THE FIBONACCI TRADING BOOK

USING FIBONACCI METHODS TO IMPROVE YOUR TRADING

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About the Author

Sofien Kaabar is a financial author, trading consultant, and institutional market strategist specializing in the currencies market with a focus on technical and quantitative topics. His goal is to make technical analysis objective by incorporating clear conditions that can be analyzed and created with the use of technical indicators that rival existing ones. Having elaborated many successful trading algorithms, Sofien is now sharing the knowledge he has acquired over the years to make it accessible to everyone.

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INTRODUCTION

Fibonacci trading aims to profit from using Fibonacci methods by forecasting short-term and long-term market reactions. The versatility of Fibonacci methods means that they can be part of both trend following and contrarian systems as well as integrating other external trading techniques and strategies. In a bullish (rising) market, a contrarian trader would short[1] (sell) and expect a bearish reaction. In parallel, in a bearish (falling) market, a contrarian trader would buy and expect a bullish reaction. Meanwhile, in a bullish (rising) market, a trend follower would buy and expect a further bullish reaction. In parallel, in a bearish (falling) market, a trend follower would short (sell) and expect a further bearish reaction. Fibonacci trading tries to take advantage of both market phases to successfully forecast the next market move or the next key level from where local and global reactions may occur.

This book deals with technical analysis and more specifically Fibonacci methods which are composed of tools, indicators, patterns, and strategies (they are all discussed in detail in every part). You will see five distinct parts after having introduced the mathematics and history of the Fibonacci sequence and after having done a refresher on technical analysis. **Part 1** is reserved for *Fibonacci tools* and how to use them properly. Fibonacci tools are objects are applied onto charts that help understand better the past and current price action. **Part 2** presents three *Fibonacci indicators* I personally use to analyze the markets. They will also be used subsequently as components of trading strategies in later topics. **Part 3** discusses price action patterns based on the Fibonacci sequence or any derivatives from the sequence (such as Fibonacci ratios). **Part 4** presents a number of trading strategies created through the combination of different Fibonacci methods. Finally, **Part 5** presents a new breed of indicators that use specific rules from other indicators and Fibonacci-related concepts to deliver a directional view. Unlike my previous books, this book does not include any code as it focuses more on the trading aspect than the algorithmic implementation. You must understand that the techniques and strategies of the book are **not** recommendations, and you must back-test them while adding your personal touch of risk management and the necessary optimization.

Get your trades on!

[1] Short selling is the act of borrowing an asset from a third party and selling it to another while waiting for the price to go down before buying it back at a lower price and returning it to the third party, thus pocketing the price difference and benefitting from the price decrease.

HISTORY OF THE FIBONACCI SEQUENCE

Before you start your Fibonacci trading journey, you have to understand where it comes from and what it represents. Also, you must know why it is used in trading and why you should take into account its methods[2]. This part presents the history, math, and the implementations of the Fibonacci sequence in the world.

Leonardo Bonacci (c. **1170** – c. **1240–50**), sometimes referred to as *Fibonacci* (as in the son of Bonacci), was an Italian mathematician who worked in the early 13th century and is the creator of the Fibonacci sequence. In **1202**, he wrote his treatise *Liber Abaci* which introduced the sequence to the West.

In his work, Fibonacci addressed the issue of estimating the expansion of a rabbit population. He asked, "*If each couple begets a new pair every month, starting in the second month, how many pairs of rabbits are generated by a single pair in a year?*" He developed the sequence that is now known as the Fibonacci sequence to address this issue.

Each number in the Fibonacci sequence is formed by adding the two numbers before it. Beginning with **0**, **1**, the sequence's first numbers are: **0, 1, 1, 2, 3, 5, 8, 13**, and so on. The sequence is infinite, and as the numbers increase exponentially, the ratio[3] of any two successive numbers becomes closer to a certain number referred to as the *golden ratio* which is ~ **1.618**.

This pattern allowed Fibonacci to simulate the expansion of the rabbit population, and he discovered that Fibonacci numbers offer a prediction of the number of pairs of rabbits that would be born after a specific number of months. Since then, a great deal of research has been done on the Fibonacci sequence, and it has been discovered to be related to many branches of *mathematics* as well as *nature*, *art*, and *architecture*. It is currently regarded as one of mathematics' most well-known sequences and is still a subject of research and curiosity for both mathematicians and non-mathematicians.

[2] *Fibonacci methods* is a general term that includes tools, indicators, patterns, and strategies based on the Fibonacci sequence or any variations on it.

[3] A *ratio* is defined as the division operation between two numbers. In this case, the newer Fibonacci number is divided by the one that precedes it.

The following table illustrates the first fifteen Fibonacci numbers:

Rank	Fibonacci Number
1	0
2	1
3	2
4	3
5	5
6	8
7	13
8	21
9	34
10	55
11	89
12	144
13	233
14	377
15	610

Notice the exponential rise in numbers. Mathematically speaking, any Fibonacci number is found using the following formula:

$$x_i = x_{i-1} + x_{i-2}$$

$$With\ i\ as\ the\ Fibonacci\ rank$$

The Fibonacci ratios are derived from the Fibonacci sequence where every number is divided by the number that precedes it (rank-wise). This can be done using the following formula:

$$\Phi_i \approx x_i / x_{i-1} \to_\infty \approx 1.618$$

Rank	Fibonacci Number	Fibonacci Ratio
1	0	
2	1	
3	2	2.00000
4	3	**1.**50000
5	5	**1.6**6667
6	8	**1.6**0000
7	13	**1.62**500
8	21	**1.61**5385
9	34	**1.61**9048
10	55	**1.61**7647
11	89	**1.61**8182
12	144	**1.61**7978
13	233	**1.618**056
14	377	**1.618**026
15	610	**1.618**037

As the numbers tend towards infinity, the ratio approaches **1.618** and this is why it is referred to as the *golden ratio*. Note that the golden ratio is represented by the Phi symbol **ϕ**.

The closed-form mathematical expression to find Fibonacci numbers based on the golden ratio is given by the following formula:

$$x_i = \frac{(\Phi^n - (1-\Phi)^n)}{\sqrt{5}}$$

$$With\ \Phi = \frac{1+\sqrt{5}}{2}$$

For example, plugging **10** in the variable *n* will return the number **55**. This formula uses the golden ratio **ϕ** and its conjugate (**1 - ϕ**), as well as the square root of **5** to directly calculate the *nth* Fibonacci number. The formula is based on the relationship between the golden ratio and the Fibonacci sequence, and was discovered by French mathematician *Edouard Lucas* in the late 19th century. Note that this formula is a closed-form expression, which means that it provides a direct way to calculate the *nth* Fibonacci number without having to calculate the preceding numbers. This can be very useful in certain applications where performance is a concern. However, the formula can become imprecise for very large values of *n*, due to rounding errors and limitations in the precision of the underlying mathematical operations.

Fibonacci numbers and ratios are found in biological entities, in music, and in a more disputed way, weather and astronomy. What is of interest in this book is the use of Fibonacci in trading. Let's cut to the chase and start discussing Fibonacci from a financial perspective. Before starting, keep in mind certain terminologies and a basic knowledge:

- *The Fibonacci sequence* is the original list of integers: **0, 1, 2, 3, 5, 8, 13, 21, 34**, …, *n*.
- *Fibonacci ratios* are real numbers obtained through Fibonacci operations such as ***1.618***.
- *Fibonacci tool*s are objects overlaid on the chart that are used to find levels or points in the chart that relate to either market or time data. They are discussed in **Topics 1-5**.
- *Fibonacci indicators* are price-derived calculations that use the sequence or the ratios as one of its building blocks. They are discussed in **Topics 6-8** and are revisited in **Topics 24-30**.
- *Fibonacci patterns* are shapes, configurations, and countdowns based on the sequence or the ratios. They are discussed in **Topics 9-18**.
- *Fibonacci strategies* are combinations of a number of the previous methods (such as tools, indicators, and patterns) in a way that gives an enhanced market prediction. They are discussed in **Topics 19-23**.

Before starting **Topic 1**, you must make sure to retain two important concepts; Fibonacci numbers (sequence) and Fibonacci ratios. You have already seen the former. Let's discuss the latter. Fibonacci ratios are derived from the golden ratio and as you progress through the book, you will start to understand their significance. Note that Fibonacci ratios are represented in percentages (hence, the golden ratio **1.618** becomes **161.8%**).

There are basically two other ratios that are quite important and from were you will derive other Fibonacci ratios. The first is the conjugate (but also the reciprocal) of the golden ratio. The ratio **61.8%** is what you get when you subtract **1** from **1.618** (conjugate) and when you divide **1** by **1.618** (reciprocal). The ratio **261.8%** is what you get when you add **1** to **1.618** and when you tweak the ratio calculation method and divide every Fibonacci number by the one prior to the preceding one. An example of this would be to divide **610** by **233** which would give **261.8%**. The list of the ratios that you must familiarize yourself with are as follows:

- **23.6%**: Represents the cube of **61.8%.**
- **38.2%**: Represents the square of **61.8%.**
- **50.0%**: This represents half of the distance variable (a concept seen later in the book).
- **61.8%:** The reciprocal and the conjugate of the golden ratio.
- **78.6%**: This is the square root of **61.8%.**
- **88.6%**: This is the cube root of **61.8%.**
- **100.0%**: This represents the full distance variable.
- **127.2%**: This represents the square root of **161.8%**.
- **161.8%:** The golden ratio.
- **200.0%**: This represents twice the distance variable.
- **224.0%**: This is the sum of **61.8%** and **161.8%**.
- **261.8%**: This represents **1 + 161.8%**. It is also the square of **161.8%**[4].
- **361.8%**: This represents **2 + 161.8%**.

You will see that **61.8%** and **161.8%** are the most reliable ratios in trading. The examples of the charts seen in this book come from the charting platform **Trading View**.

[4] Notice that there are three ways to find **261.8%.**

A REFRESHER ON TECHNICAL ANALYSIS

Technical analysis is the study of charts in the aim to infer the next likely market direction. Therefore, you try to forecast the market based on the past patterns and behavior. Within the large field of technical analysis, there are many different types of technical approaches, most notably the following:

Charting analysis

Charts are visual representations of time series on which you apply techniques that aid in the forecasting process. To locate inflection levels and predict the next move, you often utilize techniques like drawing support and resistance lines, but also other charting methods exist such as Fibonacci retracements and projections that you will see in **Topic 1** and **Topic 2**.

Indicator analysis

In this type of analysis, mathematical formulae are used to develop objective indicators that can either be trend following or contrarian. Moving averages and the relative strength index (RSI), two well-known indicators, are covered in further detail in this chapter.

Pattern recognition

A *pattern* is typically an event that occasionally occurs and has a specific expected outcome based on empirical observations (some outcomes are theoretical as well). Among known price patterns: the double top and the head and shoulder formations which signal reversals.

Throughout this book, you will see all three types of analyses applied within a Fibonacci framework. As stated in the list, some Fibonacci charting techniques include retracements and projections. A few examples of Fibonacci indicators are the Fibonacci moving average and the Fibonacci volatility bands. Lastly, pattern recognition will have a sizable portion in terms of topics (examples include the Fibonacci timing pattern and the Bat pattern). Additionally, this technical analysis refresher also includes a Fibonacci pattern called the *Golden pattern*. It is not considered to be a full topic on its own but I believe that you should pay attention to it as it adds value in the field of *candlestick pattern recognition* (a concept you will later understand).

Before starting the presentation on the three types of approaches, let's take a little trip down the development and history of technical analysis, namely its three principles:

History repeats itself

Clusters are frequently visible throughout trends and ranges. Additionally, a lot of the time, specific configurations and patterns are likely to produce results that are comparable (but never guaranteed). This presupposes a nonrandom probability with predictable properties over the long term. The fact is that history most likely rhymes rather than repeats itself.

The market discounts everything

All fundamental, technical, and quantitative information are presumed to be contained in the current price.

Market movement occurs in waves

Trading occurs at varied frequencies because of different time frames and needs, which leads to patterns and waves rather than a straight line.

Unfortunately, the retail trading community overhypes technical analysis, which gives it a dubious reputation in the professional sector. Each form of analysis has its benefits and weaknesses. Technical analysis assumes, among other things, that markets are not efficient, but what does that imply? According to the *efficient market hypothesis* (EMH), price and value are equivalent, and information is already included into the current price. When you purchase an asset, you are expecting that it is undervalued (in the lingo of fundamental analysis) or oversold (in the lingo of technical analysis), and for that reason you think the price will rise to match the value. As a result, you're making the assumption that the value is greater than the price the moment you buy it.

The EMH suggests that any alpha trading must not produce above average returns because it refutes any assertions that the price does not equal the value of an asset. *Alpha trading* is the act of engaging in speculative operations to outperform a certain benchmark, which is typically an index or a weighted measure.

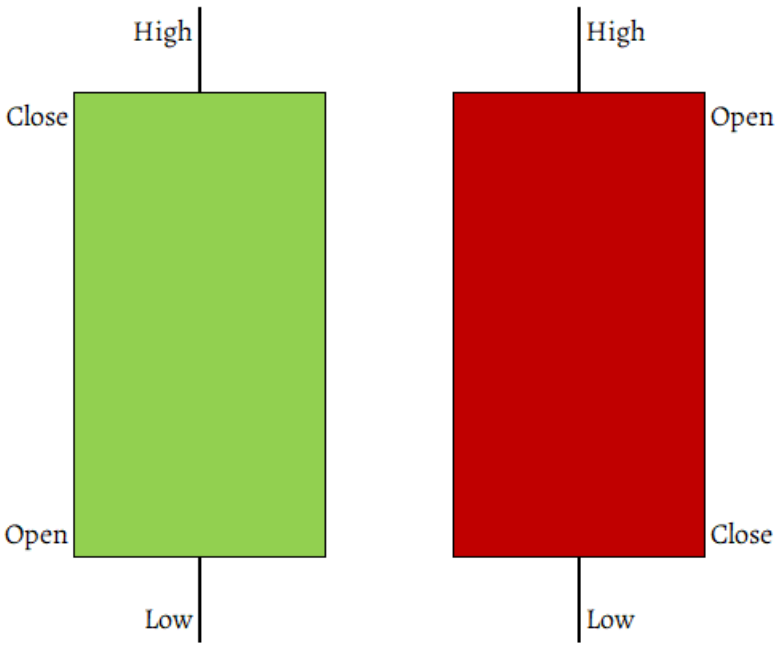
The EMH is the greatest nemesis of the technical analyst since one of its first tenets is that technical analysis cannot provide excess profits under weak forms of efficiency. As a result, technical analysis is disproved from the start, and fundamental analysis follows suit with a similar hammering. Given the volume of market participants and the ease of access to information, it is reasonable to assume that markets may eventually become efficient in the future.

CHARTING ANALYSIS

A *chart* is a visualization of the time series of a certain instrument. Charts can be composed of lines or scatter points but the ones of interest are *candlestick charts*. To understand candlestick charts, you must understand the concept of candlesticks. Assume the following chronological information of a certain financial instrument:

- The market opens at **$1.00**
- The market shapes a high of **$1.02** and a low of **$0.98** during trading
- The market finally closes at **$1.01**

These four pieces of information are the building blocks of financial time series and they are called OHLC data (open, high, low, and close). *Candlesticks* are box-shaped OHLC representations for every time step. The following Figure shows two candlesticks.



A *bullish candlestick* has a close price that is higher than its open price, and a *bearish candlestick* has a close price that is lower than its open price. *Candlestick charts* are composed of chronologically arranged candlesticks and they include a lot of information. **Figure A-1** shows a full candlestick chart on EURUSD.

FIGURE A-1 A candlestick chart on EURUSD

You can notice in **Figure A-1** that whenever the market is in a bullish regime, green candlesticks are more prevalent (as the market goes up) and whenever it is in a bearish regime, red candlesticks are more prevalent (as the market goes down). Finding levels to forecast the market's response through the charting method requires lines, whether horizontal or diagonal:

- A *support level* is a level from where the market should bounce, as it is implied that demand should be higher than the supply around it.
- A *resistance level* is a level from where the market should fall, as it is implied that supply should be higher than the demand around it.

On a timeline axis, the asset's direction can take one of three forms: bullish, where prices are making higher highs; bearish, where prices are making lower lows; or a sideways phase, where prices are fluctuating over extended periods of time between two horizontal boundaries.

Figure A-2 shows a horizontal support level on EURUSD.

FIGURE A-2 A horizontal support level (in blue) on EURUSD

Horizontal support levels start to be noticed after being tested at least two or three times already. The same goes for horizontal resistance levels.

Figure A-3 shows a horizontal resistance level on EURUSD.

FIGURE A-3 A horizontal resistance level (in blue) on EURUSD

Figure A-4 shows an ascending support line on EURUSD.

