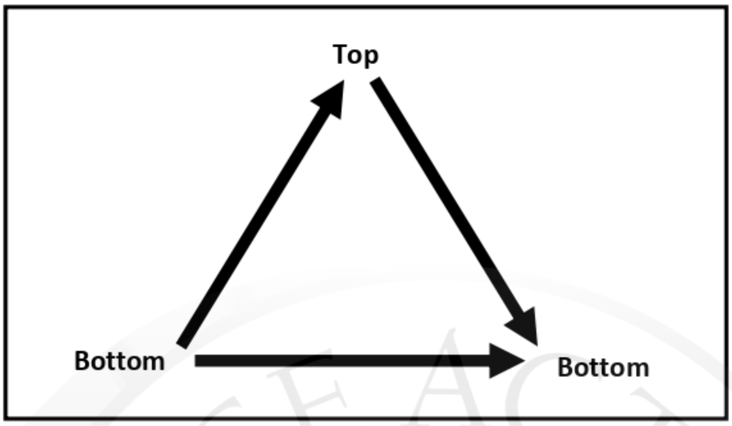


Figure A

When price is in high area, the retail investors buy cryptocurrencies crazily, while the first and second kinds of investors sell their cryptocurrencies. When the price is in mid area, institutional investors push up or weigh down price. When price is in bottom, the investors of the first kind consider that it is an opportunity to enter the market. The investors of the third kind undersell their cryptocurrencies.

The above is a simple model of market activity. It has two (2) premises. The first premise is that crypto market keeps constant, namely, both the supply of crypto and capital are constant. The second one is that investors can be divided into three (3) kinds, namely, the first kind is the investors with the best reaction (They can be retail and institutional investors); the second kind is the institutional investors with large capital; the third kind is the popular investors.

From this simple market model of cycle fluctuation, we can find that investors notice few opportunities and participate in the market rarely in the starting stage. During this period, the investors of the first kind with the best and fastest reaction are aware of the low-priced cryptocurrencies and grasp the opportunities to buy them with courage. As the investors with this awareness become more and more, the prices rise higher and higher. This may arouse the notice of institutional investors who are the investors of second kind. The market will turn to be boiling if good news becomes public at this time when institutional investors enter the market with large fund. Then the investors of the third kind crowd into the market as soon as they feel the investment profit. The market is crazier and crazier, and the price is strikingly high.

At this time, the investors with the best reaction sell all their cryptocurrencies decisively based on the judgement that the price level and investment risk are too high while the profit they win is general. Then the price begins to fall, and the institution investors exit the market as quickly as possible under the bad news running public. Many investors sell their cryptocurrencies, and the price falls violently upon that. Pieces of bad news are over the market and the market is in dark. Extensive investors swear not to enter crypto market with the heavy heart, even dropping into desperation. Then the variant and horrifying underselling starts. Cryptocurrencies price return to the relatively low level. Where are the cryptocurrencies which the retail investors sell? The investors with best reaction catch them. The new ascending trend is about to come. The crypto market repeats the process again and again.

Volume verifies trend. When the market is bullish, it can be shown as following: volume enlarges in the process of ascending trend and correction, while it shrinks in the process of rebound. The usable signals can only be created by relative volume in certain period. What is more, the decisive signals about market trend can only be created by price activities in the final analysis of Dow Theory. Volume provides only the assistant proof which can be used to help to explain some puzzling situations. Therefore, we should soften volume as our learning is deepened step-by-step.

"The existing trend comes to the end only when distinct reversal signals appear."

How to judge main trend as quickly as possible? Trendline, the best tool emerged. And then Pipeline, Tangent Line, and X-Line were developed based on Trendline. All of them make the judgement of main trend more specific, accurate, and effective. Every investor should master this method which will benefit him/her for the whole life.

Through the analysis of market activity model, we learn the basic law of crypto movement preliminarily, the functions each kind of investors play the importance of the early judgement of the main trend in operation. The investors who can judge the main trend quickly and accurately are the persons who have the best reaction, win the primary trend and gain the general profit.

Chapter 2

Drawing of Trendline and Candlestick

Trend is your best friend forever. We can grasp the main trend only if we grasp the tendency of long-term investors.

2.1 Price Movement Laws

2.1.1 The Law of Price Movement

Price is fluctuating around the equal level of the short and long. After the breakout of the original balance, the crypto price will find a new balance. We can describe specifically the law of price movement with the following method:

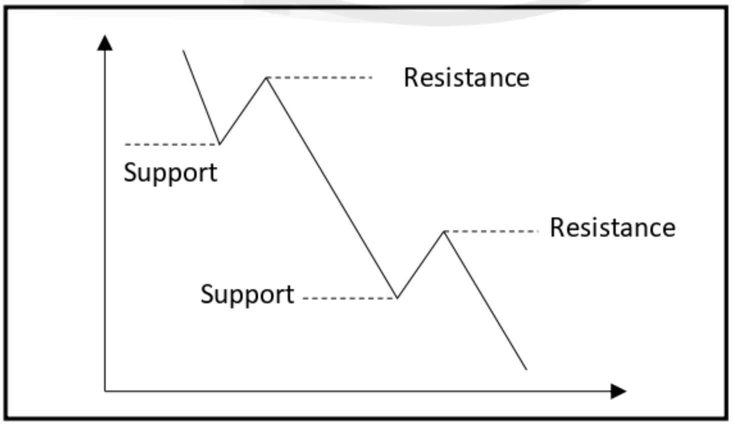
Continuously Consolidate -> Keep Balance -> Break Balance -> Form a New Balance -> Break Balance again -> Find a New Balance again…

Price moves in cycles according to this law. The winners usually earn money before or during the balance breakout. When original balance has been broken, and the new balance has been found, it may be too late to take action.

2.1.2 Support Level and Resistance Level

When the price falls around a certain level, then it stops falling, maybe it rebounds. The reason is that the long buy their coins in this area. The support level can keep the price from dropping. When the price rises around a certain level, and then it stops rising, even it may fall back. The reason is that the short sell their coins in this area. The resistance level can keep the price from rising.

*Note: The previous highs and lows are all important resistances and supports.



There are three (3) aspects affecting current price change. The first aspect is the duration in this area; the second one is the volume in this area; the third one is the distance from the support or resistance area to present one. Obviously, the longer the duration is, the bigger the volume is and the nearer the distance is the larger the influence will be and vice versa.

2.1.3 Trendline and Pipeline

1. Trendline

Trendline can measure price trend and we can judge the price trend clearly by the direction of trendline.

To get uptrend line, we can draw a straight line connecting two obvious low points in an uptrend; to get downtrend line, we can draw a straight line connecting two obvious high points in a downtrend. The uptrend line is a kind of support line, while the downtrend line is a kind of resistance line.

It is easy to draw a trendline. However, it does not mean that we have already mastered it. We need to resolve a lot of questions after drawing a trendline. The most urgent problem needed to resolve is to make sure that whether the straight line can be used, and whether it has a high accuracy as a reference to predict crypto market. If we want to get an effective trendline, we need to verify it in many ways. Firstly, there is a trend exactly. In general, the more frequently the trendline is touched, the more valid the trendline is. The longer the duration is, the more effective the trendline is.

Two (2) Functions of Trendline:

a. It restricts the price fluctuation in future (refer to Figure A).
b. After the trendline is broken out, the crypto price will reverse. The more effective and important the trendline which is broken out, the stronger the reversal signal is (refer to Figure B).

What is the key problem of trendline? How to judge whether the trendline is validly broken? Not any striking number can tell us whether the breakout is valid or not. It includes many man-made or subjective factors. There are several references for the validity judgement in specific analysis.

- ✓ The breakout of the close is more important than those of High or Low.
- ✓ After the prices penetrate the trendline, the breakout will be more valid when the distance between price and trendline becomes farther. People can establish a fluctuation limit according to particular situation of individual cryptocurrency, such as 3%.

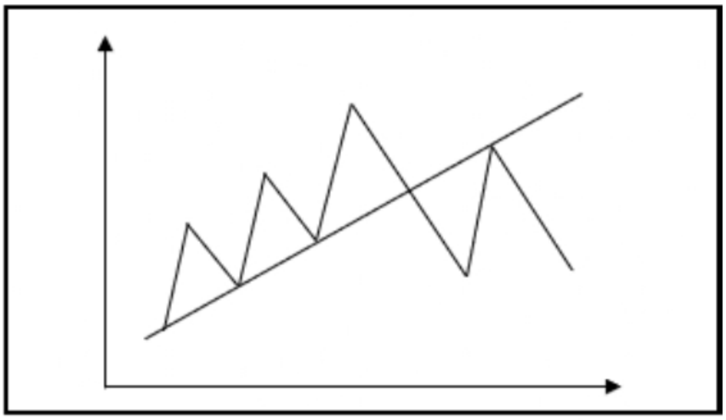


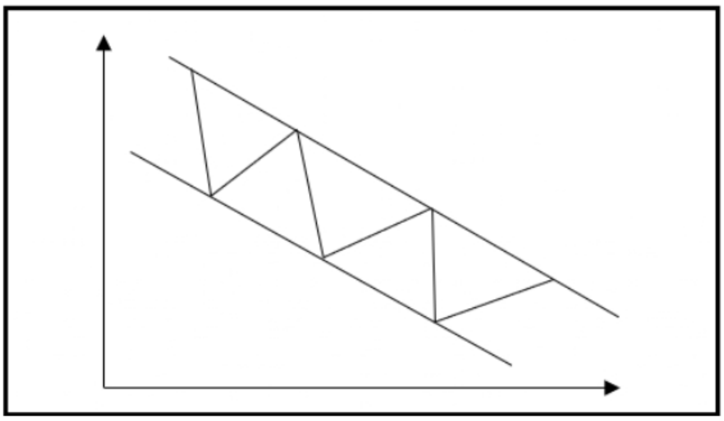
Figure A

Figure B

- ✓ After the penetration, the longer the duration of the price staying on the side of trendline is, the more valid the breakout is.

2. Pipeline

Pipeline is also called Channel Line, a method based on trendline. Pipeline is made up of two (2) parallel lines which are the ascending and descending channels.



*Note: Pipeline will be more important if the duration is longer. If a long ascending channel or descending channel is validly broken out, it represents the beginning of a new trend.

✓ Uptrend: The principle of one (1) buy point and three (3) sell points (refer Figure A).
  - One buy point: When the price touches the trendline, we should buy.
  - Three sell points:
    a. When the price touches the upper pipeline, we should sell.
    b. When the price upwards breaks out the upper pipeline, we should sell.
    c. When the price falls below the trendline, we should sell.

