Graphic Patterns and How to Use Them to Maximize Trading Earnings

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ABSTRACT

When we begin to study technical analysis in more detail, we will undoubtedly come across graphic formations or patterns. Graphic formations in technical analysis go hand in hand with the development and plotting of a price chart. They are most often associated with the use of candlestick price charts of various financial assets. The aim of our article will be based on the methods of formal logic to summarize the theoretical apparatus behind graphic formations and identify the advantages and disadvantages of their application as an analytical tool for the future price development of financial instruments. In the first chapters of our article, we elaborated in detail the theoretical basis of the problem. We developed the issue of technical analysis, explained the basics of Dow's theory and introduced its basic principles. In the following chapters, we focused on the candlestick chart as a basic starting point for graphic formations. We have seen a few examples of graphic formations and theoretically processed their interpretation and logic. In the last chapter, based on the procedures of formal logic, we determined the general advantages and disadvantages of graphic formations.

Keywords: Graphic patterns, chart formations, trading

1. INTRODUCTION

When we begin to deal in detail with the predictions of the development of the prices of financial instruments, we come across a wide range of tools and methods. One of the most popular methods of analysing the prices of financial instruments is technical analysis. However, it also has a wide range of its own tools and methods. In our article we will deal with the issue of graphic analysis, specifically graphic formations and their use in predicting the future price development of financial instruments.

2. THEORETICAL BACKGROUND

2.1. Technical Analysis

Technical analysts assume that human behaviour remains essentially the same and demonstrate, based on this view, that investor behaviour is also characterized by repetitive reactions. And since the history of price changes is constantly repeated over time, they try to identify individual development trends using time series, from which they then deduce the future movement of the price of the underlying asset [1, 2]. Fans of technical analysis have long been studying the activities that are being created in the markets. In this way, they try to identify recurring price trends. Their goal is to trade this trend. Most traders use histograms or bar graphs to draw graphs, which interpret the highest, lowest, opening and closing price and the given period, while the graph also shows the volume of trades [3, 4]. Previously, the wider use of technical analysis was hindered by the considerable laboriousness of compiling and evaluating individual graphs. Recently, however, its use has become more widespread, mainly due to the increasingly available computer technology, including special programs. Gradually, different types of indicators are being used, which are based on different mathematical formulas that can use the prices of the underlying asset, the volume of positions and many other data and identify trading signals based on it. Technical analysis can be defined as a tool that, based on research and analysis of past price movements of financial instruments over time, helps us to predict the future development of the price of a given financial instrument. Its starting point is a price chart and the identification of specific formulas (price formations) in the chart. We consider technical analysis to be the oldest approach dealing with the price development of stocks, currencies or commodities. The use of technical analysis was common practice in Asian markets as early as the 18th century, where it was used by one of its first pioneers, Munehisa Honma, who, together with his son, created and successfully used the candlestick method [5, 6]. However, we consider Charles Dow (1851 - 1902) to be the father of

today's modern technical analysis. Together with their followers, they created a comprehensive Dow theory, which we consider today to be the basic starting point for the entire technical analysis. It is interesting that the public knows mainly the name of Charles Dow, but not so, for example William P. Hamilton or Robert Rhea, without whom Dow's theory probably would not have come into being at all. It was they who compiled a series of Dow's articles in the Wall Street Journal and consolidated them into a comprehensive theory that was published about 20 years after Dow's death. Another post by Ch. Dowa in the world of financial markets was the creation of the Dow-Jones indices [6, 7].

2.1.1. Dow's theory as a basis for technical analysis

Charles Dow believed that the stock market as a whole can be considered a reliable measure of overall trading conditions within the economy and that with the help of market analysis as a whole it is possible to accurately assess and identify the direction of major market trends and predict the direction of individual stocks. Charles Dow first used the ideas of this theory to create the Dow Jones Industrial Index and the Dow Jones Rail Index, which were originally compiled for the Wall Street Journal. The creation of these two indices was conditioned by the conviction of Ch. Dowa that as they cover the two main economic segments (industry and transport), they will be an accurate reflection of the business conditions within the economy [8].
The basic principles of Dow's theory are [8]:
- The market takes into account all available information
- Markets are constantly moving in one of three main trends
- Trends consist of three phases
- Market indices must confirm each other
- The volume of trades must confirm the trend
- The trend is valid unless there is a clear reversal signal

2.2. Graphic Formations

2.2.1. Candlestick chart as the basis of graphic formations

This type of graph, similarly to a bar graph, consists of a large number of so-called candles. It is the most used type of chart for trading purposes based on technical analysis. This type of chart was developed by Japanese traders who used it for rice trading as early as the 18th century, almost two centuries before its first supporters appeared in the United States. This type of graph also provides information on Open, Close, High and Low, but

distinguishes the individual rising and falling candles of which the graph is composed. A growing (bull) candle is defined as a candle whose opening price (Open) is lower than its closing price (Close) and the body of this candle is most often marked in green (the colour is selectable according to the trader's preferences). The opposite is a falling (bear) candle, which is defined by a lower closing price than its opening price, and its body is most often shown in red. Candle wicks, both bear and bull, say that the price reached these levels during the chosen time period, but did not stay on them until the end of the time period [8, 9].