FIGURE A-4 A trend line support level (in blue) on EURUSD

Trend lines are like horizontal support and resistance lines but they carry a small trend bias in them since they are tilted positively or negatively.

Figure A-5 shows a descending resistance line on EURUSD.

FIGURE A-5 A trend line resistance level (in blue) on EURUSD

Markets that are ranging (moving sideways) increase the likelihood that horizontal support and resistance lines will be effective. This is due to the overall equilibrium between supply and demand. As a result, if there is an excess supply, the market would quickly react since rising demand would stabilize the price. In contrast, ascending and descending channels occur during trending markets. Ascending and descending levels have a *trend bias* in them that may tilt the probability of the expected reaction. The basic framework is as follows:

- In a bullish market, ascending support levels should provide better reactions that ascending resistance levels.
- In a bearish market, descending resistance levels should provide better reactions that descending support levels.

This phenomenon is attributed to the bullish or bearish pressure embedded in the trend. Therefore, buying at support during a bullish market gives you an edge. Similarly, short selling at resistance during a bearish market also gives you an edge. You can consider this hidden force as the invisible trend hand which is another way of saying: *Do not fight the market.*

Channels are linear parallel lines that occur within a trending market (whether a rising or a failing market). They provide dynamic support and resistance levels which go up or down across time. When the market approaches the lower half of an ascending channel, traders watching this would expect a bullish reaction, and when the market approaches the higher portion of the channel, they would expect a bearish reaction. Channels are therefore two parallel descending or ascending levels.

It is important to understand that reactions from the levels (whether horizontal or trend lines) are not always perfect. The market may shape some noise around the level which can either be a few closes above and below it or a few highs and lows around it. When looking at support and resistance levels, you may want to think in terms of zones rather than exact levels. This is so you do not get stopped out even though you had a good analysis from the beginning. This is not to say that they work all the time. Quite often, support and resistance lines fail to provide the expected reaction.

Figure A-6 shows an ascending channel on GBPUSD.

FIGURE A-6 An ascending channel on GBPUSD

Channels start to be noticed after being tested at least three times already. Hence, the lag can be considerable. Some argue that paradoxically, strong channels are actually a signal that the market will exit them due to the fact that they have been tested too many times.

Figure A-7 shows a descending channel on GBPUSD.

FIGURE A-7 A descending channel on GBPUSD

INDICATOR ANALYSIS

After charting analysis, the second most popular technical analysis tool is indicator analysis. In most cases, indicators are used to support your initial hypotheses. Indicators can be thought of as helpers. They fall into two categories:

Trend following indicators

Used to identify and trade in markets that are trending and where the current trend is anticipated to continue. They are related to how persistent the move is.

Contrarian indicators

Employed to fade the move and are most effective in sideways markets, which typically predict the conclusion of the initial move. They consequently relate to the move's anticipated reversal (and thereby to the move's anti-persistence).

I will provide a brief technical introduction into two of the most followed indicators: *moving averages* and the *relative strength index* (RSI). Let's start with moving averages.

A *moving average* is a trend-following overlay indicator. Moving averages aid in trend confirmation and support. They can be used to identify the underlying trend, as well as to locate support and resistance levels, stops, and targets.

The most popular moving average is the *simple moving average*, which is calculated by taking the rolling mean of the close price, as indicated in the following formula:

$$\bar{x} = \frac{1}{n}\sum_{n}^{i=1} x_i = \frac{1}{n}(x_1 + ... + x_n)$$

You use the simple mean in statistics and essentially everything else in life. Simply said, it is the sum of the observations over their quantity.

The basic rules of thumb for moving averages are as follows:

- The market is in a bullish regime if it's above its moving average. Therefore, it is recommended to search for long opportunities as opposed to short opportunities.
- The market is in a bearish regime if it's below its moving average. Therefore, it is recommended to search for short opportunities as opposed to long opportunities.
- The market may switch its regime (from bearish to bullish) whenever its surpasses its moving average.
- The market may switch its regime (from bullish to bearish) whenever it breaks it moving average.
- The market is choppy (unclear direction) when it keeps surpassing and breaking its moving average.

Figure A-8 shows a 200-week moving average on the S&P 500.

FIGURE A-8 The S&P 500 index with a 200-week simple moving average

Different moving averages can also be combined to provide signals. Make sure to understand the following assumptions:

- A buy signal may be generated whenever the short-term moving average (for example, a 50-day moving average) surpasses the long-term moving average (for example, a 200-day moving average). This is referred to as a *golden cross*.
- A short signal may be generated whenever the short-term moving average (for example, a 50-day moving average) breaks the long-term moving average (for example, a 200-day moving average). This is referred to as a *death cross*.

Note that I use the word *surpass* for a cross that occurs from below and *break* for a cross that occurs from above. **Figure A-9** shows a moving average cross on EURUSD.

FIGURE A-9 A moving average cross on EURUSD

Now let's talk about the RSI. *J. Welles Wilder Jr* published his book (*New Concepts in Technical Trading Systems*) in **1978** where he first presented it. The *RSI* is a technical indicator bounded between **0** and **100** where values around **30** represent an oversold market (attractive for buying activities) and values around **70** represent an overbought market (attractive for short selling activities). The RSI is typically calculated on the past **14** time periods. The steps to calculate it are as follows:

- Calculate the difference between the current close price and the previous close price.
- Separate the positive and negative differences and take the absolute values.
- Create a *smoothed moving average* for both the absolute values of the positive changes and the negative changes.
- Divide the smoothed positive changes by the smoothed negative changes. This gives the *relative strength* (RS).
- To obtain the RSI, use the following normalization method at each time step:

$$RSI_i = 100 - \frac{100}{1 + RS_i}$$

Figure A-10 shows a standard 14-period RSI applied on ETHBTC.

FIGURE A-10 14-period RSI applied on ETHBTC

The RSI typically works well in ranging markets but underperforms in trending markets. This is to be expected as contrarian indicators rarely add much value in trending markets.

PATTERN RECOGNITION

Pattern recognition is not just a fancy technique that only computer algorithms may perform. Technical analysis at its purest form is a pattern recognition field since you are finding the same shapes and predicting their outcomes. For example, a support level can be considered a pattern because the market has held above it for a few times, thus giving a better probability to hold one more time. Therefore, this *pattern* can be seen by the trader and a decision may be taken. Pattern recognition in technical analysis can be split into three major parts:

Price patterns

This type of patterns involves a certain number of price action and is typically monitored by a sizable number of technical traders. Among these patterns are double tops, double bottoms, flags, triangles, and wedges.

Timing patterns

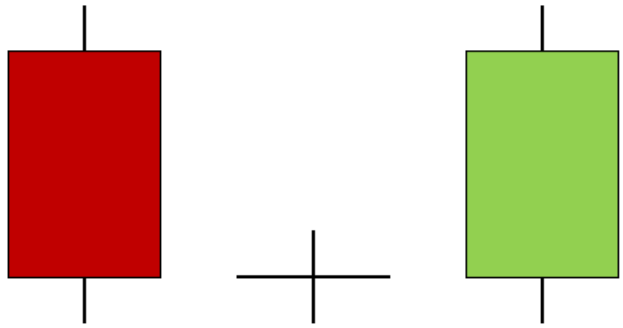
This type of patterns involves a combination of time and price to deliver a signal that predicts a local or a global reversal. You will see in **Topic 9** an example of such patterns.

Candlestick patterns

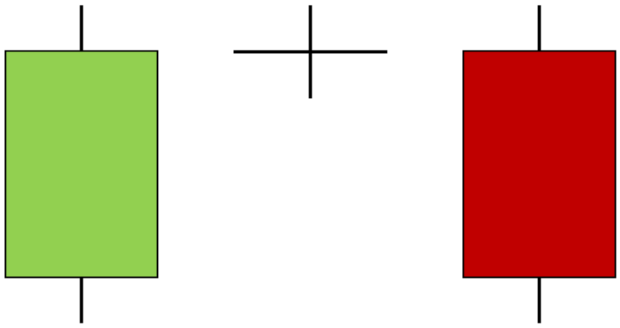
Candlestick patterns are a field on their own. They are a combination of market psychology and sentiment and are generally thought of as one of the oldest pattern techniques in technical analysis. In this refresher, you will see a classic candlestick pattern called the *Doji* pattern so that you get a first sense of what they are. Additionally, you will see your first Fibonacci pattern in this book which is the *Golden pattern*, a Fibonacci-based candlestick pattern that I generally use to confirm the views.

Let's discuss candlestick patterns (you will see the other patterns in subsequent topics). The *Doji* pattern is a one-candlestick contrarian configuration, but traders generally observe what happens before it and one candlestick after it so that they confirm the move. The pattern's general shape is a candlestick that resembles a *plus* sign which simply means that the close price equals the open price.

The *bullish Doji* is composed of a plus sign candlestick that comes after a bearish candlestick and succeeded by a bullish candlestick to confirm the bullish reversal. In parallel, the be*arish Doji* is composed of a plus sign candlestick that comes after a bullish candlestick and succeeded by a bearish candlestick to confirm the bearish reversal. Take a look at the following bullish Doji illustration to understand the theoretical form.



The theoretical bearish Doji illustration is as follows:



Precisely, the Doji pattern is an indecision candlestick since the buy and sell powers are implied to be in equilibrium after a previous biased move. Hesitation in the market may be a first signal of a market reversal (whether local or global).

Unfortunately, candlestick patterns on their own do not live up to their expectations as back-testing results[5] have always shown that they must be combined with other techniques and strategies so that a positive result is obtained, otherwise, the results underperform. These types of patterns are mostly useful in research rather than trading as they signal that there may be a certain reaction but they do not give precise location nor precise timing.

[5] For more details, see Kaabar, Sofien. *Mastering Financial Pattern Recognition in Python*. O'Reilly Media, 2022.

Figure A-11 shows three Doji patterns on AUDUSD.

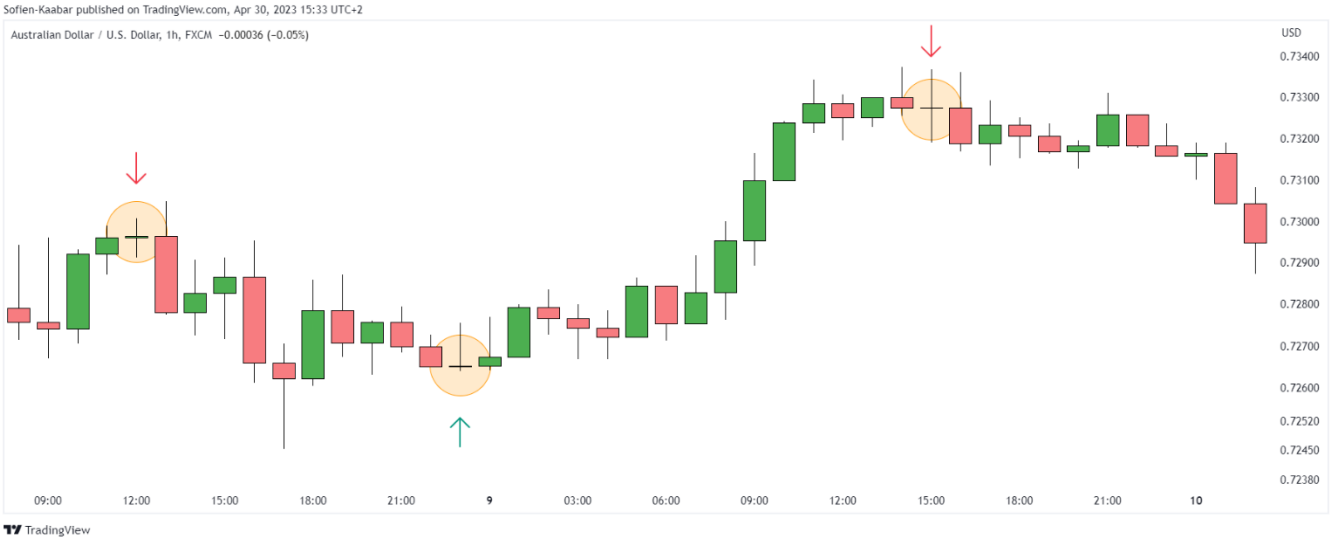


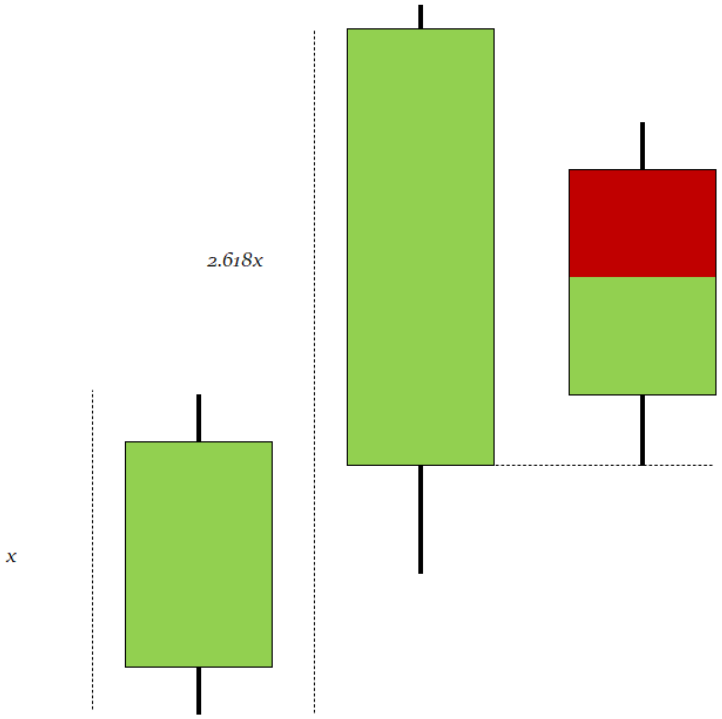
FIGURE A-11 Doji patterns on AUDUSD

Next up is the Golden pattern, a Fibonacci candlestick pattern that I will present for the first time. It is a three-candlestick configuration based on the golden ratio from the Fibonacci sequence. The golden ratio, as you have seen, is **161.8%** and variations of it include **61.8%, 261.8%,** and even **361.8%**. In this pattern, the ratio of interest is **261.8%** which seems to capture better reactions.

The *bullish Golden pattern* is composed of a bullish candlestick, followed by a bigger bullish candlestick with a close price that is at least **2.618x** times the size of the first candlestick. Finally, there must be a third candlestick that comes back to test the open of the second candlestick. Therefore, the position is initiated at the open of the large candlestick one period after it occurs.

The *bearish Golden pattern* is composed of a bearish candlestick, followed by a bigger bearish candlestick with a close price that is at least **2.618x** times the size of the first candlestick. Finally, there must be a third candlestick that comes back to test the open of the second candlestick. Therefore, the position is initiated at the open of the large candlestick one period after it occurs. The name of the pattern comes from the fact that it is derived from the golden ratio.

The theoretical bullish Golden pattern illustration is as follows.



The theoretical bearish Golden pattern illustration is as follows.

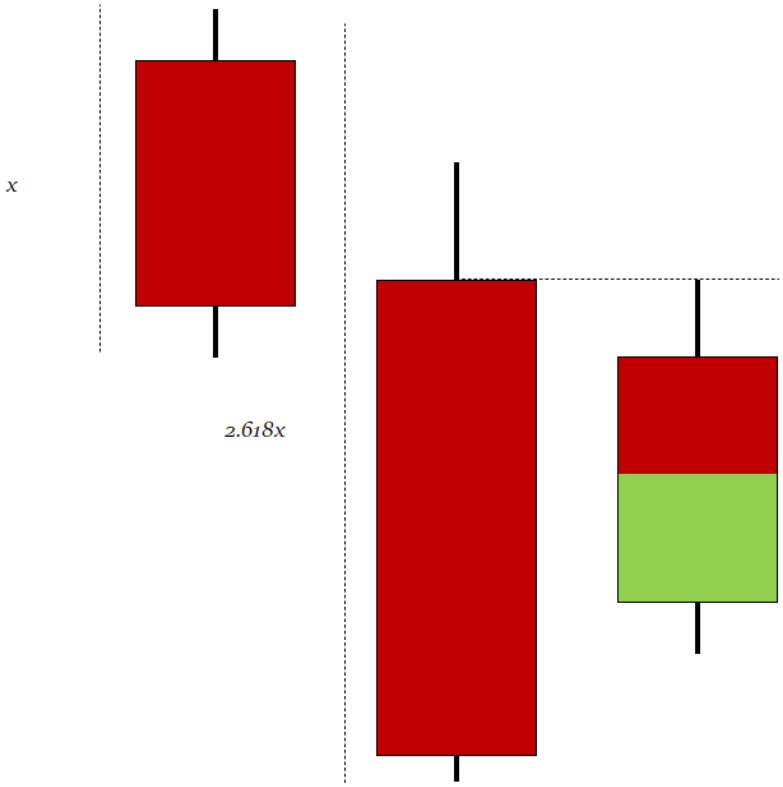


Figure A-12 shows a bullish signal from the Golden pattern on AUDUSD.