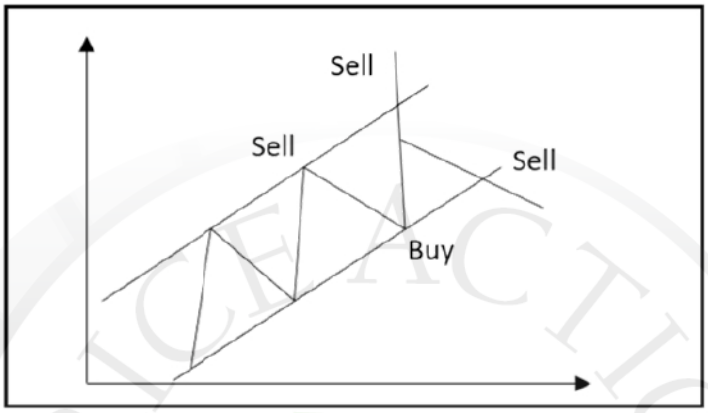


Figure A

✓ Downtrend: The principle of one (1) sell point and three (3) buy points (refer to Figure B).
  - One sell point: When the price touches the trendline, we should sell.
  - Three buy points:
    a. When the price touches the lower pipeline, we should buy.
    b. When the price falls below the pipeline, we should buy.
    c. When the price upwards breaks through the trendline, we should buy.

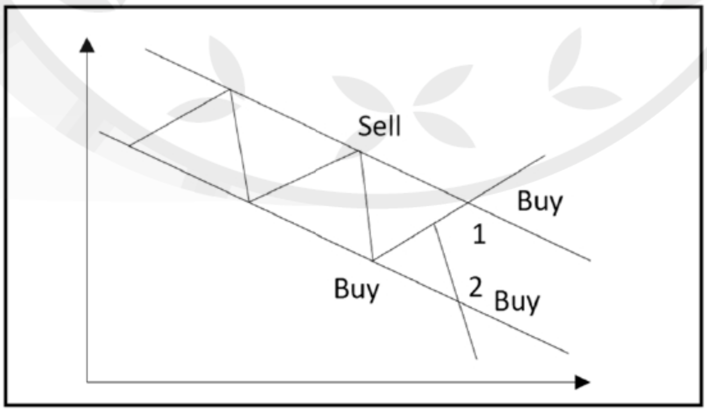


Figure B

2.2 Drawing of Candlestick

2.2.1 Drawing of Candlestick

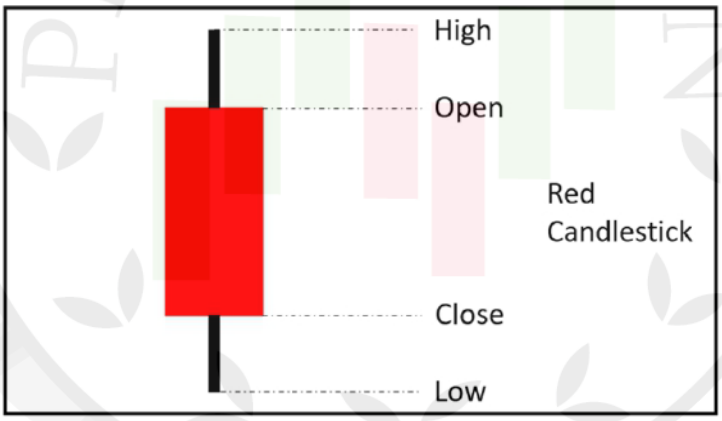
Candlestick is also called Japanese Line. It is thought to be originated in Japan about 200 years ago. At that time, there was neither crypto market, nor stock market in Japan; the candlestick was used only in the rice market. Candlestick research is based on its formation and pattern.

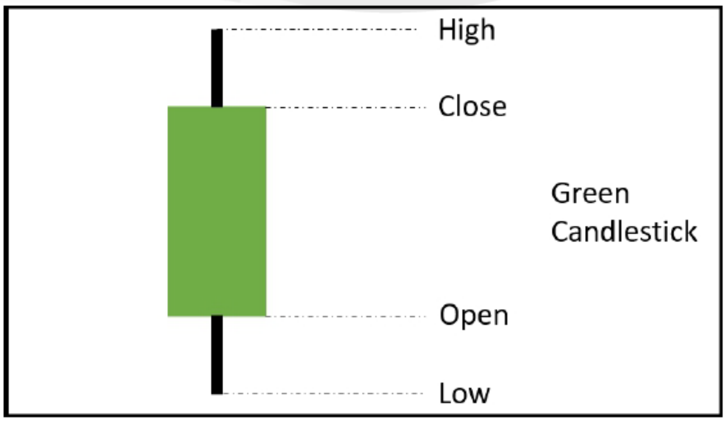
Candlestick is columnar shape, made up of shadows and body. The thin line above the body is called upper shadow, and the below one is called lower shadow. Body is divided into Red and Green.

A candlestick records price change condition of a cryptocurrency during the day. Daily candlesticks arranged by time can form the price movement from listing date on, which is called daily candlestick chart.

Fluctuation of price is mainly shown on the following four (4) prices: open price, high price, low price, and close price.

Like open price, High and Low are easily controlled by bankers to make a market on purpose.

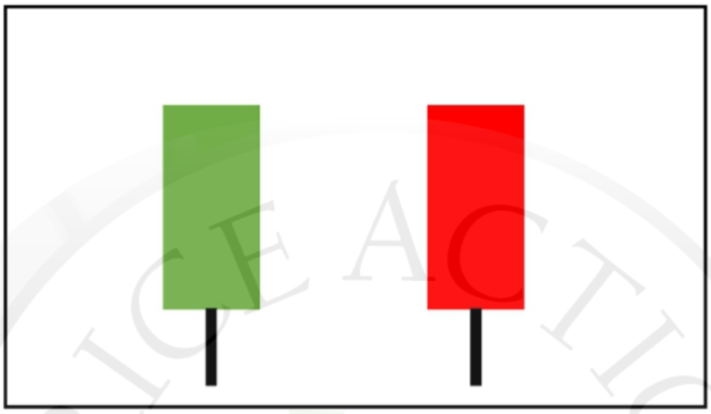




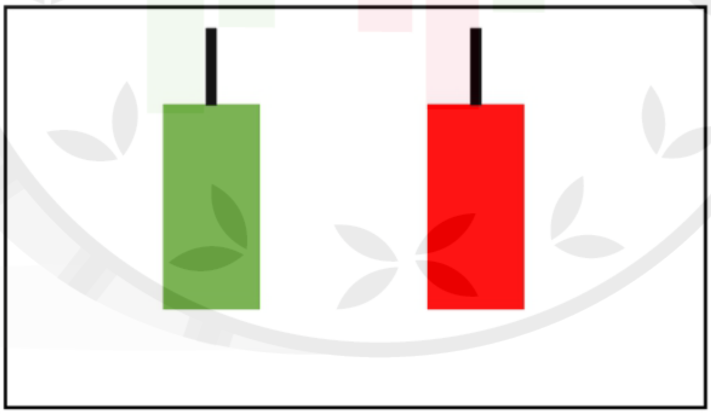
In chart, the middle rectangle is known as body. The upper and lower fine lines are called upper shadow and lower shadow. If Open is higher than Close, the body is Red. On the contrary, if Close is higher than Open, the body is Green.

In general, there are six (6) kinds of candlesticks are as follows:

i. Bald Green and Bald Red
   - These candlesticks have no upper shadows. They appear when the close price or open price equals the high.

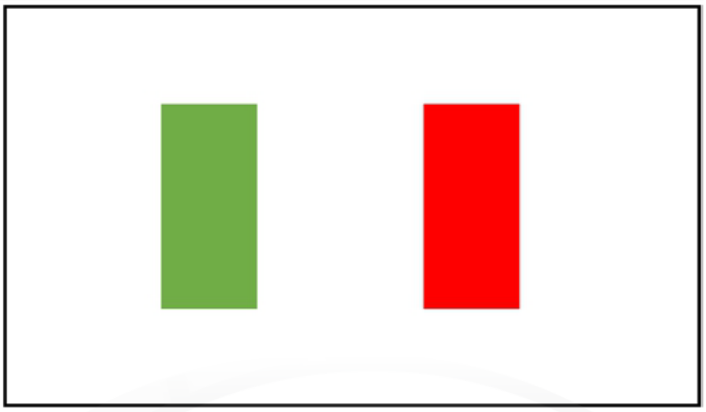


ii. Bare Green and Bare Red
   - These candlesticks have no lower shadows. They appear when the close price or open price equals the low.



iii. Bald and Bare

- These candlesticks have neither upper shadows nor lower shadows. They appear when the open price or close price equals the high price or low price, respectively.

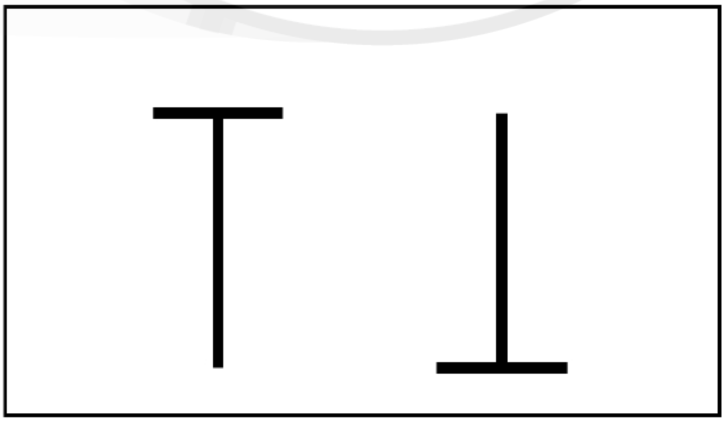


iv. Doji

- It appears when close price equals open price. It has no body as its characteristic.

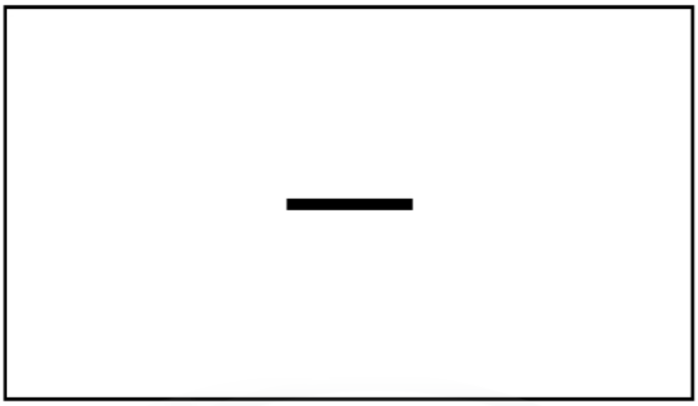
v. T Pattern and Inverted T Pattern

- The patterns look like T or inverted T after adding the condition of Bald or Bare based on Doji. They have no body and they have either upper or lower shadow.



vi. Single-price Pattern

- It appears when the four (4) prices equal. To each other. Especially, the price meets limit up or limit down at open.



2.2.2 Change of Candlestick

1. Three (3) Elements of Candlestick

- Green and Red of candlestick stand for overall trend.

- The length of candlestick stands for internal energy and trend strength.

- Shadows stands for reversal signal.