2.2.2. Graphic formations and patterns

According to Northcott (2009), Munehisa Homma was one of the first to use the concepts of technical analysis in the rice market as early as the 17th century in Japan, now known as the "candlestick pattern" [10]. This is also confirmed by L. Turek (2011) in his book "Manual of Technical Analysis", where he says that already in the 17th century, the Japanese began to use technical analysis for the needs of rice trade [8]. However, it also states that this type of technical analysis differed considerably from the American version, which was laid by Charles Dow between 1900 and 1902. Graphic formations are certain shapes or patterns embedded in the price chart of a particular financial instrument. The analysis of price formations and patterns is based on their identification and drawing the right conclusions from their existence. All such analysis is based on the observation of a graph of the development of the price of a financial instrument over time and is therefore largely subjective. We define advanced price formations as such price patterns that consist of a larger number of candles and have the character of geometric shapes. Their very shape is the result between the demand and supply of a given financial instrument. Advanced pricing formations are used by traders to predict the price evolution of various financial instruments and are applied to all time frames. In general, we know two basic types of price formations, reverse and trend. We consider reverse price formations to be those whose rise predicts the potential possibility of reversing the trend, on the contrary, the occurrence of trend formations predicts the potential continuation of an already established trend (usually occurring at the end of the primary trend correction) [8, 11].

2.2.3. Double top formation

The double peak formation is one of the best known and most widely used price reverse formation technical analysis. It occurs in strong upward trends and is defined as two consecutive price peaks that have been created at relatively the same price level. Formations are always formed in the price chart with certain logic. The logic of this formation is that in a strong upward trend, the price

hits a certain price level at which it begins to consolidate and a correction is created in the market, which is followed by a renewed rise in price. However, the moment the price reaches the price level of the first maximum, it cannot overcome this maximum (traders consider this price to be high and refuse to continue shopping). After the creation of the second price maximum at the relatively same price level, the price is reflected and begins to fall. We consider the double peak formation to be valid (we assume that the logic of this formation occurred in the market) at the moment of breaking the correction minimum between the two peaks (first peak minimum) [12, 13]. We can also encounter a modification of this formation with the so-called double bottom. This is the inverse logic of double-peak formation.

2.2.4. Formation 1,2,3

It is also one of the most well-known reverse formations of technical analysis. The structure of the formation is relatively similar to that of a double top or bottom. The formation of 1,2,3 consists of three inflection price points. The primary price maximum (Inflection point No. 1) is followed by a local minimum, which is the minimum of the price correction that was created after the primary price maximum (IP No. 2) and subsequently a lower local maximum (IP No. 3). The logic of this formation is that if the price reaches a certain price in a strong rising or falling trend, which traders consider too high / low, the price of the financial asset will begin to consolidate and create a correction. When the price in the rising trend drops enough and traders start to consider it advantageous for the purchase again, the price will start the primary rising trend, but the market will not have enough strength to return to the level of the primary maximum and create a secondary (lower) maximum. The 1,2,3 formation is valid when the price breaks through the minimum (in the case of a rising trend) or the maximum (in the case of a declining trend) of the correction between two peaks (between IP No. 1 and IP No. 3) [13].

2.2.5. Head and shoulders formation

The head-and-throat formation is one of the reverse formations of technical analysis that are at the end or in the last moments of a declining or declining trend and indicate its potential end. From the point of view of this formation, we can see that in the case of a growing trend, new and ever higher local maxima and minima are not created in the market, and thus, according to Dow's theory, a trend reversal point arises. According to the name, the formation already consists of two "arms" and one "head". The head of the formation is the primary (highest) peak of the formation, which is surrounded by two lower peaks of the so-called arms. The logic of the formation is that the market loses its dynamics and strength to continue the trend. After the creation of the first "arm", the price begins

to create a correction, after which the price starts to rise again and exceeds the price maximum of the first "arm" (as in a healthy growing trend). However, shortly thereafter, the market does not have the strength to continue to grow and creates another correction, the minimum of which is at relatively the same price level as the minimum of the first correction (the first sign of a reversal of the trend, the market did not create a higher minimum). Subsequently, the market tries to regain growth, but the market lacks a sufficient volume of purchase orders and thus the market begins to consolidate again (the second "arm" opens). The formation is valid at the moment of breaking through the so-called neckline (levels of minimum corrections between peaks) [13, 14].

3. RESULTS

Based on the study of the theoretical basis of the application of graphic formations and their procedures for analysing the prices of financial assets, we formulated the following complex advantages and disadvantages of using graphic functions in predicting the future price development of financial instruments based on formal logic procedures:

The reason why we have focused on defining the complex advantages and disadvantages of classic graphic patterns (Table 1) is that they may seem to be part of a large range of trading systems. However, this appearance is not based on a detailed study or quantification. We are of the opinion that publicly offered and published graphic patterns are extended precisely for their simple application and interpretation. More sophisticated trading systems using graphical patterns use them in combination with trading volume analysis. And it is the analysis of trade volume that should be the focus of further research in this area.

Table 1 Comprehensive assessment of the advantages and disadvantages of graphic formations based on formal logic procedures

Advantages	Disadvantages
• Simple application	• Possibility of wide variability of formations without strict quantification
• Simple interpretation	• The problem with the use of automated trading systems resulting from the ambiguity of the description of formations
	• Examination of the shape of the graph without the cause of the price development
	• Ambiguity of efficiency at high and low time frames

4. CONCLUSION

The aim of our article was based on the methods of formal logic to summarize the theoretical apparatus behind graphic formations and identify the advantages and disadvantages of their application as an analytical tool for the future price development of financial instruments. In the first chapter, we elaborated in detail the introduction to the issue. The second chapter was devoted to the compilation of the theoretical apparatus in the field, necessary for the analysis itself. In the last chapter we saw the results obtained by studying this area. We consider the aim of the article to be fulfilled and we believe that our contribution will be valuable in the field of research on the issue.

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