FIGURE A-12 Bullish signal from the Golden pattern on AUDUSD

Figure A-13 shows a bearish signal from the Golden pattern on AUDUSD.

FIGURE A-13 Bearish signal from the Golden pattern on AUDUSD

Figure A-14 shows a few signals from the Golden pattern on USDCHF.

FIGURE A-14 A few signals from the Golden pattern on USDCHF

To sum up, technical analysis is a field where charts are used to detect the future market movements. With this being said, the discussion on technical analysis was not really meant to be a full introduction as that's not the purpose. You will however see that with every topic you read in this book, your technical skills will improve.

PART 1 FIBONACCI TOOLS

This part discusses *Fibonacci tools* which are objects drawn on the chart to enhance the decision making process. Every part in the book groups a number of topics which present Fibonacci methods. The trader or the analyst draws the tools as an overlay object alongside the price action in order to understand the past behavior and estimate the future behavior.

In financial markets, *Fibonacci retracements* are used to identify potential support and resistance levels based on the assumption that prices tend to retrace a predictable portion of a move, after which they will continue in the direction of the trend. Specifically, Fibonacci retracements use horizontal lines to indicate areas of support or resistance at the key Fibonacci levels before the price continues in the original direction.

Fibonacci tools are popular among traders because they provide a visual representation of potential areas of support and resistance, allowing traders to make more informed decisions. However, it is important to note that Fibonacci tools are not always accurate and should be used in conjunction with other technical analysis tools to make more informed trading decisions.

This part contains the following topics:

- **Topic 1**: Fibonacci Retracements
- **Topic 2**: Fibonacci Projections
- **Topic 3**: Fibonacci Time Zones
- **Topic 4**: Fibonacci Channels
- **Topic 5**: Fibonacci Fans

TOPIC 1 FIBONACCI RETRACEMENTS

Tools in technical analysis refer to objects that help you draw elements on the chart which are used to enhance the decision-making process. An example of a tool is the arrow or the straight line which you can use to point to events or certain reactions.

A *retracement* is the act of going back the same route you have already taken. In technical analysis, a retracement is when a market shapes a top or bottom and starts recovering (after a bottom) or correcting (after a top). The main idea of Fibonacci retracements is to find key support and resistance levels using certain Fibonacci ratios. Here's what you need to know:

- *Support levels* are given after a top is shaped and the market started to correct lower. They are found by calculating the distance of the rise measured from the first bottom (low price) to the newly shaped top (high price).
- *Resistances levels* are given after a bottom is shaped and the market started to recover. They are found by calculating the distance of the drop measured from the first top (high price) to the newly shaped bottom (low price).

The most commonly used Fibonacci retracements are **23.6%** which is generally used to confirm a deeper correction or recovery if broken or surpassed, **38.2%** which is used as a first level to contain the deep correction or recovery, **50.0%** which is also used as a level for certain patterns that you will see in subsequent chapters, **61.8%** which is considered the most powerful level and from where significant reactions should occur with a reliability higher than the average ratio. The next retracement is **78.6%** which is also a Fibonacci level but not really used that much and therefore, does not have much impact. The next retracement is **88.6%** which is another powerful level. The next key retracement is **161.8%** which is the golden ratio and an extremely powerful reactionary level. Finally, **224.0%** is the last key retracement and is also used in harmonic patterns. Of course, there are others like **261.8%** and **361.8%** but they are used less in retracement analysis and more in patterns.

Fibonacci support levels are retracements of a bullish move and they give the levels from where the initial bullish move should continue or at least from where a limited bullish reaction is expected. On the other hand, Fibonacci resistance levels are retracements of a bearish move and they give the levels from where the initial bearish move should continue or at least from where a limited bearish reaction is expected

Figure 1-1 shows an example of a market that has retraced back to the **61.8%** level from where it reversed course and continued higher. This is a situation where a market has encountered and reacted from a support level.

FIGURE 1-1 Reactions from the Fibonacci retracement levels

Starting from the bottom of the market and going to the top, you can obtain Fibonacci retracements to show where the market will likely find support as shown in **Figure 1-1**. Notice how the market bounced on **61.8%**, the key level of the Fibonacci retracements. The retracements are found by calculating the distance from the bottom to the top and applying the percentages as horizontal lines.

However, you can also notice how the market broke **38.2%** and **50.0%** before reaching **61.8%**. This is why it's a good idea to anticipate the reaction from **61.8%** as opposed to the first levels when you are using retracement analysis to find an entry point.

Figure 1-2 shows an example of a market that has retraced back to the **61.8%** level from where it reversed course and continued lower. This is a situation where a market has encountered and reacted from a resistance level.

FIGURE 1-2 Reactions from the Fibonacci retracement levels

Choosing where to start and where to end a retracement may be subjective but it can be easier for global tops and bottoms. It is advisable to retrace large moves that have marked the end of market regimes (bull and bear). The biggest and most frequent reactions occur around **61.8%** and therefore, you may want to give it more weight in your trading system.

Reliability refers to the degree of confidence that a certain level will provide the expected reaction. **61.8%** and **161.8%** have the highest reliability and are followed by **88.6%**. The rest of the ratios typically have lower reliability in pure retracements but remain useful nevertheless in pattern recognition.

Figure 1-3 shows an example of a market that has retraced back to the **50.0%** and **61.8%** of the initial bearish move before it reversed course and reacted lower multiple times.

FIGURE 1-3 Reactions from the Fibonacci retracement levels

Multiple reactions may also occur from the retracements. **Figure 1-3** shows how the market reacted a few times from the **50.0%** level and then had a sizable reaction from the **61.8%**. Ideally, once a retracement level has been broken or surpassed, it is not advisable to keep considering it for future reactions in case the market re-integrates it. Let's take an example from **Figure 1-4**. Notice how around the end of September, the market surpassed the **50.0%** level only to react below **61.8%** and re-integrate **50.0%**. Normally, you would not take into account **50.0%** anymore as it has already been jeopardized (even though the market did react below it around the beginning of October).

Figure 1-4 shows an example of a market that has retraced from the Fibonacci levels multiple times. Notice how surpassing a level leads to the market testing the next level.

FIGURE 1-4 Reactions from the Fibonacci retracement levels

Sometimes, when a market breaks a retracement level (and it happens more often than not), it may be a signal that it will continue towards the next retracement level. Markets are not perfect and sometimes retracements do not work and this can be seen through two events:

- The market shapes the expected reaction somewhere between two retracement levels.
- The market makes a lot of noise around the retracement level, thus jeopardizing the initial idea.

In subsequent topics, you will be using Fibonacci retracements in numerous patterns. Make sure to thoroughly understand how to use them.

TOPIC 2 FIBONACCI PROJECTIONS

Projections are similar to retracements but they forecast the continuation of the move after the retracement. Imagine an impulsive move followed by a corrective move; Fibonacci projections are used to forecast the next likely reactionary[6] levels in case the market continues in the direction of the impulsive move. Here's what you need to know:

- *Support levels* are given after the market recovers from a bearish initial move and a new local top is confirmed. They are found by projecting the move starting from the high of the impulsive bearish move with its low and the high of the corrective move (its end).
- *Resistances levels* are given after the market corrects from a bullish initial move and a new local bottom is confirmed. They are found by projecting the move starting from the low of the impulsive bullish move with its high and the low of the corrective move (its end).

In a bullish scenario, the market should shape a form of a descending zigzag line. There are three key points you need to know to create the projection tool. The first point is the initial high (the beginning of the bearish move), the second point is the low (the end of the bearish move and the start of the recovery), and the third point is the end of the recovery and therefore, the high seen on the local top. The projection tool will show the next support levels to come. In contrast, In a bearish scenario, the market should shape a form of an ascending zigzag line. The first point is the initial low (the beginning of the bullish move), the second point is the high (the end of the bullish move and the start of the correction), and the third point is the end of the correction and therefore, the low seen on the local bottom. The most common projections are as follows:

- **61.8%**: This projection represents **61.8%** of the three points.
- **100.0%**: This projection represents **100.0%** of the three points.
- **161.8%**: This projection represents **161.8%** of the three points.

The **100.0%** forms a very powerful configuration that you will see in detail in **Topic 10**. It is referred to as an ABCD pattern and belongs to the harmonic family.

[6] A *reactionary level* refers to a level that provides a contrarian reaction once the market reaches it.

Figure 2-1 shows an example of a market that has found support using Fibonacci projections.

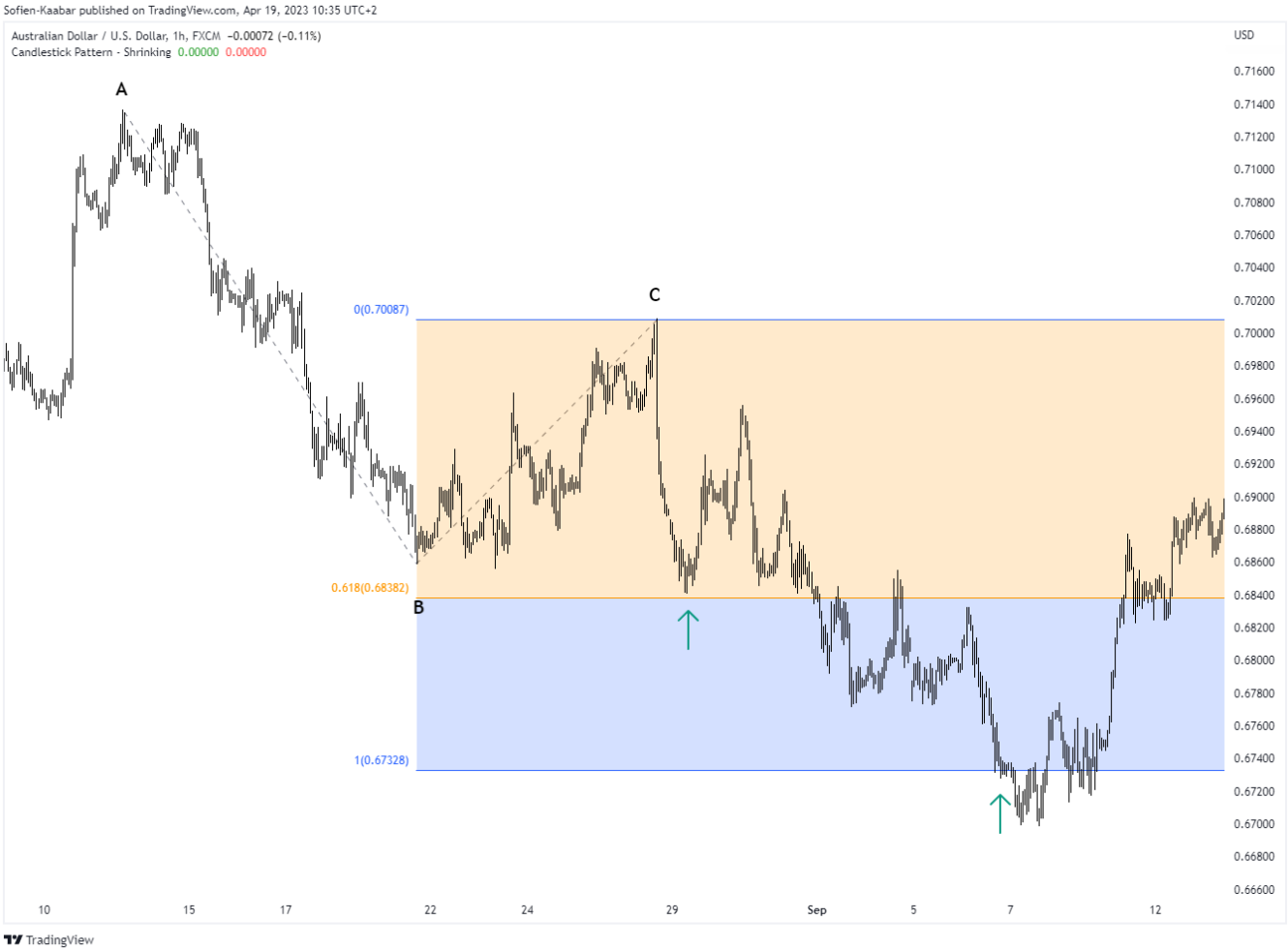


FIGURE 2-1 Reactions from the Fibonacci projections levels

In the descending zigzag line as shown in **Figure 2-1** through the ABC points, the market has visibly found a first support at **61.8%** of the ABC move and a second (more significant) support at **100.0%** of the ABC move. Therefore, the second support marked the end of the zigzag move as found by the Fibonacci projection tool.

Point A takes the highest high during the beginning of the bearish move while point B takes the lowest low during the end of the bearish move (as described subjectively by the trader), and point C takes the highest high during the local top.

Figure 2-2 shows an example of a market that has found resistance using Fibonacci projections.

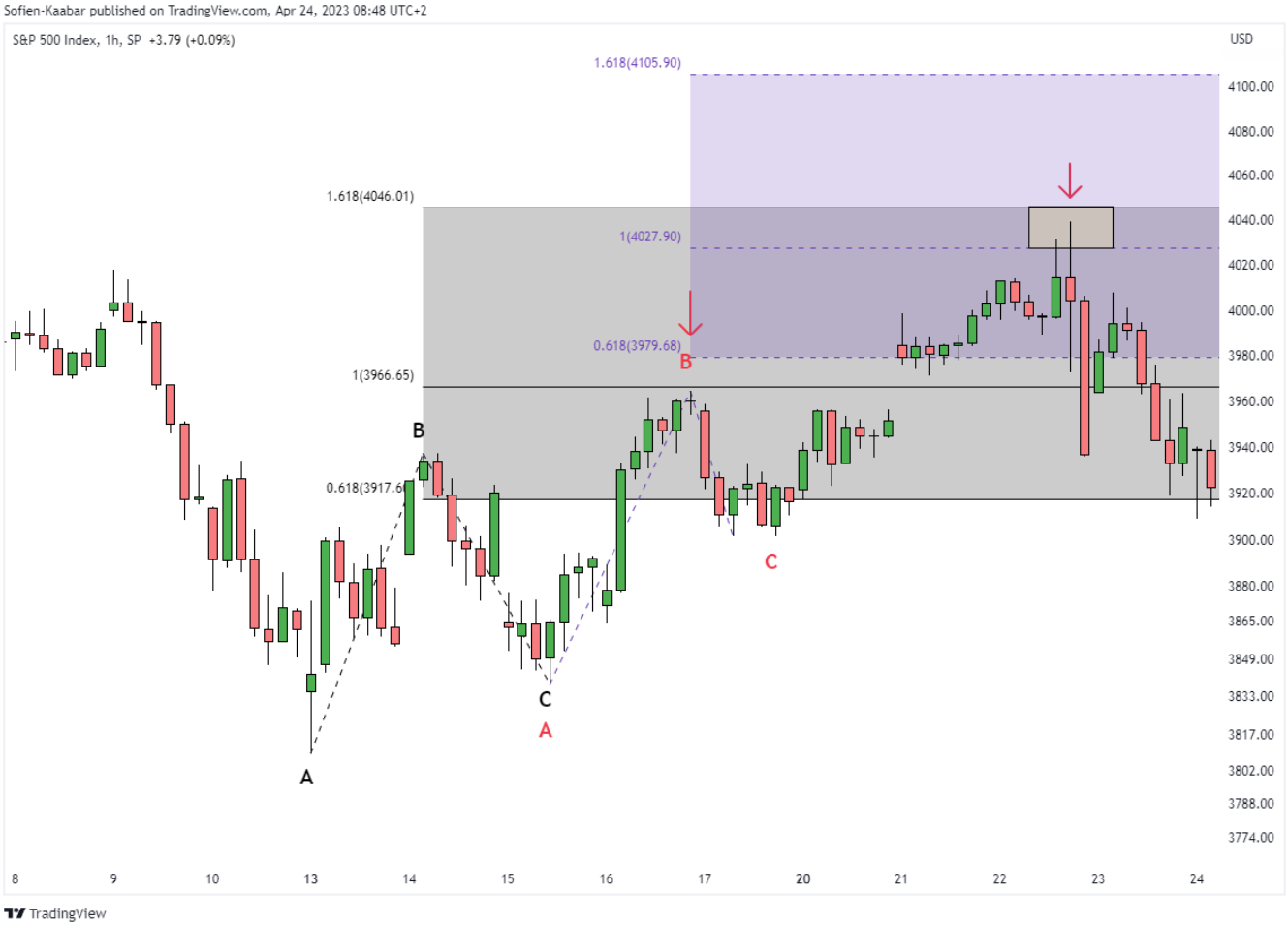


FIGURE 2-2 Reactions from the Fibonacci projections levels

In the ascending zigzag line as shown in **Figure 2-2** through the ABC points, the market has visibly found a first resistance at **100.0%** of the ABC move and a second resistance at **161.8%** of the ABC move. Another ABC move can be seen within the first one from where the market has reacted. The **100.0%** projection tool coincided with the **161.8%** projection of the initial ABC move.