2. Interrelation of Candlesticks

- Long Bald and Bare Green candlestick is the highest form of ascending process. It is an extreme bull market.

- Long Bald and Bare Red candlestick is the highest form of descending process. It is an extreme bear market.

- Doji is the highest form of balance between the bull and the bear.

3. Interrelation of Long and Short Candlestick

- Length of candlestick stands for its internal dynamic energy, while the length of body stands for the strength of trend.

4. Strength Changes with Length of Candlestick

- When the length of a Green candlestick is from short to long, it means the strength of buyer becomes stronger and stronger.

- When the length of a Red candlestick is from short to long, it means the strength of seller becomes stronger and stronger.

- On the premise of little change of candlestick body, the longer the upper and lower shadows are, the stronger the market internal energy is, the more violent the competition between the long and short is.

5. Figure of the Change of Length and Energy

- The longer the shadow is, the stronger the reversal signal is. In general, when the upper shadow is more than twice the length of the body, it stands for top signal. The shorter the shadow is, the less the probability of the turning is. If the upper and lower shadows appear in the same candlestick, we should pay attention to the longer shadow. It represents the primary turning direction.

- The length change of the shadow is a gradual process. The change from the long upper shadow to the short one stands for the process from strong top signal to weak signal then to strong bottom signal.

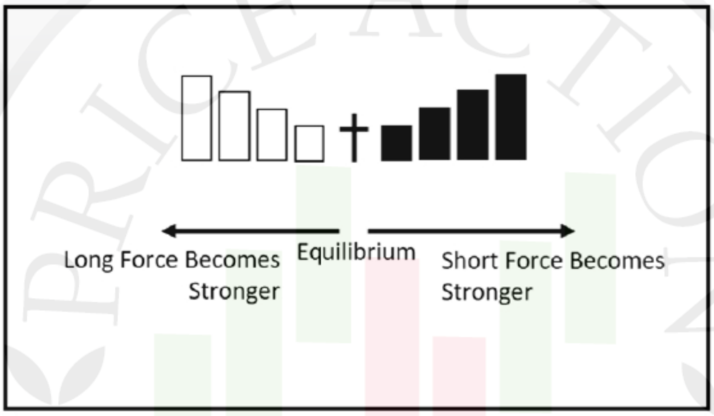
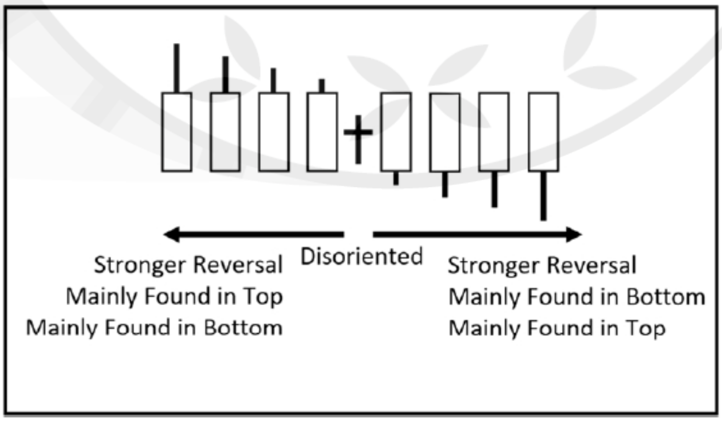


Figure of Interrelation of Long and Short Shadows and Momentum Switch:



2.2.3 Geometric Candlestick

Geometric Candlestick is a variation of Ordinary Candlestick. The difference is mainly on Y-axis. Ordinary Candlestick is isometric coordinate (which reflects the value change), while Geometric Candlestick is geometric coordinate (which reflects the ratio or value change).

For example, when the cryptocurrency price rises 10 points from 100 points, the profit ratio is 10%. While the other rises 10 points from 1000 points, the profit ratio is only 1%. Although the lengths of the two candlesticks are equal in Ordinary Candlestick, their profit ratios are different. How to reflect the profit of ratio in candlestick? Isometric Candlestick whose price rises by 10 points from 100 points is if another one whose price rises 100 points from 1000 points.

Merit of Geometric Candlestick: It can accurately reflect the profit ratio and loosen the thinking constraint of points and price, so it can reflect the trend change more accurately.

Chapter 3

Candlestick Pattern (2 Candlesticks)

A candlestick depicts the battle between Bulls (buyers) and Bears (sellers) over a given period of time. An analogy to this battle can be made between two (2) football teams, which we can also call the Bulls and the Bears.

3.1 Engulfing Pattern and Dark Cloud Cover

3.1.1 Engulfing Pattern

They are formed by two (2) candlesticks with several pre-requisites below:

a. There is an obvious uptrend or downtrend in advance, and the short-term uptrend or downtrend may also appear in advance.
b. The body of second candlestick must be long enough to embody the first one, as shown in Figures A and B. Note: Engulfing Pattern refers to the body rather than the upper and lower shadows.
c. There must be a longer Red candlestick after a Green one in an uptrend to form a bearish pattern of Engulfing.
d. There must be a longer Green candlestick after a Red one in a downtrend to form a bullish pattern of Engulfing.

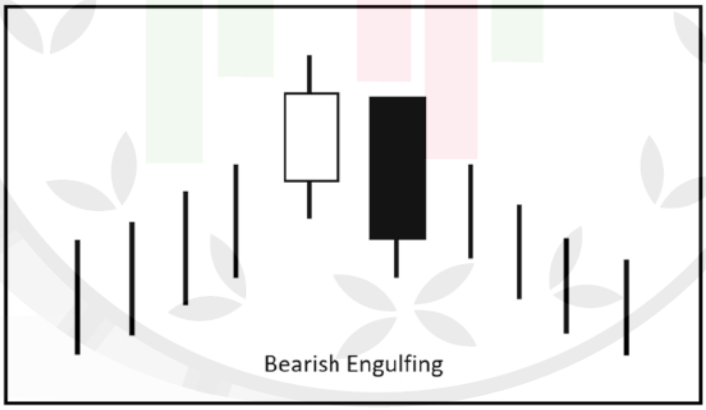


Figure A

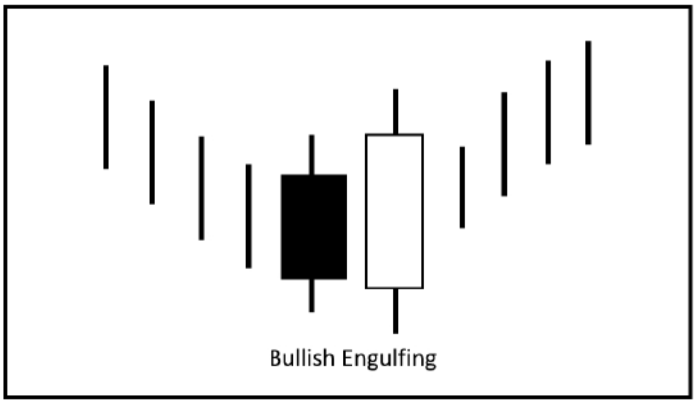
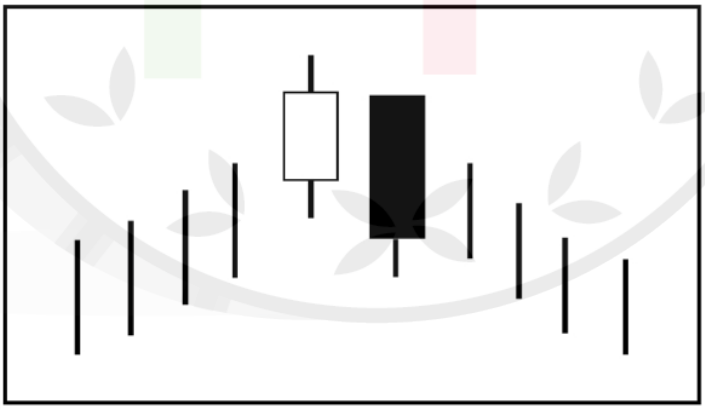


Figure B

From the pattern analysis, Engulfing Pattern easily appears on the one-day reversal. When the price of the one-day reversal hits a new high or low, the probability of Engulfing Pattern appearing is high.

The reversal force will be strengthened if Engulfing Pattern appears as follows: i) The larger the relative length of the first and second candlesticks is, the stronger the reversal is and ii) The more the second candlestick covers (such as two or more candlesticks), the stronger the force is.

3.1.2 Dark Cloud Cover



Dark Cloud Cover is made up of a Green candlestick and a Red one. Some analysts maintain that the close of the second candlestick must be lower than the half level of first candlestick's body so that the price trend can be changed. Otherwise, we had better wait for the further development of market before planning. It should be noted as follows:

a. The lower the close of the second candlestick is (it means that the next close is near the bottom of the first candlestick's body), the more obvious the trend reversal is.

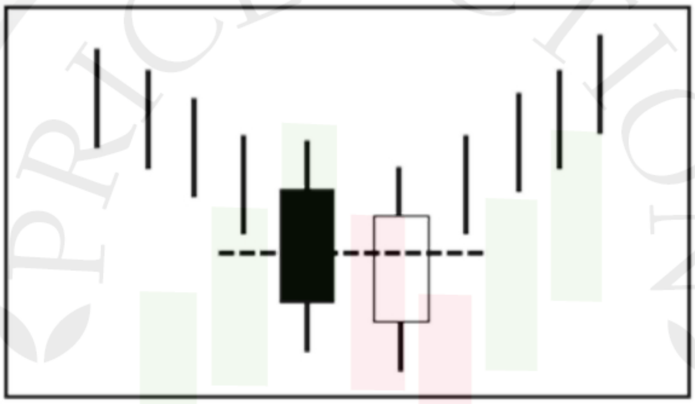
b. Dark Cloud Cover is made after price retracts following its rise exceeding the obvious resistance at the open stage. It shows that the bull cannot control the overall situation. The opportunity of top reversal increases.
c. The volume of the second candlestick at the early stage of open is also an important indicator. The greater the volume is, the more investors are locked in and the larger the likelihood of top reversal is.

3.2 Dawn Glimmer Emergence Harami and Flat Top

3.2.1 Dawn Glimmer Emergence

In candlestick analysis, we often find symmetrical examples. The same figure is known as Hanging at the top and Hammer at the bottom. The price may fall after Shooting Star appears at the top, while it may rise after Inverted Hammer appears at the bottom. Dawn Glimmer Emergence and Dark Cloud Cover are symmetrical examples as well.

The Figure of Dawn Glimmer Emergence:



The figure above is called Dawn Glimmer Emergence if it appears at the bottom. It shows that the trend may rise from bottom.

a. The principle is similar to Dark Cloud Cover, while we should operate oppositely.
b. The strength of rise increases as the length of the body of the second candlestick increases.
c. The close of the second Yang candlestick must be over half level of the body of the first candlestick.

Why can Dawn Glimmer Emergence form the reversal pattern?

a. The first Red candlestick still shows the downward trend.
b. The open of the second Green candlestick is lower than the close of the first candlestick.
c. A strong rebound appears to fill the gap and the price is over last then touches the high level of the body of Red candlestick. The long begin to store chips and cause the price rebound finally.

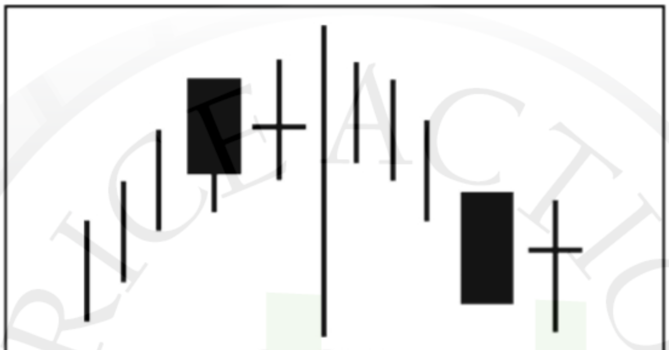
3.2.2 Harami

Harami means pregnancy in Japanese. It is one of reversal patterns and it can appear at the top or bottom.

For example, the short body of the candlestick, no matter Red or Green, appears after the long body of candlestick in uptrend. It is Harami which shows the weak intensity of rise and the trend may decline from the top.

Although the candlestick with short body can be Green or Red in Harami, a Red candlestick usually appears in the top. On the contrary, there is no analysis significance for a single Harami.

Cross Fetus is one of the patterns of Harami.

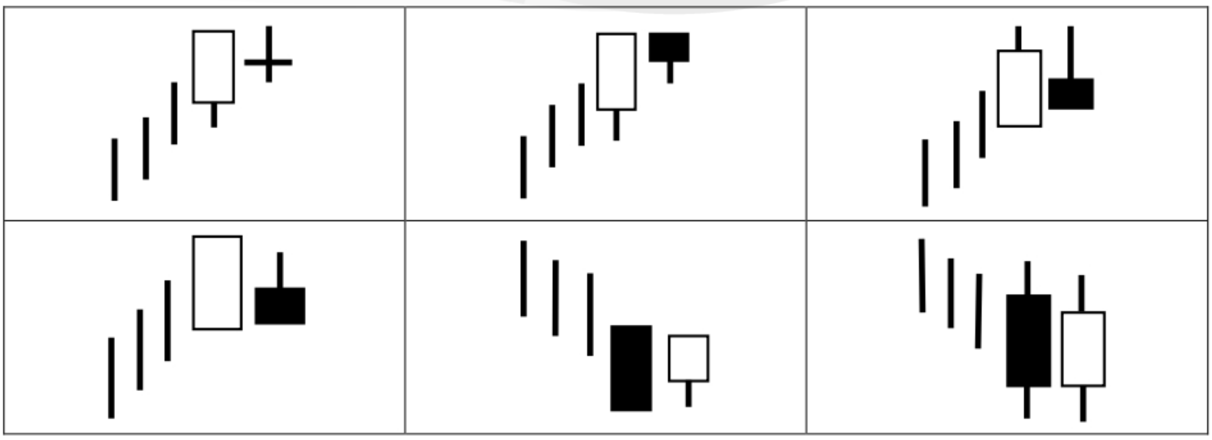


Cross Fetus

Cross Fetus appears after a long candlestick whether in an uptrend or downtrend. It shows that the force of rise or decline gradually disappears and the reversal likelihood will be naturally higher.

3.2.3 Flat Top and Flat Bottom

Flat Top and Flat Bottom are also two (2) kinds of reversal patterns. The Figures of Flat Top and Flat Bottom are as follows:



The direction of price can be inferred according to candlestick pattern of several days. The relative strength of bull and bear can be found from candlestick pattern. That is, we can judge whether the bull takes advantage over the bear, whether it is temporary or absolute advantage, based on candlestick pattern. The market quotation can be surmised through the combination of two (2) candlesticks.

Chapter 4

Candlestick Pattern (Multi-candlesticks)

The greater the uncertainty, the more people are influenced by the market trends; and the greater the influence of trend following speculation, the more uncertain the situation becomes.

George Soros

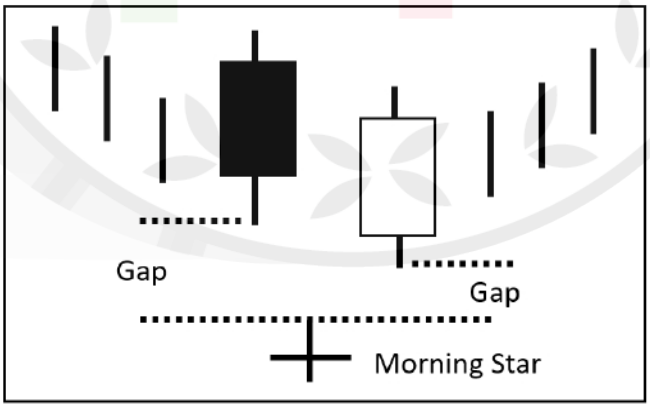
4.1 Pattern of Three Candlesticks

There are many patterns with two (2) candlesticks, while three (3) candlesticks patterns are more complicated. However, the ways of analysis are similar. We judge the strength of the long and short and observe the change of investor's mood and anticipate the flow of funds in the market based on the relative position of the last candlestick.

4.1.1 Morning Star

Morning Star has a meaning that the future is bright as the sun is going to rise and the market is naturally good.

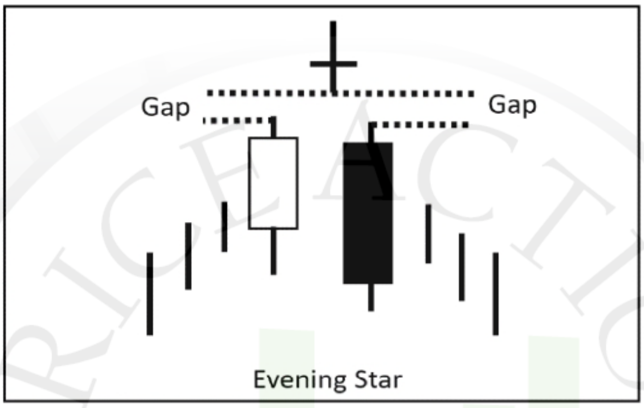
a. Red candlestick with a long body appears in a downtrend.
b. The body of the candlestick is reduced with downside gap forming the main part of star. The star candlestick can be Red or Green.
c. A Green candlestick rebounds into the scope of the first Red One. It will be better when the Green candlestick rises beyond the first one.



4.1.2 Evening Star

The setting sun is infinitely good; be just near evening. The sun will be downhill as Evening Star appears. Therefore, the chart of Evening Star stands for the price falling from top. Upon that, we should wait for opportunities. The figure of Evening Star, composed of three (3) parts, is just opposite to Morning Star.

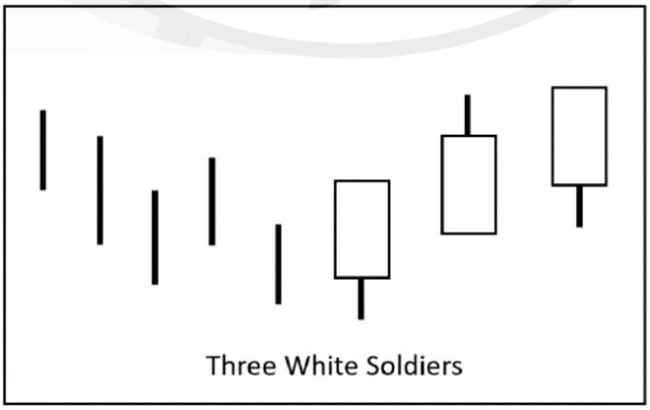
a. The trend continues to rise, and it appears a Yang candlestick with long body.
b. The second candlestick with reduced volatility is a part of Evening Star.
c. Red candlestick appears and falls beyond the first Green candlestick. If the star is a cross shape, the role of Evening Star will be strengthened.



4.1.3 Three White Soldiers

The figure of Three White Soldiers shows an expectation of bottom reversal. The daily close of the three (3) candlesticks moves up, displaying the headstrong spirit of the soldiers vividly. If Three White Soldiers appears in the low-cost area or in the calm market, the probability of upward reversal enhances.

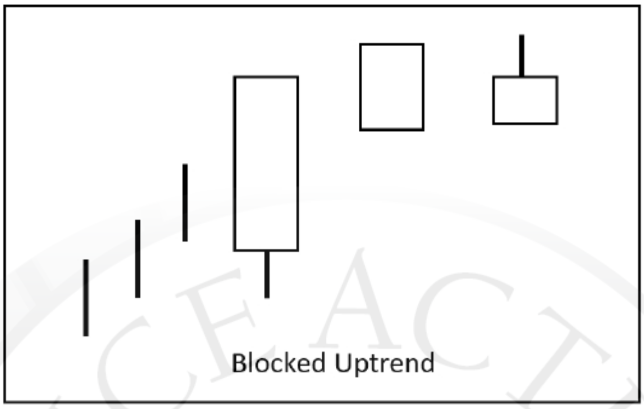
*Note: The price rises slowly but steadily and the close is near the high.



There is a clear difference between the figure of Blocked Uptrend and Three White Soldiers. For Three White Soldiers, the close is near the high, while there is a slight shadow in the last candlestick of Blocked Uptrend.

Two points should be noted:

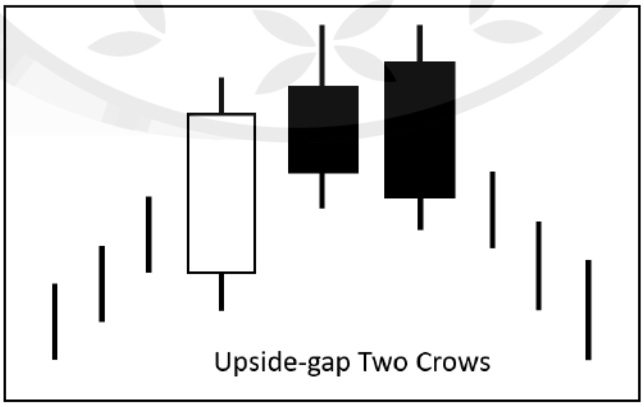
a. The body of candlestick shortens gradually.
b. The final Green candlestick has a slight upper shadow.



4.1.4 Upside-gap Two Crows

The reversal pattern is composed of two Red candlesticks in an uptrend. There is a gap between the open of the first Red candlestick and the last with a take-off shape. However, because of subsequent weakness, the close is below the last.

The body of the second Red candlestick is relatively long. Better figure is that the open of second Red candlestick is higher than that of the first one and the close of the second is lower than that of the first one.



The figure of Upside-gap shows that the market comes off early highs for two (2) consecutive days and forms two (2) Red candlesticks finally. The long are worried about the future market according to performance above and carry out profit-taking and finally resulting in the pressure of downward adjustment.