Point A takes the lowest low during the beginning of the bullish move while point B takes the highest high during the end of the bullish move, and point C takes the lowest low during the local bottom.

Figure 2-3 shows an example of a market that has found support from **161.8%** level after failing to react at the **61.8%** level.

FIGURE 2-3 Reactions from the Fibonacci projections levels

As discussed previously, reliability is the degree of confidence in the retracement or projection level. Reliability is a subjective judgement based on previous experience but it can also be a term coined for techniques that have been back-tested. For instance:

- A technical indicator may be called reliable if on average, it delivers signals with a hit ratio that is better than random according to objective back-testing.
- A Fibonacci level (for example, 61.8%) may also be called reliable if the analyst sees that more often than not, the market reacts from it. The experience factor may be more important than objective measures.

Ultimately, it is always better to back-test than to use personal experience, but some Fibonacci methods are so subjective that they cannot be confidently back-tested.

Figure 2-4 shows an example of a market that has reacted from the **100.0%** projection support.

FIGURE 2-4 Reactions from the Fibonacci projections levels

To sum up, Fibonacci projections are the continuation of the Fibonacci retracements and can be used as a complement to them. It is advisable to find retracement and projection levels around the same area so that you have more conviction in the expected move.

TOPIC 3 FIBONACCI TIME ZONES

Fibonacci time zones take a purely timing approach and assume that the market moves in cycles defined by the Fibonacci sequence. As opposed to using Fibonacci ratios, the time zones tool uses the Fibonacci sequence. As a reminder, the sequence's first numbers are as follows:

0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, …

As mentioned, the main hypothesis is that the market moves in Fibonacci cycles. The cycle can be subjectively measured from a global top to a global bottom or vice versa. Then, this distance is projected into the future using the sequence's numbers as parts.

Figure 3-1 shows a time zone retracement from the bottom as shown by the **Start** label until the top as shown by the **End** label. Every vertical interval encountered signals a reversal in the previous dominant trend.

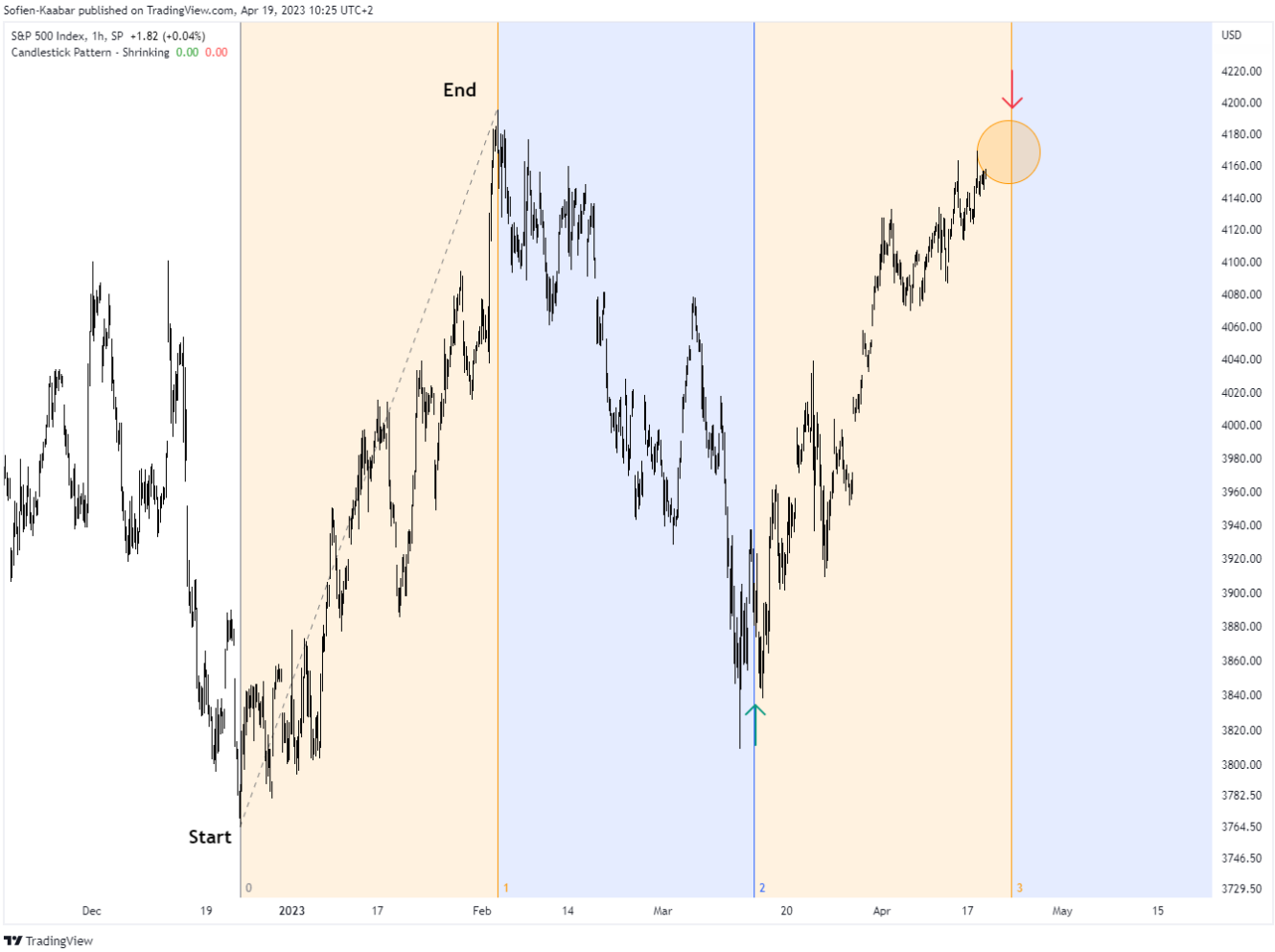


FIGURE 3-1 Reactions from the Fibonacci timing intervals

Obviously, there is a huge subjective part in the Fibonacci time zones tool as it requires choosing the right starting point and the right ending point. **Figure 3-2** shows another bottom to top time zone retracement. It is important to know that you are not supposed to use this indicator on its own. At most, it should have a minor weight within a larger trading framework.

FIGURE 3-2 Reactions from the Fibonacci timing intervals

As with any technical analysis tool, the efficacy of Fibonacci time zones depends on a number of factors, including market conditions, the timeframe being analyzed, and the skill and experience of the trader or analyst using them. While some traders may find Fibonacci time zones to be useful in identifying potential areas of support or resistance (subject to time), others may prefer to use retracements and projections. My advice is to combine them together in order to form strong Fibonacci confluence zones. For example, if the market

arrives at a **61.8%** retracement support while at the same time, it coincides with a time zone interval, the conviction may be enhanced.

Figure 3-3 shows a few bullish signals given by the time zones. Notice how the last one did not work as the market continued the move lower.

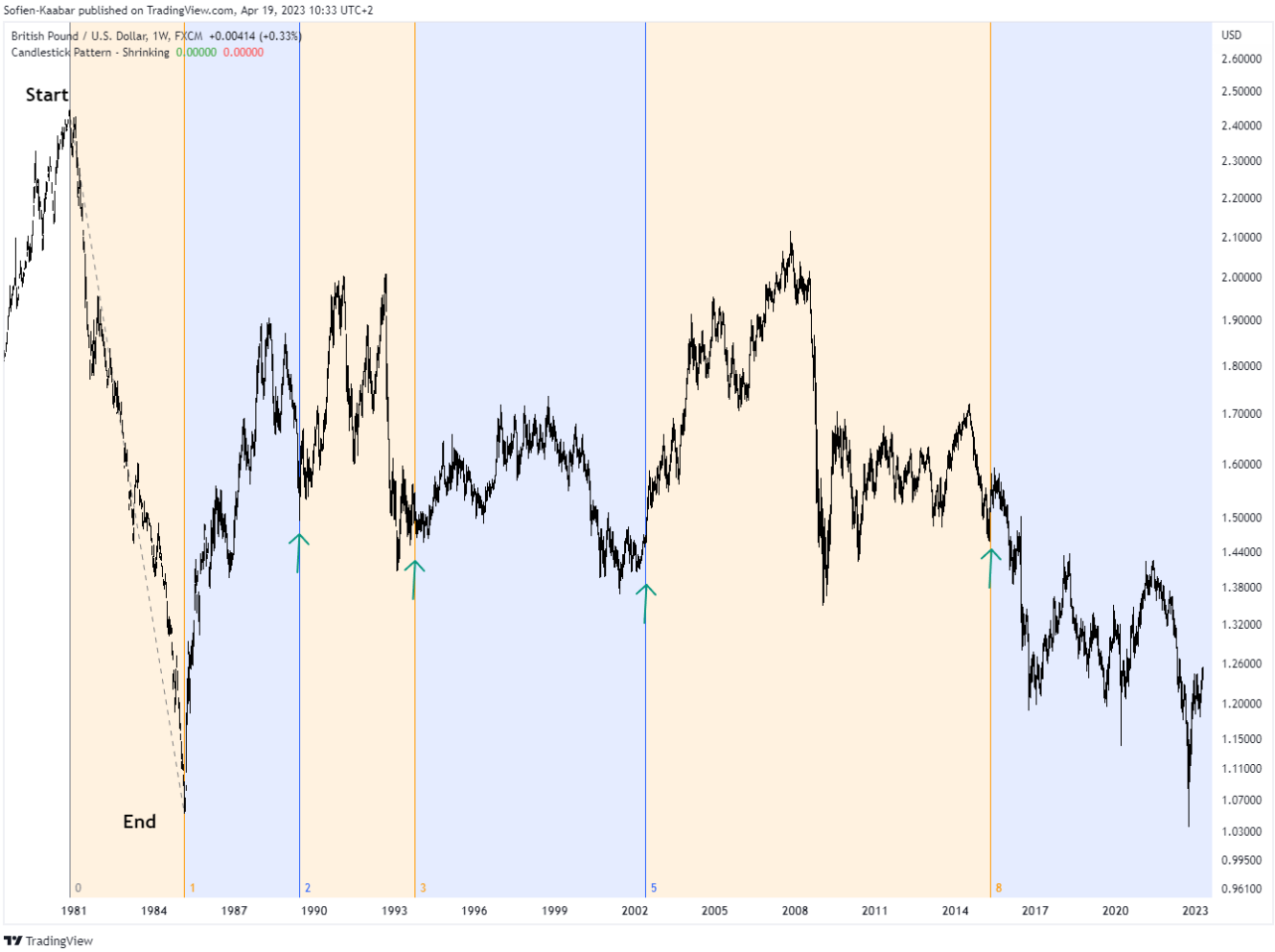


FIGURE 3-3 Reactions from the Fibonacci timing intervals

The particularity of Fibonacci time zones is that they are not concerned by price, but only by time. This can be an advantage but also a disadvantage. Some Fibonacci tools use price like the retracement tool and others use time like the time zones. There is also a Fibonacci tool that uses both price and time at the same time and this is what is discussed in **Topic 5**. It is also worth noting that in **Topic 9**, I will present a Fibonacci pattern that also uses price and time to deliver trading signals, but first things first, let's discuss Fibonacci channels.

TOPIC 4 FIBONACCI CHANNELS

Within the field of graphical analysis, lies the concept of parallel channels as you have seen from the *refresher on technical analysis*. Typically, a trending market can be twofold:

- *Linear*: This is where the trend can be framed within two ascending or descending lines. Generally, whenever the market reaches the upper straight line, a bearish reaction is to be expected and whenever it reaches the lower straight line, a bullish reaction is to be expected.
- *Non-linear*: This is where the market shows a clear trending regime (bullish or bearish) but it cannot be visualized within two parallel lines. In other words, the trend is not symmetrical as it follows a non-linear approach. This type of trends are usually detected using moving averages.

A *channel* is defined as two or more parallel lines that coincide with a number of market tops and bottoms, and form dynamic (ascending or descending) support and resistance lines. Fibonacci lines try to detect linear trends by drawing a parallel channel and applying the golden ratio inside and outside the channel. For every point in time in the channel, the market retraces **61.8%** between the two lines an also **161.8%** which gives an intermediate levels within the channel.

Typically, channels have a great deal of lag in them because they are detected after the market has rebounded or paused from their extremes a few times already. Therefore, the end of the detection period is called the *cutoff* and then, the out-of-sample period where the channel is assumed to continue providing the dynamic support and resistance levels, will be the one that can be traded as it does not lie in the past.

To conclude, the framework of channels is to draw them and fit them to the market and then to expect that they will at least hold for one time, thus giving the expected reaction.

Figure 4-1 shows a Fibonacci channel with reactions around **61.8%** after the cutoff.

FIGURE 4-1 Reactions from the Fibonacci channels

Notice how you can easily follow the trend in the case of a linear regime. However, you are unlikely to use this sort of graphical analysis when dealing with a non-linear trend as there is no added-value. Everything before the cutoff period is what is known as an in-sample period and is not tradeable because you are fitting the channel to it. That's how you know you have a channel. Anything after the cutoff period can be traded such as the two reactions from the intermediate level at **61.8%** shown by the two arrows.

You can start to notice that Fibonacci channels are simple channels with the addition of **61.8%** and **161.8%** at every time step.

4-2 shows a Fibonacci channel with reactions around **61.8%** after the cutoff.

FIGURE 4-2 Reactions from the Fibonacci channels

The main level to use with Fibonacci channels is quite simply **61.8%** for intermediate reactions within the said channel. However, it can also act as a normal channel which means that reactions can also be expected around the normal boundaries of the channel as shown by the green arrow in **Figure 4-2**.

4-3 shows a Fibonacci channel with reactions around **161.8%** after the cutoff.

FIGURE 4-3 Reactions from the Fibonacci channels

Although less used, the golden ratio **161.8%** is also a level outside of the channel that can be used to play reactions. However, to be able to play reactions from the **161.8%**, the channel would have to be invalidated first as the golden ratio lies outside the boundaries of the channel, and therefore, the linear trend would have to be jeopardized if this event happens.

In my personal experience, Fibonacci channels do not add much to the table in terms of added-value and the preference is to focus on other Fibonacci tools as you have seen in previous topics but also as you will see in subsequent topics. However, they are useful in playing intermediate reactions within bigger channels. It's worth noting that Fibonacci channels also have a time-price component as the levels are not static through time.

TOPIC 5 FIBONACCI FANS

Fibonacci fans are a technical analysis tool that combines price and time. They are drawn just as you would draw retracements. The lines that are created by connecting these points are referred to as *fans*.

Fibonacci fans are used to identify potential levels of support and resistance and to find trend reversal points. For example, a trader may draw a Fibonacci fan from a recent high price point to the low price point of a preceding price move. The lines that are created by the fan can then be used to identify potential levels of support and resistance, as the price could potentially reverse at key Fibonacci ratios such as **38.2%** and **61.8%** with a key focus on the latter level. **Figure 5-1** shows the fans in action.

FIGURE 5-1 Reactions from the Fibonacci fans

As you can see, Fibonacci fans combine price (retracement levels) with time (how long do they need to reach the levels) in order to show key support levels.

Figure 5-2 shows a bearish retracement of a market that has reacted around **61.8%**.

FIGURE 5-2 Reactions from the Fibonacci fans

Ultimately, the decision of whether to use Fibonacci fans in trading is a personal one and depends on the trader's individual preferences, experience, and risk tolerance. It's always a good idea to thoroughly research and test any trading technique before using it in a live trading environment.

Fibonacci tools are valuable but must always be combined with other technical tools. The next part will discuss a few Fibonacci indicators that can complement the analysis.

PART 2

FIBONACCI INDICATORS

This part presents indicators that are based on the Fibonacci sequence as one of the key building blocks. In reality, this is as if I am telling you that when you calculate an **8**-period or a **13**-period RSI, you are calculating a Fibonacci indicator, but that won't be useful as the RSI is not really a Fibonacci indicator since it was not created using the sequence in mind. Why would one create a Fibonacci-based indicator anyway?