4.2 Other Candlestick Patterns

4.2.1 Three Black Crows

Three Black Crows is made up of three (3) Red candlesticks. The closes of three (3) days decline one-by-one.

*Notes:

a. There are three (3) continuous Red candlesticks.

b. All the closes hit new low.

c. The close is near the low for three (3) trading days.

d. The open is within the body of the previous candlestick for three (3) trading days.

e. The body of the first Red candlestick is preferably lower than the previous high.

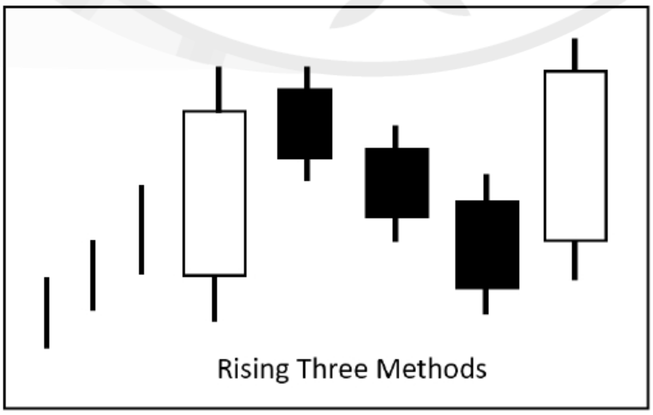
4.2.2 Rising Three Methods

*Notes:

a. A long Green candlestick appears firstly.

b. Three Red candlesticks with short bodies appear and their closes continue to decline, and fluctuations are within the candlestick of the first day.

c. A strong Yang candlestick appears and the close is over that of the first day.

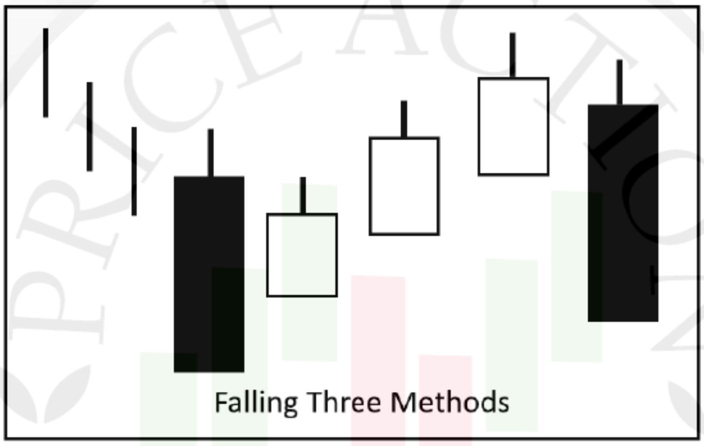


The figure of Rising Three Methods is similar to that of Three Black Crows. There are three (3) Red candlesticks in the middle of these two (2) figures, while the results are different.

4.2.3 Falling Three Methods

The opposite pattern of Rising Three (3) Methods is Falling Three (3) Methods. It implies that the price will decline after consolidation. The process of Falling Three (3) Methods is similar to Rising Three (3) Methods with opposite direction. In short, it refers to the following three (3) steps:

a. There is a long Red candlestick.
b. Three or more short candlesticks reflect the rebound of the weak market.
c. The fifth Red violent candlestick falls below the first close price and breaks the deadlock.



Chapter 5

Pattern Analysis

The ever-victorious investors have the same characteristics: most of the trading strategies are based on graph.

5.1 Reversal Pattern

Reversal pattern is a signal that the crypto reverses from uptrend (downtrend) to downtrend (uptrend).

5.1.1 Head Shoulders Top and Head Shoulders Bottom

1. Head Shoulders Top

✓ Steps of Pattern Formation:

i. The crypto price has risen for a long period, and the volume increases gradually. At the moment the pressure of profit taking increases, later the price falls and the volume decreases; the volume corresponding to the high area decreases a lot, then the left shoulder is formed.

ii. The price goes up again and breaks the apex of the left shoulder, and the volume enlarges accompanied by large turnover; at the moment, the holders and catchers are in a panic, and they sell off their cryptocurrencies in succession; the price falls to the previous low point, which is absolutely lower than the peak of the left shoulder. Upon that, the head is formed.

iii. However, the new highs are quickly turned back, and the downside is tested again (continuing neckline), the volume is low. Tentative buying re-emerges and the market rallies once more but fails to take out the previous high. This last top is considered the right shoulder.

iv. The pattern is formed when the close breakouts the neckline. If the fluctuation is more than 3% of the market price, it is a valid breakout.

*Notes:

a. Pattern: There is a visible neckline, and the highs of both shoulders are nearly equal. Most of the right shoulders are lower than the left ones (less than 3% of the height).

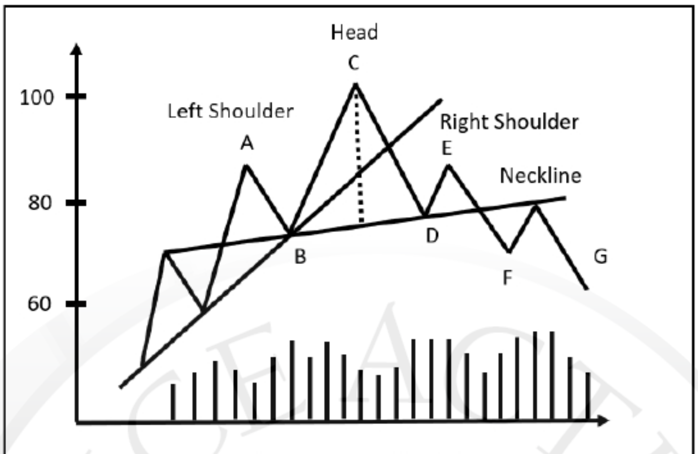
b. Volume: Left Shoulder>Head> Right Shoulder

Right Shoulder =Head=Left Shoulder

Left Shoulder < Head<Right Shoulder.

Three (3) possible circumstances account for 30% respectively.

i. Break: The neckline is broken down; the volume diminishes or enlarges.
ii. Dump Area: The price downwards breaks through the neckline; the rebound cannot exceed the neckline.
iii. Dropdown: The distance between the Head and the Neckline.



Ideal Mode of Head-Shoulders Top

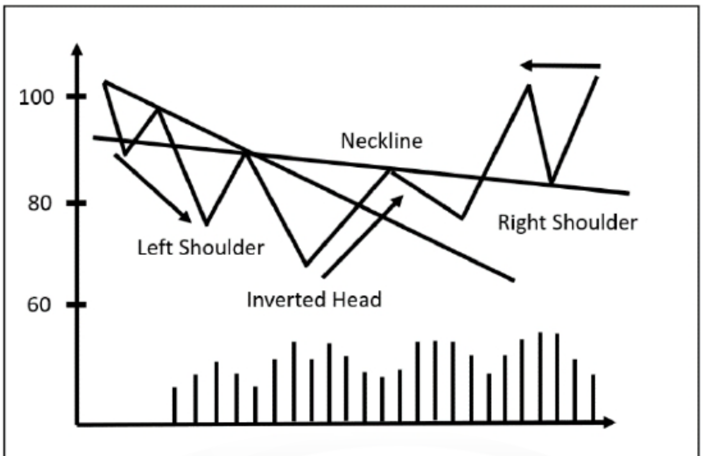
*Note: If the right shoulder is higher than the left one, the pattern may fail; if the neckline is broken up by the rebound, the pattern will fail probably.

2. Head Shoulders Bottom

✓ Steps of Pattern Formation:

i. Left Shoulder: The crypto has fallen for a long period, and the volume weakens gradually; then the rebound appears (secondary rise). The left shoulder should be accompanied by no significant increase in volume compared with that of the last several days.
ii. Head: The price goes on declining, and it is lower than the lowest price of the left shoulder; in the process of the decline, the volume does not diminish but increases; when the left low price is hovering, the volume shrinks quickly, the price rallies and exceeds the low area of left shoulder, and the volume increases rapidly over the left shoulder.
iii. Right Shoulder: The price drops at the third time; the volume is obviously lower than that of the left shoulder and the head. When it approaches the lowest price of the head, the rebound will begin.
iv. The Breakout of the Neckline: When the head shoulder bottom is formed, we can draw upward or downward line by connecting the peak of the left shoulder and the high of the bottom. The rise speed of the price is accompanied with heavy volume when it

breaks the neckline. When the neckline is broken by the close and the fluctuation is more than 3% of the market price, it is a valid breakout.



*Note: When the Head Shoulders Bottom is formed, the neckline is broken accompanied with visible increase in volume, otherwise it may be a false breakout.

3. Multiple Head Shoulders Patterns (Two Heads, Two Shoulders, Two Heads Multi-shoulders, Multi-heads, and Multi-shoulders)

Types of Patterns:

These patterns are formed by the price movement in a long period. They are divided into three types:

i. In general, the usual formation of the pattern includes two similar left shoulders, a head and two similar right shoulders.
ii. This pattern includes two heads and one shoulder or more than two shoulders in left and right sides.
iii. The head is not so obvious, and there are two shoulders in the right and the left sides.

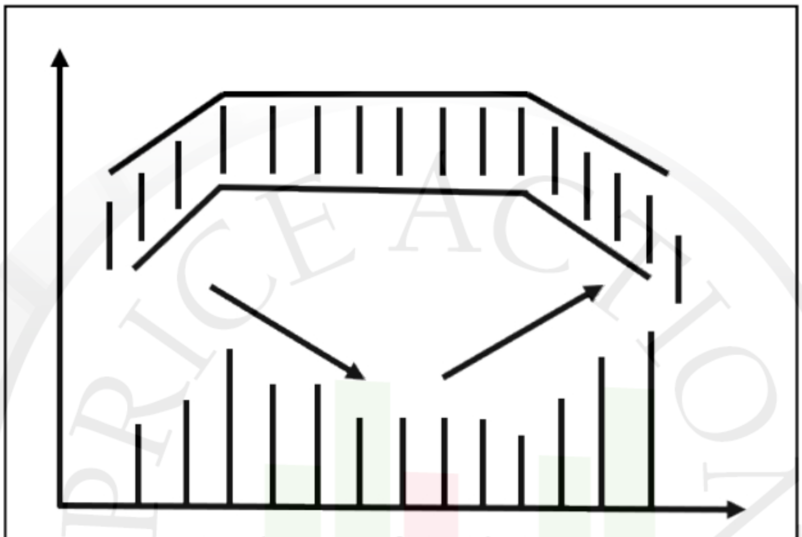
Characteristics:

- ✓ Multiple Head Shoulders Patterns are much more complicated than the Head Shoulder Pattern, but it is obvious for us to confirm them.
- ✓ For the fall extents of left and right or the shoulder and head in Multiple Head Shoulders Pattern are not the same level, it is not easy to draw neckline. However, we can connect the right lows (highs) of the two shoulders to form the neckline.
- ✓ It always turns up at the bottom or the top of the original trend, but it is more frequent to appear at the bottom than the top.

5.1.2 Rounding Top and Rounding Bottom

1. Rounding Top

   i. Pattern: As the cryptocurrency price goes up in an arch way, we connect the Short-term highs point to form the pattern. The area which the price lingers is called bowl handle.
   ii. Volume: It is in arch line pattern.
   iii. Breakout: The price rallies after the breakout of bowl handle.
   iv. Dump Area: The price rallies after the downward breakout of bowl handle.
   v. Drawdown: The drawdown is so heavy that it cannot be measured.



Reversal Pattern of Rounding Top

2. Rounding Bottom

   i. The chart pattern is opposite to Rounding Top, while the judgment and the volume are the same as the Rounding Top.

5.1.3 Double Tops and Double Bottoms

1. Double Tops (M Head)

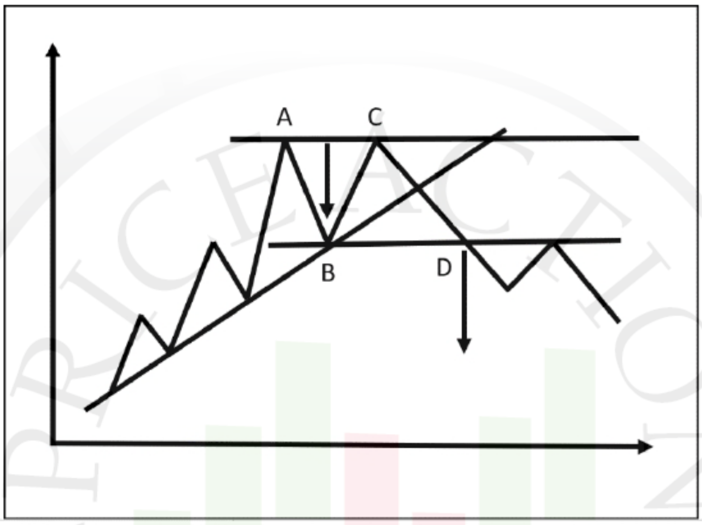
   i. Pattern: Namely the M Head. The low of the first fallback is about 10%-20% from the highest price; it includes a visible neckline, two equal peaks. And generally, the second head is higher than the first, but never over 3%.
   ii. Volume: Two of the two heads are accompanied by heavy volume, and the volume of the second head is much lighter than that of the first head.
   iii. Breakout: The neckline is broken down, and the volume diminishes or enlarges.

iv. Dump Area: The broken area of neckline or the rebound zone.
v. Increase: The distance from the highest point of the head to the neckline.

*Note: Sometimes Double Tops Pattern emerges in the consolidation.

Characteristics of Double Tops:

- ✓ When a cryptocurrency jumps rapidly to some price level, it is bound to fall. There remains large volume at its peak, then the price drops gradually with the volume shrinking, and when the price rallies towards nearby previous peak again, the volume increases again. However, the volume is not similar to that of the previous peak.
- ✓ Through connecting the low point of the two peaks, we can get the neckline.



*Notes:

a. Volume: The volume of the third peak is less than that of previous high.
b. Dump Area: The area is formed when the price downwards breaks the neckline or when the price rallies under the neckline.
c. Dropdown: The minimal dropdown is the vertical distance which is from the head to the neckline.
d. The neckline is downwards broken with a normal volume. However, if it goes on falling, the volume must enlarge.

2. Double Bottoms (W Bottom) (elide)

5.1.4 Lurking Bottoms

i. Pattern: The price moves in a narrow range by sideway.
ii. Volume: Quite light.
iii. Breakout: With huge volume.
iv. Store Area: Volume enlarges obviously.
v. Increase: It is too high to measure.

*Note: It lasts for a long period with unceasing increase in volume.

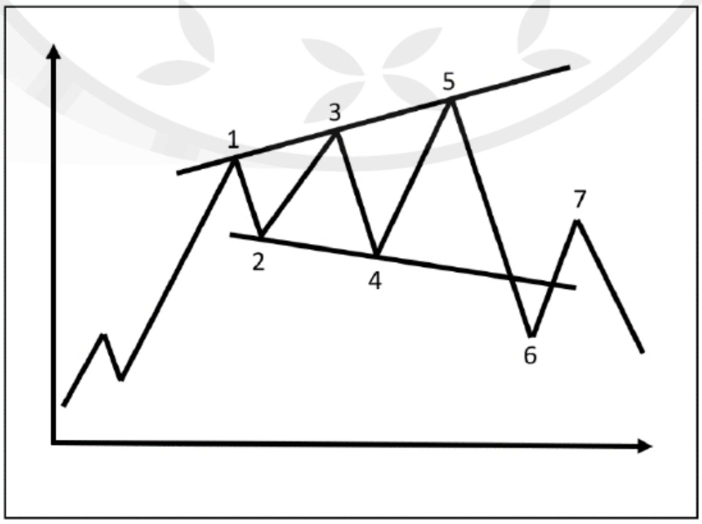
5.1.5 V Pattern

1. Pattern
   i. It is an extreme pattern; the original V Pattern is a type of steep decline and sharp rise while the inverted V Pattern is a type of steep fall.

2. Principal Characteristics
   i. Sharp rise and steep decline which emerge in the new market and the immature market caused by the publication of good or bad news.
   ii. The appearance frequency of the inverted V Pattern is larger than that of the original V Pattern; Crash is usually displayed by V Pattern.
   iii. Volume: The rise of the V Pattern needs the huge volume, while the inverted V Pattern falls with no such huge volume. However, if it continues to fall, the volume will enlarge.

5.1.6 Megaphones Pattern

i. Pattern: It is composed by three (3) tops which are higher successively and two (2) lows which are lower successively. This pattern contains two (2) channels.



ii. Volume: Irregular huge volume.
iii. Volatility: There is no clear measure method.

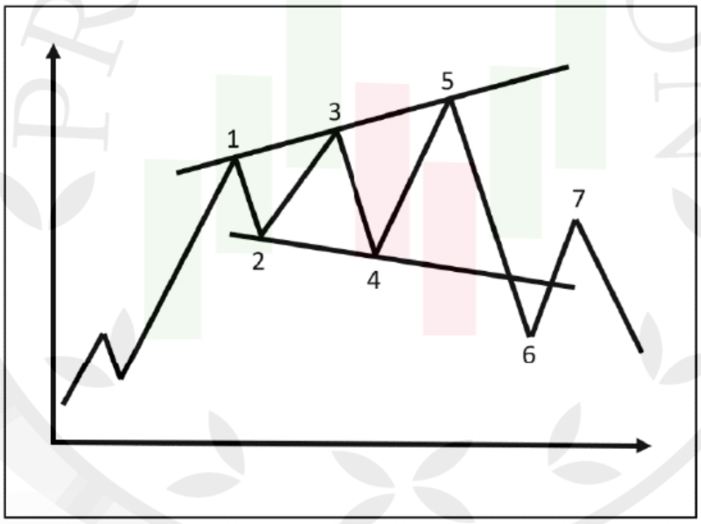
5.1.7 Diamond Pattern

The Diamond reversal formation might be described either as more or less Complex Head-and-Shoulders with a V-shaped neckline, or as a Broadening Formation, which after two or three "swings", suddenly reverts into a regular Triangle which is nearly always of the symmetrical form.

Its "natural habitat" is Major Tops and the high-volume tops which precede extensive Intermediate reactions.

i. Pattern: Visible upper and lower channel.
ii. Volume: Diminish gradually.
iii. Breakout: Downwards break through the right ascending channel or upwards break through the right descending one.
iv. Volatility: The distance from the high to the low.

The cryptocurrency price stops advancing after a rapid movement but fluctuates in a narrow range area.

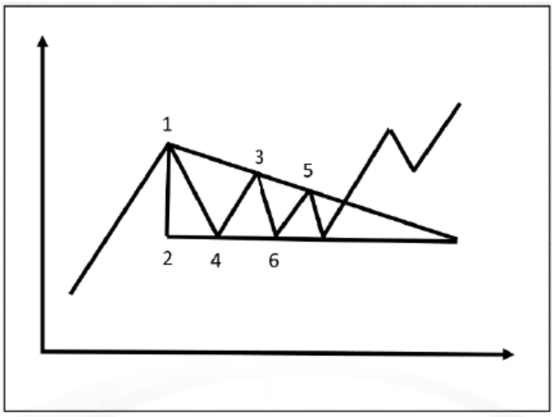


5.2 Consolidation Pattern

5.2.1 Triangle

i. Pattern: The pattern is formed by connecting the short-term lows and highs. There are two (2) obvious lows and highs.
ii. Volume: It diminished in the process of being formed of the chart.
iii. Breakout: The upward breakout is generally accompanied by a market that increase in volume, while the heavy volume is not necessarily required in downward breakout.

iv. Mostly, it turns up in the Consolidation Pattern; while it is a quarter of probability for it to appear in reversal pattern.
v. Volatility Measure: The minimal volatility of the cryptocurrency price change is the vertical distance from the vertex to the bottom of the triangle.



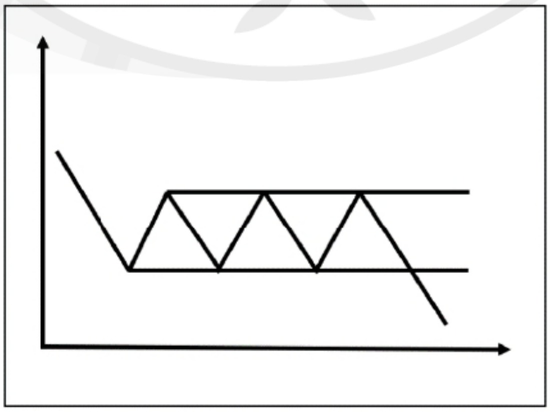
5.2.2 Rectangle

Characteristics:

Rectangle is formed by a series of horizontal price movements. And the limits of volume fluctuation become small. In the process of the pattern formation, the volume is lessening day by day. There is a heavy volume on the upward breakout, but there is not huge volume in downward breakout.

*Notes:

i. It does not appear so frequently in reversal pattern as the symmetrical triangle.
ii. It is a very common pattern for the short-term investors who buy low and sell high. It is a matched competition between the short and the long. At last, one side will be exhausted, and nobody can predict which side will win.
iii. Future Price Movement: Once the pattern is broken, the fluctuation is the spread from the upper limit to the lower limit at least.



5.2.3 Flag Pattern

1. Pattern

    i. Flag Pattern is like a flag on the top of the flagpole. It reflects that the price is in an intermediate state temporarily after the continuous sharp rise and severe drop of the price.

2. Type

    i. Flag Pattern is divided into bullish flag and bearish flag. In some case, the flag is parallelogram or rectangle, while sometimes it is triangle.