The main reason is that so you can see how to harness the inner strength of Fibonacci in trading. But of course, a few main points must be clear so that you do not find yourself in the realm of the mystic:

- Choosing Fibonacci as the main building blocks of your indicators does not suggest that there is a hidden cosmic power which suggests you will have better results using the number **13** as opposed to the number **14**.
- Choosing Fibonacci numbers as lookback periods allows you to remove the subjectivity of choosing the numbers on your own. The best example here is shown in **Topic 6**.
- The way Fibonacci indicators are constructed is through averaging using the Fibonacci sequence as you see in the following three topics.

This part contains the following topics:

- **Topic 6**: Fibonacci Moving Average
- **Topic 7**: Fibonacci Step Indicator
- **Topic 8**: Fibonacci Volatility Bands

TOPIC 6 FIBONACCI MOVING AVERAGE

Moving averages are without a doubt the number one technical tool used by all types of traders, strategists, and analysts. As you have seen from the refresher, they allow you to have a view on the current trend and to also have a dynamic (moving) support or resistance line. Moving averages are associated with simple and complex trading strategies and can be the ingredients of many different trading techniques.

When you have a set of observations and you want to describe the data, you generally use the mean as a representative (in case there is not a huge number of outliers). The mean is also used as the next expected value in case of a chronologically listed dataset (this is also considered as the simplest prediction technique). A *moving average* is a mean that moves on a rolling basis using a predetermined lookback period (quantity). If you want to create a **5**-period moving average, then you will take a dataset and at each time period, you will calculate the mean of the last five values (including the current one). Then, you will drop the first one and include the new value in the new time period. This is why it is referred to as a moving average. Technical analysis presents a wide selection of different types of moving averages as they are not all calculated the same way. This means that the sum divided by the quantity is only valid for what is known as a *simple moving average*. An *exponential moving average* is the second most used type of averaging in technical analysis as it gives more weight to the more recent values thus reflecting more up-to-date price action. The calculation is a little more complicated than the one used in calculating the simple moving average. However, I must show you how it is calculated because it is the basic building block in the Fibonacci moving average, the aim of this topic:

- Calculate a simple average using the desired lookback period.
- For the next calculation, calculate the exponential moving average using the following formula (knowing that the previous EMA in this time step, refers to the simple average from the first step):

$$EMA_i = Price_i \times \alpha + EMA_{i-1} \times (1 - \alpha)$$

$$\alpha = \frac{2}{1 + Lookback}$$

- For the next time periods, continue to use the formula to have a rolling exponential moving average.

The *Fibonacci moving average* is a structured moving zone that uses a number of exponential moving averages using the Fibonacci sequence as lookback periods. The steps to construct the Fibonacci moving average are as follows:

- Calculate exponential moving averages of the highs using the following lookback periods **{5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181}**.
- Calculate exponential moving averages of the lows using the following lookback periods **{5, 8, 13, 21, 34, 55, 89, 144, 233, 377, 610, 987, 1597, 2584, 4181}**.
- Calculate the average of the first step to obtain the upper Fibonacci moving average zone. The average is simply the sum of their values at each time step divided by **15**.
- Calculate the average of the second step to obtain the lower Fibonacci moving average zone.

Figure 6-1 shows an example of the Fibonacci moving average on Bund futures.

FIGURE 6-1 The Fibonacci moving average

Figure 6-2 shows an example of the Fibonacci moving average on Boeing's stock price.

FIGURE 6-2 The Fibonacci moving average

Naturally, as with every moving average, the market may shape some noise around it but does not necessarily break it. In **Figure 6-2**, you can see around the yellow circle that the market shaped some noise around the moving average before re-integrating it and continuing the bullish trend. Unfortunately, it is difficult to forecast if the market will break the moving average or will it just re-integrate it directly.

Luckily, some traders and analysts employ some rules of thumb that include volatility and fixed percentages away from the moving average. For example, if you notice that the recent market volatility (fluctuations from the highs to the lows of each bar) is around **0.50%**, you can tolerate that amount the moment the market breaks the moving average and suppose that it is only *really* broken when the market surpasses or breaks that threshold.

Figure 6-3 shows an example of the Fibonacci moving average on AUDUSD.

FIGURE 6-3 The Fibonacci moving average

In some instances, the Fibonacci moving average works well in a ranging market as evidenced in **Figure 6-3**. This is due to the long-term and short-term nature of the calculation which averages both types of lookback periods to create a stable moving zone.

Naturally, moving averages tend to provide poor support and resistance levels in ranging markets. The cautious way to use the Fibonacci moving average is to prioritize its signals in trending markets or to await decent reactions during ranging markets such as **Figure 6-3**.

Using an averaged number of different Fibonacci lookback periods means that you do not have to choose between different lookback periods when choosing your moving average (as you would do with simple and other moving averages).

Figure 6-4 shows an example of the Fibonacci moving average on Amazon's stock price.

FIGURE 6-4 The Fibonacci moving average

In healthy trending markets such as Amazon between **2015** and **2019**, buying back the dips is the preferred way to trade (or to invest). The Fibonacci moving average provides this dip-buying zone from where entry orders can be initiated.

Of course, when the momentum is very strong and the trend is very steep, the market will be far from the Fibonacci moving average and therefore, the signals may not be common (this issue is addressed in **Topic 7** with the Fibonacci step indicator). However, in trend following, the frequency of signals is not the biggest concern as opposed to getting the direction right from the beginning. In **Topic 19**, you see a trading strategy that uses the Fibonacci moving average as one of its signals.

TOPIC 7 FIBONACCI STEP INDICATOR

Remaining within the spirit of averaging, the Fibonacci step indicator takes a diversification approach and assumes that the latest consecutive values may not be the ones that must be taken into consideration but a sampling technique may be the better choice. This helps detect different phases since consecutive price bars are likely to provide the same idea. The Fibonacci step indicator merely answers the question of which values that need to be taken into consideration, although this topic remains subjective to some extent.

A trend following indicator, the Fibonacci step indicator is used the same way as the Fibonacci moving average, in fact, they can be used together to confirm strong support and resistance levels. The steps to construct the Fibonacci step indicator are as follows:

- Calculate a simple moving average of the highs situated in the previous **{2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377}** time periods.
- Calculate a simple moving average of the lows situated in the previous **{2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377}** time periods.

Figure 7-1 shows an example of the Fibonacci step indicator on Adani.

FIGURE 7-1 The Fibonacci step indicator

Figure 7-2 shows an example of the Fibonacci step indicator on Amazon.

FIGURE 7-2 The Fibonacci step indicator

Similar to the Fibonacci moving average seen in the previous topic, the market may shape some noise around the Fibonacci step indicator. In **Figure 7-2**, you can see around the yellow circle that the market shaped some noise around the indicator before re-integrating it and continuing the bullish trend.

In the example of Amazon, the Fibonacci step indicator provided valuable long entry points as it accurately tracked the market's price action. This is precisely the point of the Fibonacci step indicator (being a moving average that tracks prices closer than the Fibonacci moving average). For best results, it is not recommended to use this indicator in ranging markets.

Figure 7-3 shows an example of the Fibonacci step indicator on EURUSD.

FIGURE 7-3 The Fibonacci step indicator

The main disadvantage of the Fibonacci step indicator is the width of the zone which can be big sometimes due to volatility. When the zone is relatively big, it may be wise to wait for it to shrink so that trading opportunities have better risk-reward ratios. Ideally, one would enter a position when the market is within the Fibonacci step zone. The *risk-reward ratio* is a financial term used to describe the potential profit an investor could make relative to the amount of risk they are taking on.

It is typically calculated by dividing the amount of profit an investor expects to make on an investment by the amount of potential loss they could incur. So, if you expect to gain **$200** on a trade and you risk **$100** on it, your risk-reward ratio would be **2.00** which is a desired ratio. A rule of thumb in trading states that your risk-reward ratio should be at least around **2.00**.

Figure 7-4 shows an example of the Fibonacci step indicator on SBI.

FIGURE 7-4 The Fibonacci step indicator

When the market surpasses or breaks the Fibonacci step indicator (or any type of moving average), it is advisable to wait for a pull-back before validating the new trend move. For example, you can follow these rules of thumb:

- Whenever the market surpasses the Fibonacci step indicator, it is advisable to wait for a comeback to the zone before playing the move higher. This can be seen in **Figure 7-4** around the **18**th of July.
- Whenever the market breaks the Fibonacci step indicator, it is advisable to wait for a comeback to the zone before playing the move lower. This can be seen in **Figure 7-4** around the **17**th of May.

TOPIC 8 FIBONACCI VOLATILITY BANDS

Volatility bands envelop the market price and create a dynamic area of support and resistance levels that is regularly updated. The most famous type of volatility bands are Bollinger bands as they are considered the first ones in the field of technical analysis.

The aim of this topic is to present a variation of volatility bands that uses the Fibonacci sequence to determine the dynamic support and resistance levels. However, before presenting this variation, it may behoove you to understand how Bollinger bands are created.

Bollinger bands are the pioneers of volatility bands. Created by *John Bollinger*, the bands are three dynamic lines that move alongside the price.

The aim of Bollinger bands is to provide moving support and resistance lines based on insights from descriptive statistics. They are calculated as follows:

- Calculate a **20**-period simple moving average on the close price. Let's refer to this as **step 1**.
- Calculate a **20**-period standard deviation measure on the close price and multiply every value by **2**. Let's refer to this as **step 2**.
- To find the lower Bollinger band (dynamic support), subtract **step 2** from **step 1**.
- To find the upper Bollinger band (dynamic resistance), add **step 2** to **step 1**.

And voilà, you now have calculated the famous Bollinger bands which are composed of the moving average line and the two bands.

Before moving on, let's define standard deviation so that you understand what you're creating. *Standard deviation* is a statistical measure that quantifies the amount of variation or dispersion of a set of data values from their mean or average. In other words, it measures how spread out the data is from the average value.

To calculate the standard deviation, you take the square root of the *variance*, which is the average of the squared differences of each data point from the mean. A high standard deviation indicates that the data is more spread out, while a low standard deviation indicates that the data is more tightly clustered around the mean.

Figure 8-1 shows an example of Bollinger bands applied on GBPJPY.

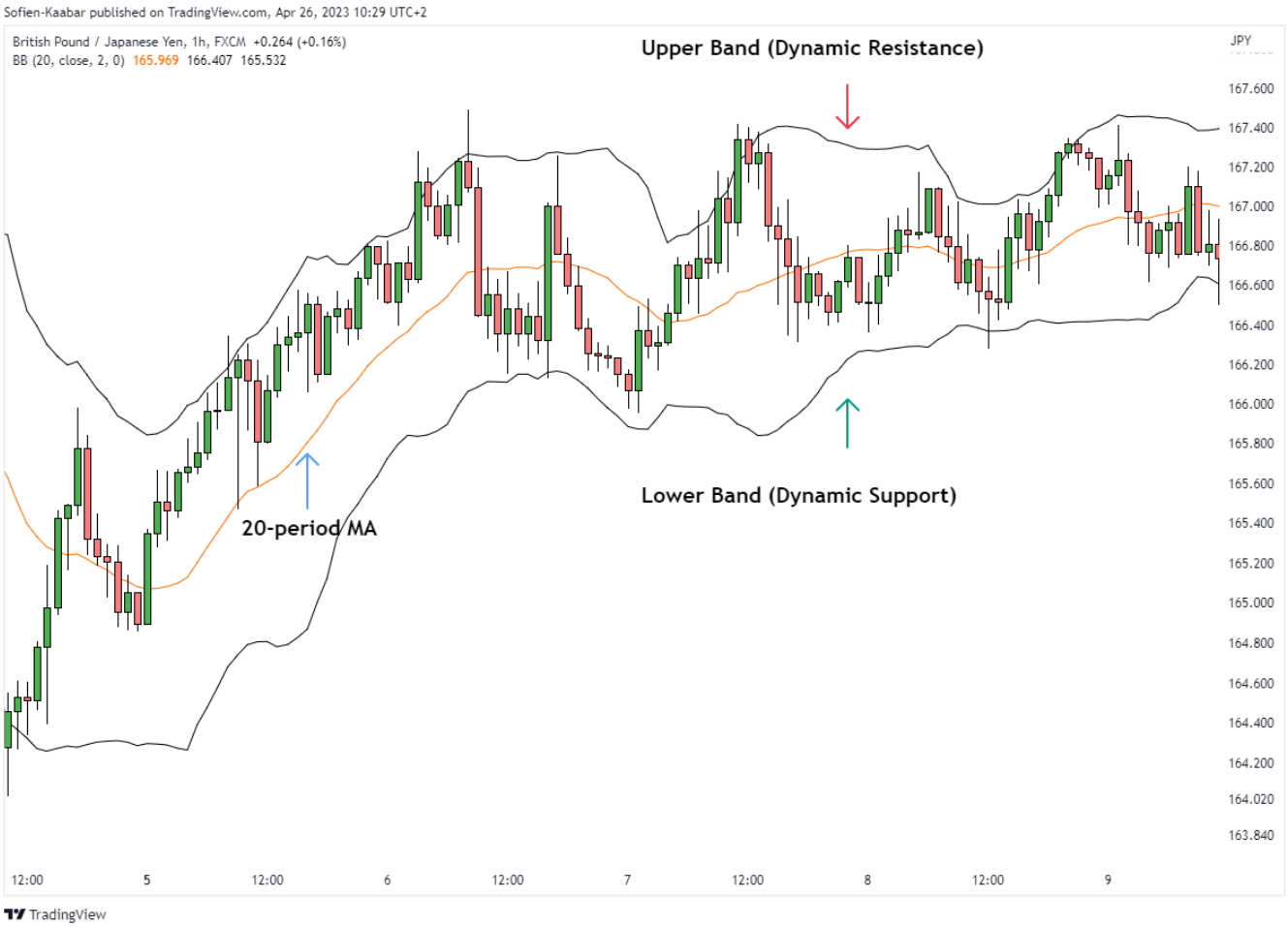


FIGURE 8-1 Bollinger bands applied on GBPJPY (hourly time frame)

The above Figure shows a market evolving within Bollinger bands. In a ranging market, the bands tend to work out well. In contrast, during a trending market, the bands tend to underperform as can be seen around the **5**th of the month in **Figure 8-1**. To calculate the Fibonacci volatility bands, follow these steps:

- Calculate a simple moving average and the standard deviation of the highs using **{5, 8, 13, 21, 34, 55, 89, 144}** as lookback periods. Multiply the results of the standard deviation by **2** and take the respective sums with the different averages. Take the average of the different moving averages calculated to get the upper band.
- Repeat the previous step using the lows and by differencing the standard deviation measures from the averages instead of summing them.

Figure 8-2 shows an example of the Fibonacci volatility bands on EURNZD.

FIGURE 8-2 The Fibonacci volatility bands

As you may know already, volatility bands tend to work well in ranging markets. **Figure 8-2** shows an example of decent predictions from the Fibonacci volatility bands. The difference between Bollinger bands and the Fibonacci volatility bands is that the latter takes into account more data and uses the extremes (highs and lows) and hence, it has more tolerance for whipsaws and dislocations (in other words, it is wider).

Of course, during trending markets, nothing will save the volatility bands from providing bad signals. The only exception would be to use them in accordance with the trend. This means that whenever a bullish market corrects and reaches the lower band support, a bounce may be expected. Similarly, whenever a bearish market recovers and reaches the upper band resistance, a downside consolidation may be expected.

Figure 8-3 shows an example of the Fibonacci volatility bands on GBPJPY.

FIGURE 8-3 The Fibonacci volatility bands

Occasionally, the market reaches the bands and quickly reverses from them, thus giving a limited window of a trade opportunity (as shown in the first two circled events in **Figure 8-3**). However, by doing so, the market may confirm even further the move and the conviction for the reversal increases.

To sum up, Fibonacci volatility bands are a type of contrarian indicator that works better in ranging markets. The upper part of the bands is supposed to give a moving resistance zone adjusted to volatility and the lower part of the bands is supposed to give a moving support zone adjusted to volatility. It is important to combine this indicator with other methods and to take into account the market regime.

PART 3

FIBONACCI-BASED PATTERN RECOGNITION

Price action analysis is the analysis of pure historical price-based movements in the goal of determining the next likely move. For example, drawing horizontal support and resistance lines is a price action method which seeks to produce buy signals around support levels and sell signals around resistance levels. Another example is the Fibonacci retracement technique which relies on price action to give out support and resistance levels. This part presents Fibonacci-based patterns with almost all of the topics dedicated to harmonic patterns. These patterns use Fibonacci ratios to give out a directional bias. Some of the patterns may be quite complex but they are essential in Fibonacci-based trading. The pioneer of harmonic patterns is *Scott Carney* as he has discovered many of the harmonic patterns seen in this book and has made massive contributions to harmonic patterns' education. For in-depth details, I recommend his books. After this part, you should be able to distinguish between different harmonic patterns and use them in trading. But before starting this journey of harmonic patterns, I will start off with an independent topic that presents a Fibonacci timing pattern based on both price and time. It is a contrarian technique that can be considered as an add-on to any trading system. This part contains the following topics:

- **Topic 9**: Fibonacci Timing Pattern
- **Topic 10**: The ABCD Pattern
- **Topic 11**: The Arrow Pattern
- **Topic 12**: The Gartley Pattern
- **Topic 13**: The Bat Pattern
- **Topic 14**: The Crab Pattern
- **Topic 15**: The Butterfly Pattern
- **Topic 16**: The Extreme Impulse Wave Pattern
- **Topic 17**: The 5-0 Pattern
- **Topic 18**: Harmonic Potential and Invalidation

TOPIC 9 FIBONACCI TIMING PATTERN

As previously mentioned, pattern recognition in the world of Fibonacci analysis is centered around harmonic patterns which are complex price action configurations that use Fibonacci ratios as conditions of validation.