3. Characteristic of Bullish Flag

    i. The price rises continuously in large angle with heavy volume.
    ii. The flag forms an opposite movement in a small angle with the main trend.
    iii. The volume of the flag lessens day-by-day.
    iv. The time range of the flag is not more than four (4) weeks.
    v. If the price of the flag breaks through upwards, it needs heavy volume to support.

4. Characteristic of Bearish Flag

    i. The price corresponding to the flagpole goes down constantly.
    ii. The volume of the flag is irregular.
    iii. The downward breakout of the flag does not require heavy volume.
    iv. Dropdown: It is the flagpole's length at least.

Chapter 6

Gap and Moving Average

If you wait for the market or a particular cryptocurrency to bottom (the best time to buy), you could be waiting forever, because there is no way of knowing when a cryptocurrency or the market has bottomed.

Paul Clitheroe

6.1 Forecast of Gap

When the intraday High and the former Low or the intraday Low and the former High appear a neutral position on candlestick chart, there is a leap gap.

The leap gap, with clear measure function at the same time, is the most recognizable in various forms. Leap gaps can be divided into four (4) categories in the form of gap nature. We will explain them one-by-one:

1. Common Leap Gap
   - It usually appears in the hovering region and will be covered in a few trading days. So, such leap gap plays a minor role in analysis.

2. Breakout Gap
   - After the pattern completion of the head and shoulders top (bottom), triangle or island reversal, breakout gap appears easily. It has two (2) meanings: first, the reversal pattern has been formed; second, the future trend will be accelerated.

3. Measure Gap
   - As the name suggests, such a leap gap, which usually appears in the middle area of the mid-term or long-term descending or ascending trend, can measure the rise and fall volatility. It is accompanied by volume enlargement and also known as Halfway Gap.
   - Measure gap appears after the breakout. Most the measure gaps and breakaway gaps will not be covered in a short-term. There may also appear 2 or 3 halfway gaps in a long-term ascending trend.

4. Exhaustion Gap
   - It belongs to reversal signals. When the long-term ascending or descending trend approaches to the end, its appearance can confirm the trend coming into turning. Most of such gaps are covered in a few days, offering the best opportunities of short-term selling, or buying.
   - In general, breakout gap shows the beginning of a trend in market; measure gap appears in halfway of the ascending or descending trend; and exhaustion gap

reflects the end of a trend. Each leap gap has a specific meaning and plays a certain role in forecasting the following market.

6.2 Usage of Moving Average

Moving average is a technical analysis method used to judge price movement by curve which describes the change of average value of cryptocurrencies in the past. It is based on drawing moving average of price fluctuation accurately.

Moving average is drawn on graph based on mobbing average value. The calculation method of moving average, simply speaking, is to sum the total cryptocurrency price in a certain time, then divided it by date. The formula is as follow:

$$\text{Moving average value} = \frac{\sum Pi \atop i=1}{N}$$

In the formula, Pi is the i-day price; N is the days of calculation and Σ is the sum of prices. For example, to draw a 10-day moving average of a certain cryptocurrency is to add up of the prices from the first day to the tenth day and divided the sum by 10. That is the arithmetic average price of a cryptocurrency. Furthermore, add up of the prices from the second day to the eleventh day and divided the sum by 10. That is the second average price in 10 days. By parity of reasoning, we can obtain several average prices in 10 days, and then link the average prices on a coordinate.

There are many periods of moving average. Some of them are 6-day, 26-day, and 300-day; others are 10-day, 100-day, and 200-day. Most of investors prefer the period between 5 days and 1 year to calculate the average value because moving average with short period and large fluctuation is difficult for us to judge the price trend, while moving average with long period is not only cumbersome to calculate, but also lack of change. Undue period reduces the reference value greatly.

Investors can grasp the market trend through the drawing of moving average for a period of time. Thereby, investors can invest effectively. There are eight (8) laws of crypto investment according to the relationship between 200-day moving average and daily market value of crypto price. These laws are called Granby Laws.

The trading times of these eight (8) laws are as follows:

i. When moving average rises steadily after dropping continuously, it is a buy signal when the crypto price (daily chart) upwards breaks through moving average and upward extension. That is because the crypto price will be in uptrend when moving average turns to be level. If the crypto price breaks the average line and upwards extends, it means the intraday price has broken the sellers' resistance, and the buyers have a relative advantageous status.

ii. It is suitable to buy when moving average ascends and crypto price drops below average. For moving average is a kind of slow reaction, once the price falls rapidly below average, it will rise above it again a few days later. This decline is only a temporary phenomenon so that it is still a buy opportunity.

iii. It is suitable to buy when price rises again before downward breakout and stands above moving average still. The investors carry out profit-taking operation, while the buyers are relatively strong. Upon that, crypto price sharply rises after a short-term consolidation. Therefore, it is a buy opportunity.
iv. It is suitable to buy when moving average descending, while price falls sharply far below moving average. On such occasion, the crypto price is excessively low and will rebound to the moving average in all probability.

The other four (4) laws of Granby define crypto selling opportunity as follows:

i. The crypto price will descend continuously, when price downwards breaks through moving average which turns downwards or level from uptrend.
ii. The main trend will descend, if moving average declines continuously and price falls below average line after upward breakout.
iii. When the price falls again before upwards reaching the moving average, it means the crypto price will be bearish.
iv. When moving average is uptrend and the price suddenly rises far away from the average line, it shows the price is close to the top and much likely to fall.

The above eight (8) laws are used to judge the price direction and decide the trading opportunities according to single moving average. Moving average can be divided into short-term line (usually 5-day, 10-day, and 30-day), medium-term line (normally 60-day, 90-day, 120-day, etc.) and long-term line (normally 150-day, 240-day, 300-day, etc.). Short-term line is easily impacted by the crypto price changes so that the reaction is relatively sensitive and the buy or sell signals are much frequent. Medium- and long- term lines respond a little slowly, but they can describe the primary movement of price. Therefore, some investors achieve good results when they comparatively analyze market quotation combining daily price chart and various moving averages. Combine short-, medium-, and long-term moving averages with daily price quotation to judge crypto market.

The explanation of short-, medium-, and long-term moving averages are as follows:

i. When short-term line sharply moves up beyond the medium- and long-term lines, it is a buy signal and investors had better seize the opportunity. When crypto price turns uptrend after continuously dropping to the bottom, short-term average reacts fast, and long-term average reacts slowly. The short-term average firstly upwards crosses the medium- and long-term averages and stands on the top, and then mid-term average will go above the long-term average. Golden Cross is a cross formed when short-term average upwards breaks through the medium-term average, and medium-long average upwards breaks through the long-term one. It marks the market quotation coming into ascending period. After the golden cross appears, short-, medium-, and long-term averages arrange orderly from up to down. Upon that, this arrangement, which shows a typical rising market, is also called Long Arrange.
ii. When daily average is on the top, and short-, medium-, and long-term averages from a long arrange, and all the lines are in upward state, it is the safest and strongest market.

iii. Short-term average presents a tendency to decline from the top of stagnation after the strong market which lasts for a long time. This means the ascending trend is about to downwards reverse, and it is time to clear the position.
iv. When the three (3) averages of short-, medium-, and long-term start to cross subtly, the shares should be sold out or decreased properly.
v. When the short-term line drops to the bottom gradually and mid-term average falls below the long-term one, it is a typical descending market.
vi. When mid-term average downwards crosses long-term average, a cross called Dead Cross is formed, which means the end of an uptrend. Since then, the daily price line with short-, medium-, and long-term averages arrange orderly from the bottom up. This is called Short Arrange, and it is also a typical descending market.
vii. When falling quotation lasts for quite a period of time and short-term average has a tendency to rise from bottom, which indicates crypto price comes into rebound and the price is very low, it is a good change to open a position.

Moving average method, a technical analysis method with statistical theory basis, is popular with the public investors and crypto specialists.

Chapter 7

Application of Indicator

Several practical investment skills speak louder than too much useless gimmickry.

7.1 MACD

1. Theory and Calculation of MACD

MACD is a trading indicator based on the relative distance between fast-moving average (short-term) and slow-moving average (long-term). First, calculate the fast-moving average (usually 12 days) and slow-moving average (usually 26 days) by exponential calculation method; second, make fast line value minus slow line value to gain the difference of relative distance. In order to make the trend signals clearer and less influence exerted by excessive price fluctuation, the difference should be smoothly calculated (general select 9 days) to get average of difference value (deviation average for short). Chart the difference and its average in a coordinate system with time for horizontal axis and MACD for vertical axis. Then, we can apply the identical, contrary, or cross signals through observing their directions, relative, and absolute positions. In order to make signals clear, draw a vertical line based on the spread and its difference to form the MACD column. MACD calculation steps and formula are as follows:

a. Firstly, select initial value of moving average to calculate MACD; we generally consider the close of beginning date as the initial value of EMA.
b. Set the 12-day EMA as EMA 12, 26-day EMA as EMA26, and the intraday close as Ct, calculate EMA12 and EMA26 of the n-day from the beginning of the date:

n-day, EMA12 = (n-1) EMA12* 11/13 + Ct * 2/13
n-day, EMA26 = (n-1) EMA26* 25/27 + Ct * 2/27

c. Calculate DIF.
d. Calculate the n-day DEA from the beginning of the date (that is, 9-day MACD of DIF):

DEA = (n-1) DEA * 8/10 + DIF * 2/10 (regard the first DIF as the initial value of DEA)

e. Calculate MACD Column:

MACD column = DIF - DEA

2. Characteristics of MACD

The cycles of MACD commonly used at home and abroad are the 12-day and 26-day moving average, they also have an extraordinary effect on the practical application of crypto market. Some other people use 6-day and 12-day moving averages to calculate MACD, and 25-day and 50-day averages can also be used. Different cycles depend on different markets and different analysts.

There are three (3) lines on MACD chart: DIF, DEA, and MACD. The trading signals are based on the negative or positive position of DIF and DEA and their crosses, and also the sign and length of MACD. When DIF and DEA are negative, the market is bearish; when DIF and DEA are positive, the market is bullish.

MACD is an oscillator with no fixed value line, and the value moves around zero up and down. MACD has a normal distribution range in a certain period, and the normal distribution range changes over time.

3. Meaning of MACD

MACD is difficult to understand in various indicators. The main reason is that it uses twice exponential smoothing calculations. Because of that, MACD reflects the market trend accurately. There is an important relation in moving average theory which it is the relation between short-term (fast-line) and long-term moving average (slow-line). The difference in MACD means the opposite direction of the fast and slow lines.

DIF in MACD is the difference between fast line and slow line, which expresses their relatively distance. DEA expresses their average distance in a certain period of time, while MACD expresses the comparison of fast and slow line distance in short-term and the average distance in a certain period of time. Trading signals of MACD are decided by its representative significance.

4. Trading Signal of MACD

i. Position Signal

- ✓ When DIF and DEA are both positive and short-term line above the long-term one, it is a long position arrange, the market is bullish that belongs to medium-term strong market, and we should buy. When DIF and DEA are both negative and short-term line below the long-term, it is a short position arrange. It is a bearish market which belongs to medium-term weak market. We had better sell the cryptocurrencies.

ii. Deviation and Cross Signals

- ✓ When cryptocurrency price hits a new high after a long time of bullish market, and both DIF and DEA appear downward reversal signs instead of hitting a new high (That an indicator deviates from crypto price on the top is called Top Deviation), and when positive value of MACD column is narrowing and DIF is dropping from top and making a dead cross with DEA, fast moving average starts to be close to slow one. Top deviation and dead cross are all sell signals.

The crypto price hits a new low after a long time of bearish market, while DIF and DEA appear upward reversal signals instead of hitting a new low. (That indicator deviates from price at the bottom is called Bottom Deviation). When negative value of MACD column is narrowing and DIF is making golden cross with DEA, it means fast moving average starts to close to slow moving average from the bottom. Bottom deviation and golden cross are both buy signals.

7.2 Relative Strength Indicator (RSI)

Relative Strength Indicator (RSI) is a kind of technical indicator in common usage. According to the changing situation of crypto price in a certain period, RSI can predict the future direction of crypto price; according to the fluctuation magnitude of price, we can judge the strength of market.

1. Calculation of RSI

The parameter of RSI is the days, namely, the time we apply; it is generally 5 days, 9 days, 14 days, etc. Now, we take 14 days for example to introduce the calculation method of RSI (14). And those of other parameters are similar.

Find the closes of 14 consecutive days including intraday, each close minus that of last day. And we will obtain 14 numbers, of which some are positive, the others are negative. We define:

A= sum of positive numbers of 14 numbers

B= sum of negative numbers of 14 numbers X (-1)

Then A and B are positive, we can calculate RSI (14) as follows:

RSI (14) = A/ (A+B) X 100%

In Mathematics, A means the upward fluctuation magnitude of crypto price, B means the downward fluctuation magnitude of crypto price; A+B means the total fluctuation magnitude of crypto price. RSI means the percentage of the upward fluctuation magnitude in the total fluctuation magnitude, and the percentage is from 0 to 100%. If the percentage is high, the market is strong, otherwise the market is weak.

2. Principle of RSI
   i. Combined use of two (2) or more RSI curves with different parameters
      - ✓ RSI with small parameter is called short-term RSI; RSI with large parameter is called long-term RSI. Then combined use principle of two (2) RSI curves with different parameters can copy the use principle of two (2) moving averages. That is:
      - Short-term RSI > long-term RSI, it is the long market.
      - Short-term RSI < long-term RSI, it is the short market.
   ii. Quotation Judgement Based on Situation of RSI

- ✓ We divide RSI values into four (4) areas from 0 to 100, and operate according to the area to which RSI value belongs, the method of area division is as below:

100~80	Extremely Strong	Sell
80~50	Strong	Buy
50~20	Weak	Sell
20~0	Extremely Weak	Buy

- It has something to do with RSI parameters. The area division situations are different with different parameters. In short, the larger the parameter is, the nearer the dividing line from center (50%) is, and the further the dividing line from 100% and 0% is.
- It has something to do with cryptocurrencies themselves because different cryptocurrencies have different active extents, the values of RSI are different. In general, the more active the crypto is; the further the dividing line from 50% is; the less active the crypto is; the nearer the dividing line from 50% is. As the RSI value changes from the top down, we should act in following order:

  Sell -> Buy-> Sell -> Buy

  We can buy cryptocurrencies when the market is strong, but if it is too strong, we should sell them. The following sentences can explain the question well: When a thing reaches its extreme, it reverses; the changes of quantity cause the changes of quality.

iii. Quotation Judgement Based on Curve Pattern of RSI

When RSI is in the higher (lower) position and the head and shoulders pattern and multiple tops of bottoms pattern appear, it is an action signal. Remember that: the further the RSI from 50% is, the more believable the conclusion is and the smaller the probability of making a mistake is.

The trendline closely connected with pattern theory is useful here. During the process of RSI rising and dropping, there will be some opportunities of drawing trendline. Once these tangents which play the role of support and resistance are broken, it is an action signal.

iv. Quotation Judgement Based on Deviation Between RSI and Cryptocurrencies Price

When RSI is in the high position, the latter wave crest is lower than the former, and for the moment, the crypto price corresponding latter wave crest is higher than the former, which is called top deviation. The rise is the last spent action.

When RSI is in low position, the latter wave trough is higher than the former. And for the moment, the cryptocurrency price corresponding latter wave trough is lower than the former, this is the last drop or close to the last drop, which is a signal to open a position.

3. Situations Needs Attention

The easiest situation to make a mistake is when RSI enters the action position at the first time and forms a single wave crest or wave trough. We cannot clearly make a conclusion until the second wave crest or wave trough is formed. At this time, we can use other analysis methods instead of RSI. Most od people who use RSI make this mistake. Putting the usage methods of RSI to the first wave crest or wave trough mechanically is a loss without fully understanding technical indicators. The people who understand and analyze technical analysis less in-depth are false rather than technical analysis method itself.

The other deficiency of RSI is the inactivation in the top and bottom. However, the inactivation of RSI is much stronger so that the specific price cannot be provided when RSI makes an action signal.

Apart from this, the above introduction about RSI is directed towards daily chart. About the usage of RSI in other periods, the specific number limit, and times to touch top or bottom should be modified correspondingly.

Chapter 8

Golden Section and Time Period

When price squares time, a change in trend is imminent.

8.1 Fibonacci Sequence

The questions Fibonacci put forward in Arithmetic generate a series of numbers: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, and 144 until infinity. The series of numbers are called Fibonacci Series.

In Fibonacci Series, the sum of any two (2) numbers equals the next larger number, that is: 1+1=2, 1+2=3, 2+3=5, and 3+5=8 until infinity. Except for the first several numbers, the ratio of two (2) consecutive numbers is 1.618 or 0.618. As shown in figure below, it is the ratio table of Fibonacci Series from 1 to 144.

Fibonacci Ratio

	1	2	3	5	8	13	21	34	55	89	144
1	1	2	3	5	8	13	21	34	55	89	144
2	0.5	1	1.5	2.5	4	6.5	10.5	17	27.5	44.5	72
3	0.333	0.66	1	1.66	2.66	4.33	7	11.3	18.3	29.6	48
5	0.2	0.4	0.6	1	1.6	2.6	4.2	6.8	11	17.8	28.8
8	0.125	0.25	0.37	0.62	1	1.62	2.62	4.25	6.85	11.1	18
13	0.077	0.15	0.23	0.38	0.61	1	1.61	2.61	4.23	6.84	11.0
21	0.047	0.09	0.14	0.23	0.38	0.61	1	1.61	2.61	4.23	6.85
34	0.029	0.58	0.08	0.14	0.23	0.38	0.61	1	1.61	2.61	4.23
55	0.018	0.03	0.05	0.09	0.14	0.23	0.38	0.61	1	1.61	2.61
89	0.011	0.02	0.03	0.05	0.08	0.14	0.23	0.38	0.61	1	1.61
144	0.006	0.01	0.02	0.03	0.05	0.09	0.14	0.23	0.38	0.61	1

Therefore, the ratio of any number to the next larger number is 0.618 to 1, but to the next smaller number is 1.618 to 1. Moreover, the larger the number is, the closer the ratio is to 0.618 or 1.618. In Fibonacci Series, the ratio of gap digit numbers is 2.618 or 0.382. The correlative characters of the four (4) main ratios are as follows:

2.618-1.618=1

1.618-0.618=1

1-0.618=0.382

2.618*0.382=1

2.618*0.618=1.618

1.618*0.618=1

0.618*0.618=0.382

1.618*1.618=2.618

Except for 1 and 2, any number in Fibonacci Series multiplied by 4 and plus the selected number of Fibonacci Series equals another number in Fibonacci Series, as follows:

3*4=12; +1 =13

5*4=20; +1 =21

8*4=32; +2 =34

13*4=52; +3=55

21*4=84; +5=89

i. Any two continuous numbers of Fibonacci Series have no common factor.
ii. In Fibonacci Series, the sum of any 10 numbers can be divided exactly by 11.
iii. In Fibonacci Series, the sum of a number and all the numbers before it plus 2 equals the second number after the selected number.
iv. In Fibonacci Series, the sum of squares of any continuous numbers equals the result of multiplying the last number of the continuous numbers by the adjacent larger number.
v. In Fibonacci Series, the square of any number minus the square of the second number the number equals another number of Fibonacci Series forever.
vi. In Fibonacci Series, the square of any number equals the result of multiplying the number before the chosen number by the number or after the chosen number, then plus or minus l. Moreover, plus or minus I will appear repeatedly.
vii. In the increasing direction of Fibonacci Series, the equivalent numbers are related to 1 or 0.987+0.013, the adjacent numbers are related to 1.618+0.012, and the gap digit numbers are related to-2;618. Therefore, we call it magical Series.

8.2 Golden Section Ratio and Time Window

8.2.1 Golden Section Ratio

Golden Section Ratio is the property relation of time and wave volatility among waves. When identifying the golden section ratio activity of five ascending waves and three (3) descending waves in crypto market circulatory movement, someone will predict that the following corrective wave is 3/5 of the last ascending wave in time and wave volatility after finishing any bullish stage. We seldom see this kind of simplified situation. However, the basic trend of market corresponds with the relation of Golden Section. And the relation always appears in every wave.

The formula of calculating the ratio of time and wave volatility is as follows:

$$\text{Wave Volatility Ratio} = \frac{\text{Corrective Wave Points}}{\text{Impulse Wave Points}}$$

In crypto market, the research on ratio analysis often leads to such an amazing discovery, which makes the practitioners of wave theory be fascinated by its importance. Using the annual moving average, we find that all the waves are related to adjacent waves or the gap digit waves, the ratios are all from Fibonacci Series ratio. However, we must devote our efforts to present proofs, and put them on trial. (More detailed discussion can be found in manual of accurate ratio range).

The analysis of Golden Section Ratio points out three (3) kinds of recurrent relationships:

- The ratio relationship of Fibonacci Series between the net distance from a key point of the fourth wave to the fifth wave and that from starting point of the first wave to ending point of the third wave (the key point is usually the high, the low or the end point).
- It exists a ratio relationship of Fibonacci Series between the length of C wave and that of A wave, especially in a corrective wave of extended platform type, generally, the ratio is 1.618.
- In the interlaced waves of symmetrical triangles, the ratio is 0.618 when at least two (2) waves appear.

8.2.2 Time Window

In wave theory, time cannot be predicted, because a certain frequency cannot be calculated. Therefore, when predicting, there is no special method according to time factor. However, the time based on Fibonacci Series usually surpasses mathematical operation; moreover, it seems to fairly correspond with the pitch of waves, which makes analysts research more clearly. Time can point out the period that the turning appears, especially when time is approximately in accordance with price target and undulation number.