Timing is important in trading but it is not crucial. However, being able to have a timing tool that gives you that extra confidence boost to take the trade is never a bad thing. There are a lot of things to understand with timing patterns and probably the most important are their weaknesses which will eventually allow you to use them efficiently. What is a timing pattern anyway?

A *timing pattern* uses price and time conditions to deliver a directional reversal signal. Why is this pattern called Fibonacci? The answer to this is that because it uses the Fibonacci sequence in its conditions to find bullish and bearish configurations. The detailed rules of the pattern are as follows:

- ***Bullish pattern:*** Whenever the market shapes eight consecutive times a close price that is lower than the close from three periods ago and five periods ago. Similarly, the last close price has an extra condition where it must also be lower than the previous close price. Additionally, the close price from eight periods ago must be bigger than the close price from eleven periods ago.
- ***Bearish pattern:*** Whenever the market shapes eight consecutive times a close price that is greater than the close from three periods ago and five periods ago. Similarly, the last close price has an extra condition where it must also be greater than the previous close price. Additionally, the close price from eight periods ago must be lower than the close price from eleven periods ago.

Consecutive signals are not allowed and therefore, a global condition is also imposed where if the conditions match at a certain time step while the previous step already has a timing pattern, the current pattern is invalidated but the previous pattern remains valid. The Fibonacci timing pattern works well in ranging and flat markets. In trending markets, you will see how to make them work better in **Topic 20**.

Figure 9-1 shows a detailed example of two bullish Fibonacci timing patterns. Notice how the countdown must be successive.

FIGURE 9-1 Signals from the pattern

I have noticed this pattern while trying out different methods that revolve around Fibonacci numbers. The pattern seems to work adequately across markets. This is a good thing as it avoids overfitting. *Overfitting* occurs when you try to force a pattern or a strategy to be perfect on one market during a certain period of time. The direct consequence of overfitting is severe underperformance the moment you test the strategy on another market or in a different time period.

The property of working adequately across markets can also be seen on some of the classic technical indicators such as the MACD and the stochastic oscillator which are used on every market. Results-wise, I have not found the steepness of the market to be an important factor in determining the success of the pattern. Therefore, the conditions remain pure with no external additions.

Figure 9-2 shows a few signals generated from the Fibonacci timing pattern.

FIGURE 9-2 Signals from the pattern

It is of course recommended to try adding a few parameters or conditions to the pattern but keep in mind the default version which as mentioned previously, tends to signal some local and even global tops and bottoms across different markets. Surely, no perfect pattern exists and research must be done individually to ensure that the pattern works. On my side, I have been using this pattern in my analyses with satisfactory outcomes. Hence, I recommend you keep an eye on it when you are trading your own system. It can serve as a confirmation factor.

Figure 9-2 shows that the pattern may sometimes be slightly early in delivering the expected move (if it's the right direction). Therefore, you should not always expect a direct reaction or even an extended one. The expectations for the Fibonacci timing pattern is to expect a local reversal (limited within a global trend) around the current price action but not immediately.

Figure 9-3 shows a few signals generated from the Fibonacci timing pattern.

FIGURE 9-3 Signals from the pattern

An important question must be asked at this stage: *When should you use the pattern?* The most direct answer is composed of three parts:

- During a ranging market, expect a better-than-average probability of a reaction.
- During a bullish market, only take into account bullish patterns.
- During a bearish market only take into account bearish patterns.

I highly advise you to follow these three guidelines so that you maximize your chances of getting the expected outcome from the pattern.

Evidently, it is up to you to understand the current market regime. Ranging markets are detected when horizontal support and resistance lines work well and the market seems to be balanced between bull and bear powers. Trending markets are obvious to the naked eye even though sometimes, they can be complicated (in other words: non-linear).

Figure 9-4 shows a few signals generated from the Fibonacci timing pattern.

FIGURE 9-4 Signals from the pattern

Another important question can be asked and that is: *Which time frame should be applied on the pattern?* It is mostly a short-term pattern, hence anything above 5-minute charts and below 4-hour charts is acceptable. Going upwards will show a decrease of utility of any technical analysis model as fundamental analysis takes the lead in impacting the markets. For instance, when you use the pattern on daily data, you may see a lot of false signals and mostly a more random picture. The preferred time frame is the hourly time frame.

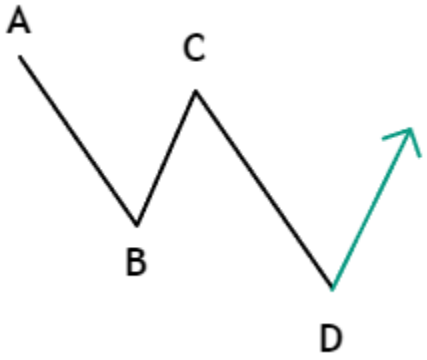
To sum up, the Fibonacci timing pattern is a valuable add-on to your research or you trading framework. I have found this pattern a few years ago and have been using it non-stop with no change in its predictive ability. I do however, encourage you to back-test it on the markets of your choice with the conditions of your choice, and above all, with the entry/exit techniques of your choice, as all of these parameters will have very different results.

TOPIC 10 THE ABCD PATTERN

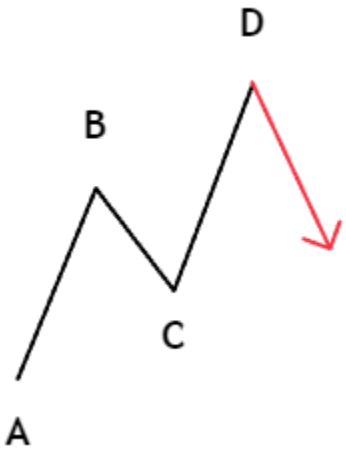
The ABCD pattern is the easiest and most frequent harmonic pattern in existence and it pertains to the concept of symmetry. The basic appearance is a zigzag line made out of four points in time which form the pattern's name. For the ABCD pattern to be valid, the AB leg must equal the CD leg. Here's the rundown of the pattern:

- The AB leg is impulsive and based on an initial move.
- The BC leg is corrective and based on a reactionary move.
- The CD leg is impulsive and based on a continuation of the initial move.
- The D point is the reversal zone from where the pattern becomes valid.

The theoretical bullish appearance of the ABCD pattern is as follows:



The theoretical bearish appearance of the ABCD pattern is as follows:



Ideally, you should start noticing the pattern half-way through the CD leg. This allows you to approximate the D point from where you would expect a corrective reaction and take action.

The symmetry condition implies that this pattern does not really rely on Fibonacci ratios, so why include it in the book? It is true that symmetry is not necessarily related to Fibonacci-based methods, but the ideal ABCD pattern is actually based on the golden ratio and its reciprocal. Note that symmetry is the equality between the AB and CD leg.

This means that the perfect theoretical ABCD pattern has the BC leg retrace back **61.8%** of the AB leg and the CD leg retrace back **161.8%** of the BC leg thus, shaping a perfect Fibonacci symmetry. However, the ABCD is a recognized harmonic pattern found through simply using the Fibonacci projection tool where the D point is at **100.00%** of the initial ABC move. **Figure 10-1** shows an example of an ABCD pattern.

FIGURE 10-1 Signals from the pattern

The ABCD pattern is very common and easily detectable. The reactionary force from the D point is considered to be very reliable especially when confirmed by the trend. The latter part means the following:

- Detecting a bullish ABCD pattern in a bullish trend increases the conviction.
- Detecting a bearish ABCD pattern in a bearish trend increases the conviction.

The clearer the pattern, the more likely it will provide a reaction as more market participants will detect it and act on it. The interesting part on the ABCD pattern is that it does not have a preferred time frame where it works best. Even on the long time horizons, the pattern has shown its efficacy in providing reactionary zones.

Figure 10-2 shows an example of an ABCD pattern.

FIGURE 10-2 Signals from the pattern

Nested ABCD patterns double the conviction for the expected reversal. This is quite important as trading is a mere numbers game, and the more odds you stack in your favor, the more you are likely to succeed. A *nested* ABCD is when a relatively big ABCD pattern contains a small ABCD pattern within it and shares the same D point, therefore, both patterns point to the same reversal zone.

Intuitively, nested ABCD patterns are far less frequent than regular ones. As you will see in the coming topics, the ABCD pattern may also be one of the building blocks for more complex harmonic patterns. Make sure you thoroughly understand how to easily detect one.

Figure 10-3 shows an example of a nested ABCD pattern.

FIGURE 10-3 A nested ABCD pattern

In **Part 4** of the book, you will see how to also increase the conviction of the ABCD pattern externally. As you know, you are not supposed to initiate a trade simply based on one indicator or one observation. **Figure 10-4** shows another example of an ABCD pattern.

FIGURE 10-4 Signals from the pattern

Figure 10-5 shows another example of an ABCD pattern confirmed by the bullish trend.

FIGURE 10-5 Signals from the pattern

In summary, the ABCD configuration is the easiest and the most common harmonic pattern in existence. It may also be one of the patterns that work the best in terms of predictive ability but this has yet to be proven as such subjective patterns have a hard time being back-tested. It is recommended to use this pattern in a trend-friendly way which means that it is arguably better to detect a bullish ABCD pattern in a bullish market.

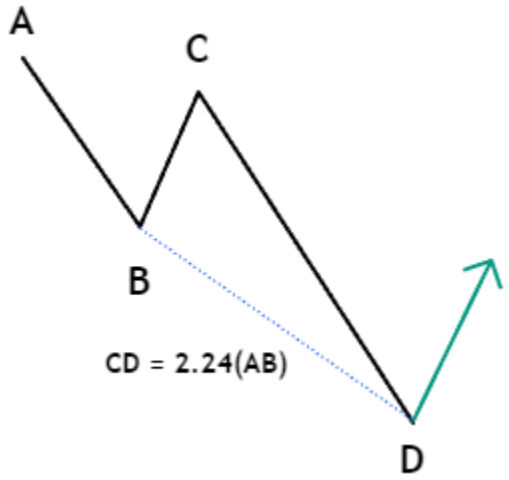
Similarly, it is better to search for a bearish ABCD pattern in a bearish market. This is done to maximize the chances of a correct prediction.

TOPIC 11 THE ARROW PATTERN

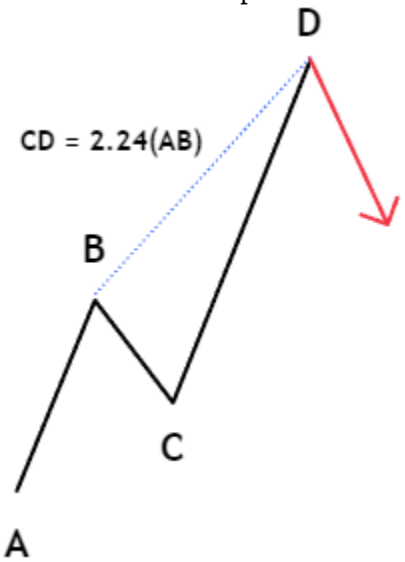
The Arrow pattern resembles the ABCD pattern and is also one of the simple harmonic configurations. The basic appearance is a zigzag line made out of four points in time just like the ABCD pattern. For the Arrow pattern to be valid, the CD leg must equal the **2.24x** of the AB leg. Here's the rundown of the pattern:

- The AB leg is impulsive and based on an initial move.
- The BC leg is corrective and based on a reactionary move.
- The CD leg is impulsive and based on a continuation of the initial move.
- The D point is the reversal zone from where the pattern becomes valid.

The theoretical bullish appearance of the Arrow pattern is as follows:



The theoretical bearish appearance of the Arrow pattern is as follows:



The Arrow pattern does not necessarily have to be an invalidated ABCD pattern since the symmetrical reaction (at **100.0%**) could happen and then the market continues to shape **2.24x** of the AB move. The Arrow pattern is slightly less reliable than the ABCD pattern in terms of reactions, but combined with proper indicators, it has a good chance of achieving its goal. As is the case with the ABCD pattern, the Arrow pattern starts to be noticed in the CD leg but as opposed to the ABCD pattern, it works only on short-term frames. This means that any time frame as of the daily horizon underperforms. It is also worth-noting that nested Arrow patterns increase the conviction but are extremely rare and are still less reliable than nested ABCD patterns.

Figure 11-1 shows an example of an Arrow pattern.

FIGURE 11-1 Signals from the pattern

In terms of frequency, the Arrow pattern is much less frequent than the ABCD pattern since the theoretical form must be visible so that it's picked up on.

Figure 11-2 shows an example of an Arrow pattern.

FIGURE 11-2 Signals from the pattern

In summary, the Arrow is one of the simpler patterns alongside the ABCD pattern. It is recommended to use this pattern in a trend-friendly way even though this may filter out a lot of signals, but trading is all about waiting for the right opportunity and not jumping on the first train that comes. Remember, there are two forms of risk taking, *reckless* and *calculated*. Choose wisely. **Topic 19** discusses harmonic potential and invalidation which details where to take profits when reactions occur from the reversal zone and when to invalidate and stop the view when the market fails to react as expected.

TOPIC 12 THE GARTLEY PATTERN

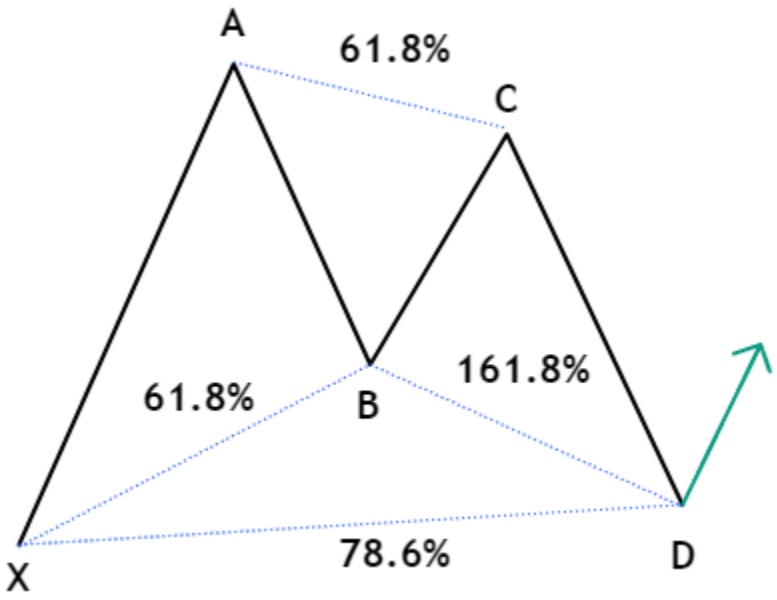
You have finally reached the discussions on complex harmonic patterns. Up until now, the ABCD and the Arrow patterns were mainly zigzag lines that are easily detectable by traders, which may have contributed to their strength (especially, the ABCD pattern). Topics **12-18** present the complex harmonic patterns as presented by pioneers such as *Scott Carney*.

The *Gartley* pattern resembles a **W-M** setup and is one of the first complex configurations. The basic appearance is a form of the letter **M** for a bullish pattern and a form of the letter **W** for a bearish pattern. The perfect chronological conditions for the Gartley pattern are as follows:

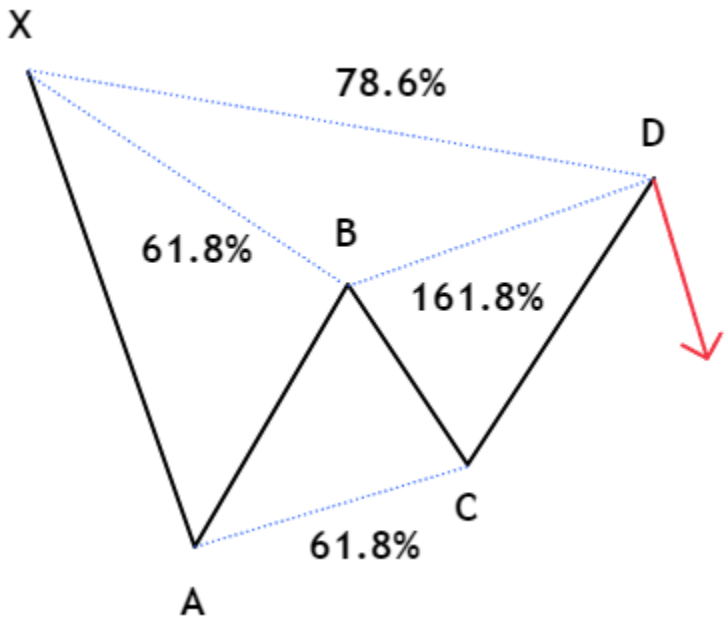
- The XA leg retraces back **61.8%** which forms point B.
- The AB leg retraces back **61.8%** which forms point C.
- The BC leg retraces back **161.8%** which forms point D (the reversal area).
- Point D must also be the **78.6%** retracement of the XA leg.

The word perfect refers to the retracements that must be seen to determine the type of pattern with a high degree of confidence. I recommend you only take into account these perfect ratios to validate the pattern.

The theoretical bullish appearance of the Gartley pattern is as follows.



The theoretical bearish appearance of the Gartley pattern is as follows.



What makes the Gartley pattern is the confluence of the **161.8%** and **78.6%** ratios around the same area. Since occasionally, the **78.6%** serves as an excess level over **61.8%**, the Gartley pattern can be considered the perfect harmonic pattern composed of the golden ratio and its reciprocal. The best time frame for the Gartley pattern is undefined but with a preference for short-term configurations. Keep in mind that the higher the time frame, the less likely technical analysis will add value.

As you may have already noticed, there is an embedded ABCD pattern in the Gartley, but not any ABCD pattern. As the AB leg retraces back **61.8%** and the BC leg retraces back **161.8%**, the ABCD is considered the perfect type which may add conviction to the reactionary zone around D. This what makes the Gartley pattern very powerful as it's a combination of the perfect ABCD pattern with a retracement at **78.6%** that may serve as an excess level over **61.8%**.

The concept of *excess levels* is important in analysis as markets generally do not form reactions at exactly one pre-defined point (for example, the **61.8%** retracement level), but around it. This noise can be considered as excess needed for the market to do its thing.

Figure 12-1 shows an example of a Gartley pattern.

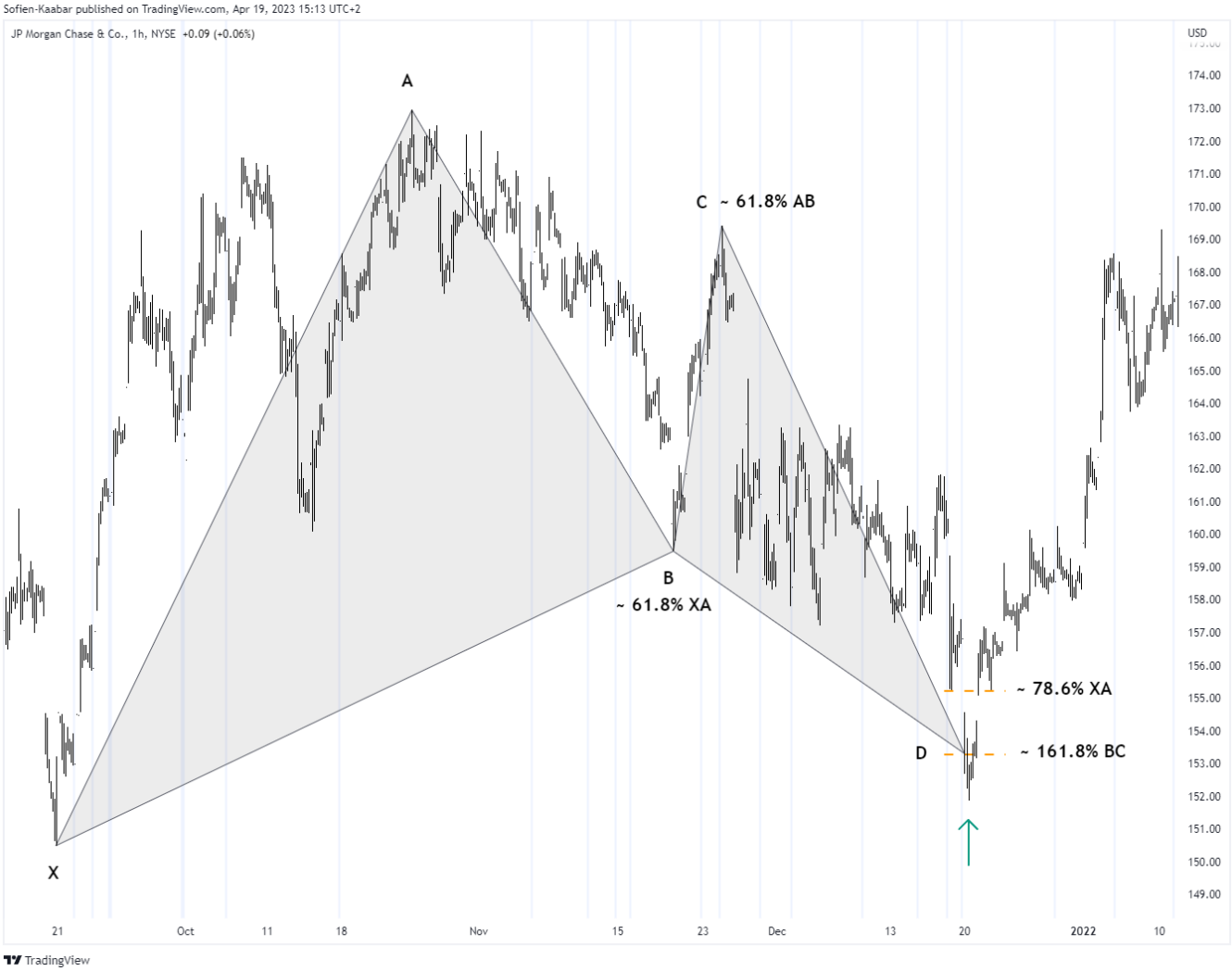


FIGURE 12-1 Signals from the pattern

Evidently, the confluence level that is found from the XA and BC legs is more likely to be a zone as you can see from **Figure 12-1**. The bigger the zone, the less reliable the D point is, as you will have a lot of room to consider as support or resistance. This may hinder the risk-reward ratio of the trade.

Notice how the bullish Gartley looks like the letter **M** with the last leg higher than the first leg and lower than the second leg.

Figure 12-2 shows an example of a Gartley pattern. Notice how the bearish Gartley looks like the letter **W** with the last leg lower than the first leg and higher than the second leg.

FIGURE 12-2 Signals from the pattern

The example shows a tighter (and more desirable) D area where the Gartley pattern is better visualized and closer to the theoretical illustration. The reaction also seems to have not seen any excess above the zone.

In summary, the Gartley pattern is the poster boy of harmonic patterns since it's generally the one that is the most studied (alongside the ABCD pattern). Typically, the Gartley pattern is more common than the other complex patterns that will be discussed in the following topics. In terms of reliability, it is important to know that it varies from market to market.

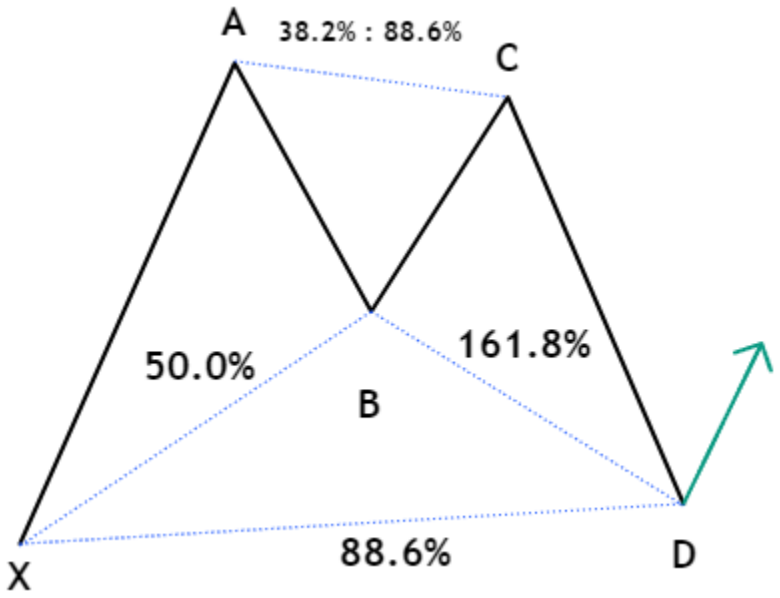
TOPIC 13 THE BAT PATTERN

The *Bat* pattern also resembles a **W-M** setup. The basic appearance is a form of the letter **M** for a bullish pattern and a form of the letter **W** for a bearish pattern. The perfect chronological conditions for the Bat pattern are as follows:

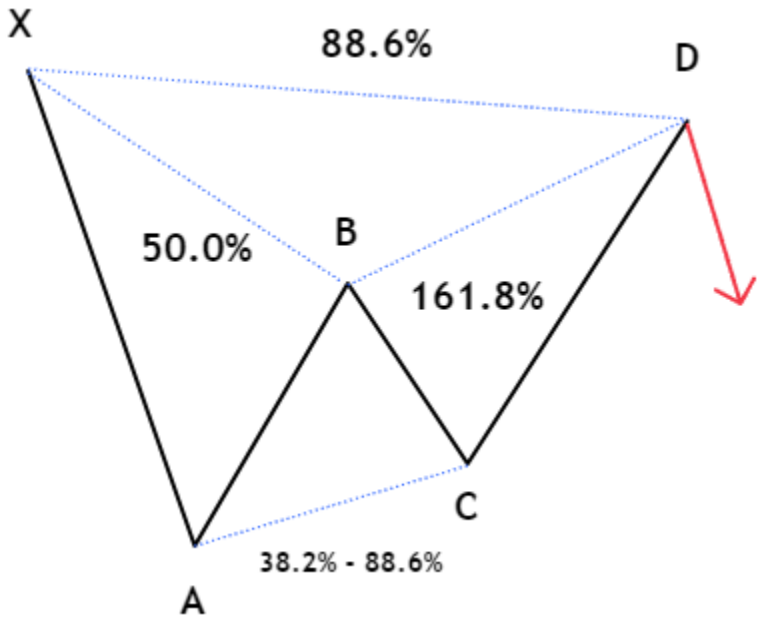
- The XA leg retraces back **50.0%** which forms point B.
- The AB leg retraces back **38.2% - 88.6%** which forms point C.
- The BC leg retraces back **161.8%** which forms point D (the reversal area).
- Point D must also be the **88.6%** retracement of the XA leg.

Remember that the word perfect refers to the retracements that must be seen to determine the type of pattern with a high degree of confidence. The pattern is named after its resemblance to the shape of a bat, with its wingspan and head. Discovered and presented by *Scott Carney*, the father of harmonic patterns, the Bat pattern is uncommon but is likely to yield satisfactory reactions if used right.

The theoretical bullish appearance of the Bat pattern is as follows:



The theoretical bearish appearance of the Bat pattern is as follows:



What makes the Bat pattern is the confluence of the **161.8%** and **88.6%** ratios around the same area. The **88.6%** retracement is probably less known than other ratios but it may be one of the most powerful ones in terms of reactions which makes the Bat pattern even more interesting. The best time frame for the Bat pattern is undefined but with a preference for short-term configurations.

The Bat pattern is purely complex as there is no embedded ABCD pattern in it unless you trade a less perfect version of it where you consider a BC retracement of **61.8%** as valid. Unfortunately, the Bat pattern may be less common than other patterns but its reliability is one of the strongest alongside the Gartley pattern.

Figure 13-1 shows an example of a Bat pattern.

FIGURE 13-1 Signals from the pattern

Figure 13-1 shows a Bat pattern with a relatively small reaction zone. The ratios were perfect which explains the strong reaction from the reversal area (the D point). You may be wondering where should you place your buy. Is it at the D point given by the BC retracement or the D point given by the XA retracement? This is a good question especially with larger reversal zones. There are two ways of doing this:

- *The aggressive way*: This method assumes buying at the first encountered level. In the case of **Figure 13-2**, it's the D point given by BC.
- *The conservative way*: This method assumes buying at the second encountered level. In the case of **Figure 13-2**, it's the D point given by XA.

Ultimately, it's up to you to decide on the buying (or selling) level but keep in mind that you wouldn't have this problem if the reversal area is small. This is one of the reasons why it's preferred to have a small area.

Figure 13-2 shows an example of a Bat pattern.

FIGURE 13-2 Signals from the pattern

The above Figure shows a bearish Bat pattern with a very tight reversal area. With this type of configurations, you can place your entry (in this case, a short order) wherever you want inside the zone (even slightly higher if you want to avoid excess noise). The stops and targets of harmonic patterns are discussed in **Topic 19**. For now, let's stick to discussing the shapes of the patterns and how to identify them.

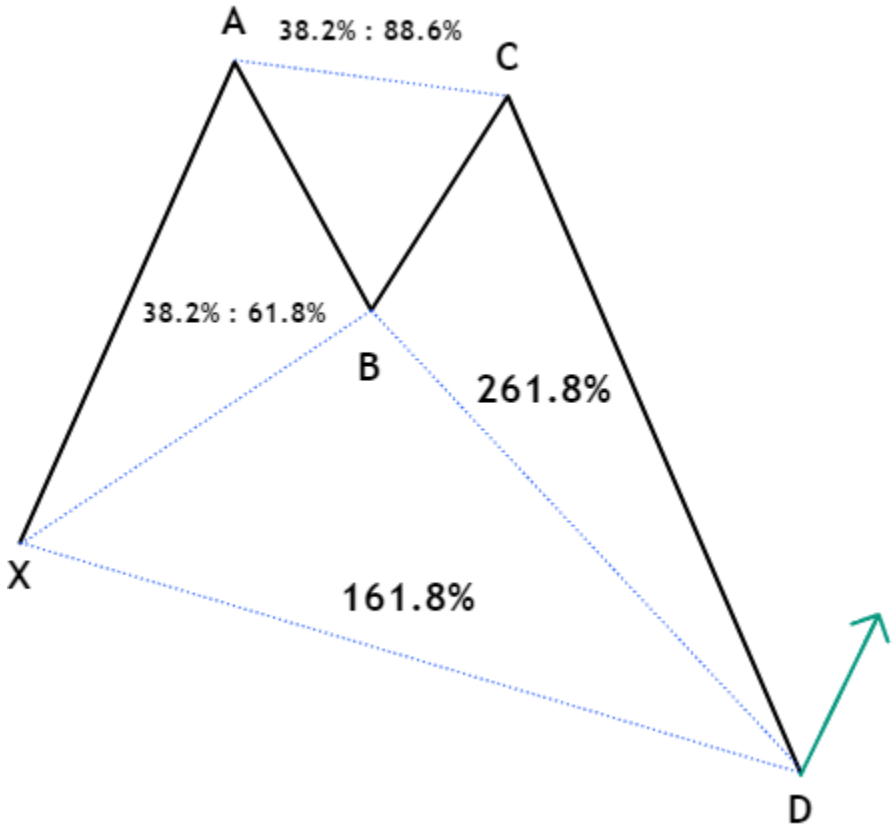
In summary, the Bat pattern is a complex harmonic configuration with specific ratios. It is characterized by the absence of the embedded ABCD pattern like the Gartley. The frequency of the Bat pattern leaves room to be envied but the reliability factor is relatively high compared to other complex harmonic patterns.

TOPIC 14 THE CRAB PATTERN

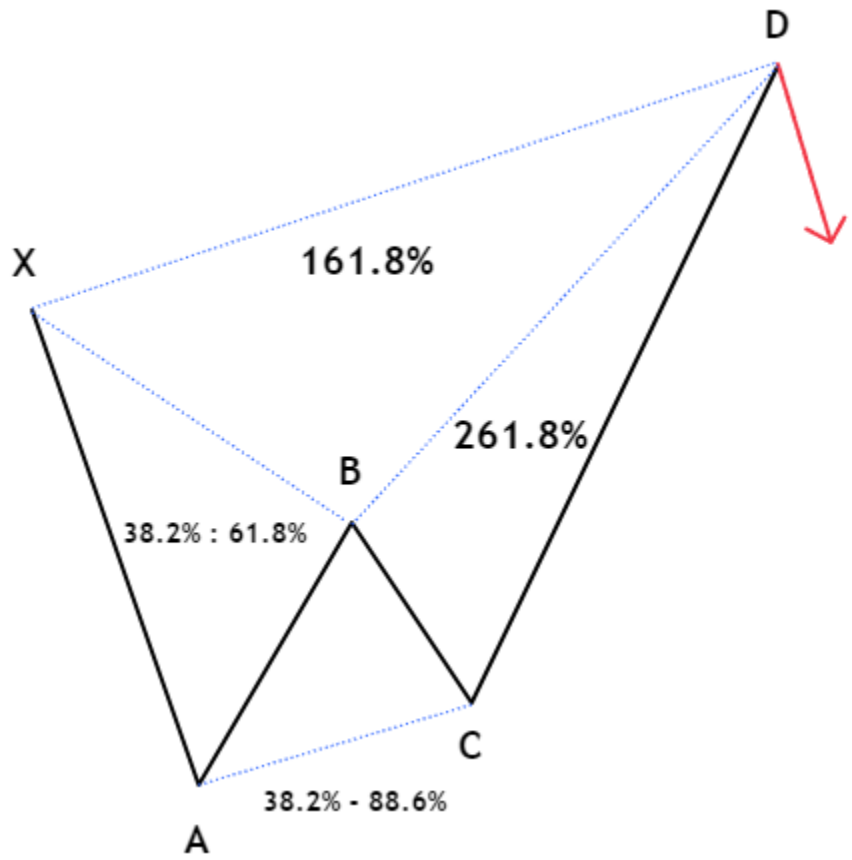
The *Crab* pattern also resembles an extended **W-M** setup. The basic appearance is a distorted form of the letter **M** for a bullish pattern and a distorted form of the letter **W** for a bearish pattern. The perfect chronological conditions for the Crab pattern are as follows:

- The XA leg retraces back **38.2% - 61.8%** which forms point B.
- The AB leg retraces back **38.2% - 88.6%** which forms point C.
- The BC leg retraces back **261.8%** which forms point D (the reversal area).
- Point D must also be the **161.8%** retracement of the XA leg.

The theoretical bullish appearance of the Crab pattern is as follows:



The theoretical bearish appearance of the Crab pattern is as follows.



As visible from the theoretical illustrations, the Crab pattern has a large extension at the end that makes seem outstretched. The **261.8%** retracement makes a first appearance to show the large extension (in some literature, it can even be **3.618%**). The Crab pattern seems to play on a golden ratio confluence with **161.8%** and **261.8%**.

The Crab pattern is generally seen in volatile and trending markets since the extension needs to be wide enough for the market to reach the big ratios. The reliability of the Crab pattern may be less than the one on the Gartley and the Bat patterns but it remains nevertheless very interesting due to the golden ratio confluence zone.

Figure 14-1 shows an example of a Crab pattern.

FIGURE 14-1 Signals from the pattern

Figure 14-1 chart shows how extended the Crab pattern can be before encountering the reversal zone from where a sizable reaction occurred. These has a better chance of occurring when the ratios are perfect. Due to the number of harmonic patterns, you can afford to wait for the perfect configuration to come before initiating a trade. After all, there are enough ABCD patterns to fight boredom.

The reversal zone tends to be wider than usual due to the long distance that the market must cross before reaching the perfect ratios. This is why, when it comes to the risk-reward ratio, the Crab pattern may not be the best configuration to trade on its own.

Figure 14-2 shows an example of a Crab pattern.

FIGURE 14-2 Signals from the pattern

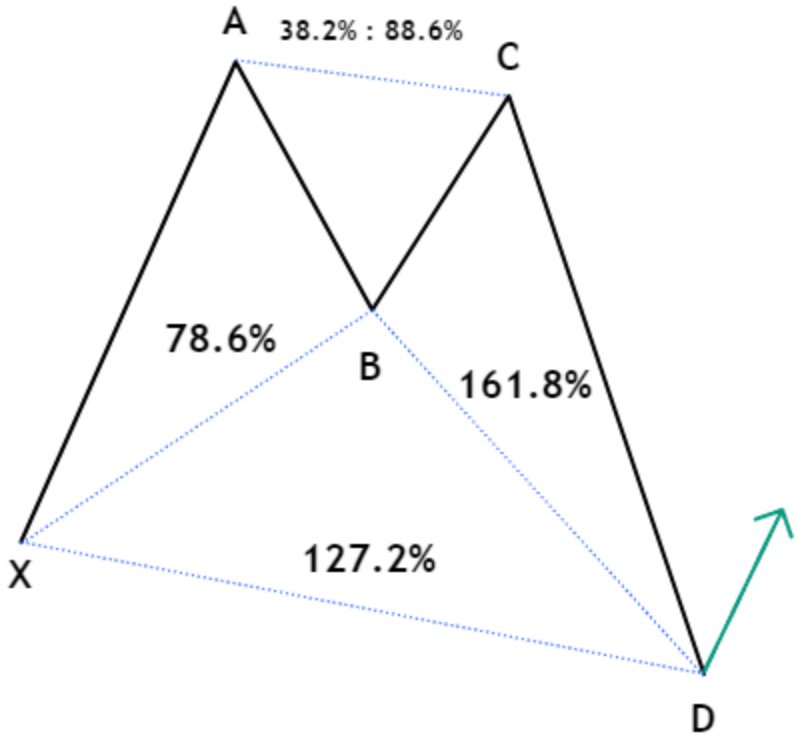
Sometimes, reactions come in the form of stabilization and not full reversals as shown in **Figure 14-2**. It's always better to combine the reactions with technical indicators and graphical levels (such as horizontal support and resistance levels). Stabilization phases can also be played through the use of *options* in case you have a bias of a lower volatility ahead. This is not the main aim of harmonic patterns, but when the trend is very steep, you may want to expect a stabilization first before calling a global top or bottom directly.

TOPIC 15 THE BUTTERFLY PATTERN

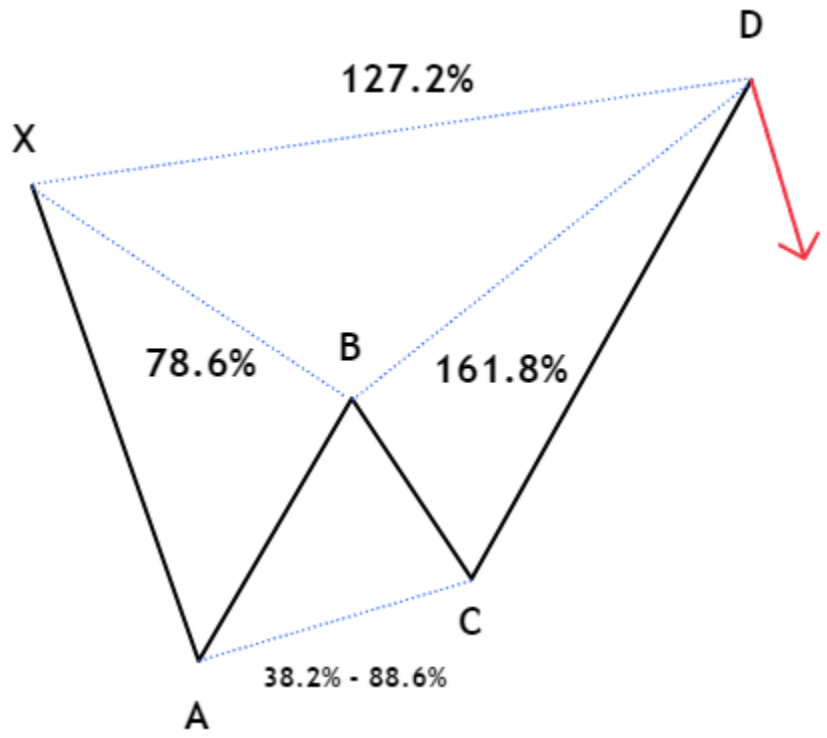
The *Butterfly* pattern is another pattern that resembles a **W-M** setup. The basic appearance is a form of the letter **M** for a bullish pattern and a form of the letter **W** for a bearish pattern. The particularity of the Butterfly pattern is that the last leg of the **M** is slightly below the first leg and the last leg of the **W** is slightly above the first leg. The perfect chronological conditions for the Bat pattern are as follows:

- The XA leg retraces back **78.6%** which forms point B.
- The AB leg retraces back **38.2% - 88.6%** which forms point C.
- The CB leg retraces back **161.8%%** which forms point D (the reversal area).
- Point D must also be the **127.2%** retracement of the XA leg.

The theoretical bullish appearance of the Butterfly pattern is as follows.



The theoretical bearish appearance of the Butterfly pattern is as follows.



The Butterfly pattern retraces back to **127.2%** from the XA leg where a confluence zone lies with a retracement of **161.8%** from the BC leg (which is the CD leg). The Butterfly assumes that the market should break the initial point X (either to the downside in case of a bullish pattern or to the upside in case of a bearish pattern) just like the Crab pattern which is why these patterns are not that far from each other in terms of shape.

The Butterfly pattern is rich with different Fibonacci ratios as the first retracement is **78.6%** followed by either **38.2%** or **88.6%** and finally, **161.8%** and **127.2%**. The preferred time horizon for the Butterfly remains the same as the previous patterns, therefore, short-term.

The occurrence of the Butterfly pattern is rather uncommon and thus, you are unlikely to immediately detect it. Add to that the fact that these complex patterns are not easily noticeable, and the probability of having the perfect Fibonacci retracements is even lower.

Figure 15-1 shows an example of a Butterfly pattern.

FIGURE 15-1 Signals from the pattern

The bullish example shows an opportunity signaled by the Butterfly pattern around a tight reversal area. Note that even if the planets align themselves, the markets may either not react as expected, react too early, or react late. **Figure 15-1** shows a reaction that occurred slightly earlier than expected. Normally, you would have missed this opportunity as the market didn't really enter the reversal zone.

With this being said, wasted opportunities are always better than regretful situations, therefore, you must ignore the fear of missing out (FOMO) and stick to the initial trading plan which is to initiate the trade only if your initial research validates it and if the market enters the reversal zone.

Figure 15-2 shows an example of a Butterfly pattern.

FIGURE 15-2 Signals from the pattern

Harmonic patterns do not have ideal nor default sizes, they can occur even at a few bars interval (look at the difference between **Figure 15-1** and **Figure 15-2** in terms of time). **Figure 15-2** shows a small Butterfly configuration. Notice how the market perfectly enters the reversal zone before reversing. The relatively small red candlestick pattern left in the reversal zone can actually tell you something about market psychology. As the first bearish (red) candlestick after a series of bullish (green) candlesticks, the body of the candle represents hesitation from market participants about the initial bullish move. This can be seen as a precursor to a bearish reversal.

Another thing to note about harmonic patterns is that they can occur during any market regime. This means that a bullish Butterfly may occur during a bullish trend, thus making it even more powerful.

Figure 15-3 shows an example of a Butterfly pattern.

FIGURE 15-3 Signals from the pattern

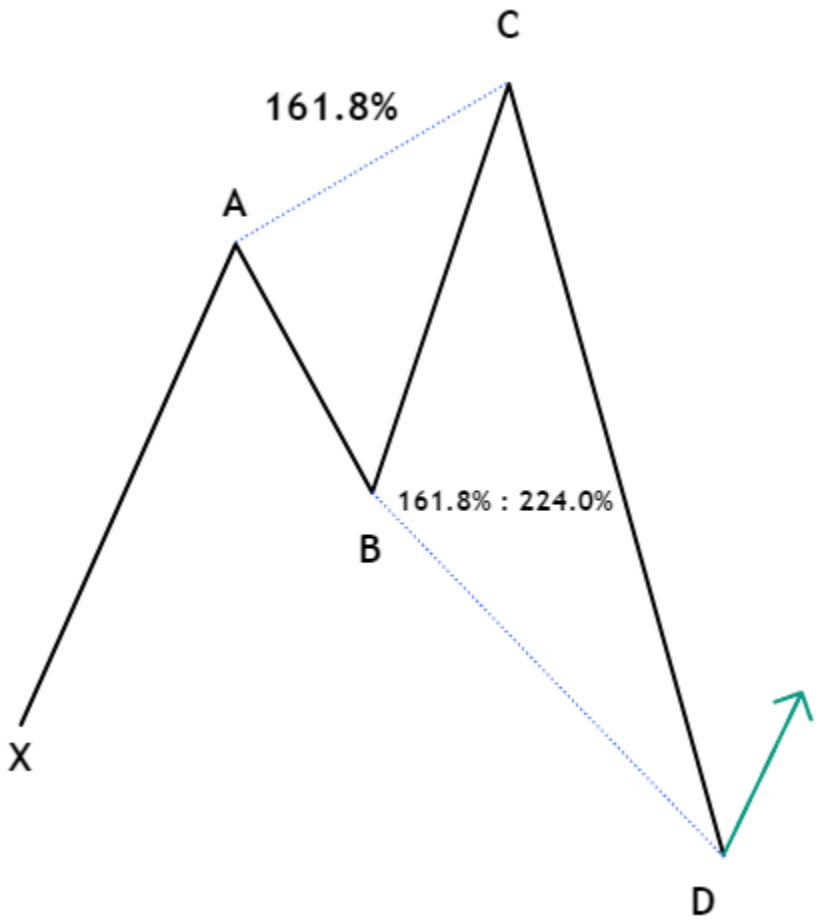
In summary, the Butterfly pattern is another harmonic configuration with different ratios. It is relatively less common than the other patterns but worth monitoring. By now, you should start to understand how the different harmonic patterns are structured. However, not all harmonic patterns look like **W-M** formations. The next two topics show two related patterns that have a slightly different shape and different ways to find them. It's worth noting that their reliability is quite high. Personally, I constantly use the patterns presented in **Topic 16** and **Topic 17** combined with other Fibonacci techniques such as the Fibonacci timing pattern and the Fibonacci moving average.

TOPIC 16 THE EXTREME IMPULSE WAVE PATTERN

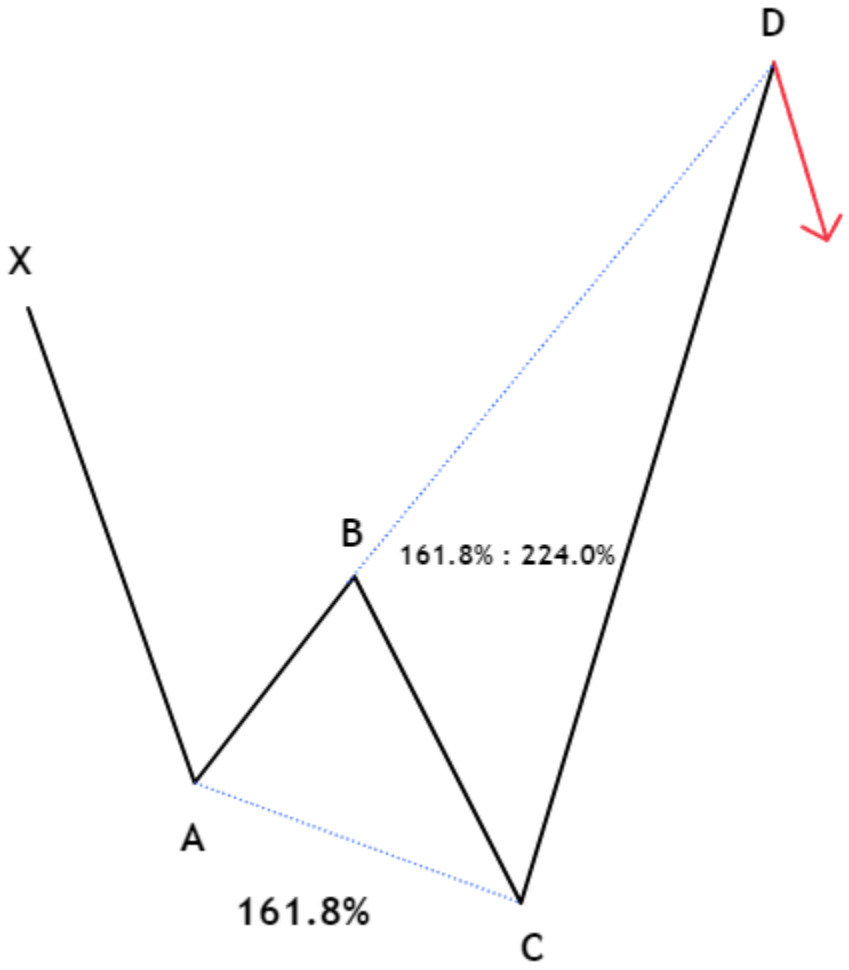
The *Extreme Impulse Wave* pattern is another complex harmonic setup that is a bit different from the ones you have seen (Gartley, Bat, Crab, and Butterfly). It is defined by two ratios:

- An XA leg occurs with no preferred retracement level.
- The AB leg retraces back **161.8%** which forms point C.
- The BC leg retraces back **161.8%%** or **224.0%** which forms point D (the reversal area).

The theoretical bullish appearance of the Extreme Impulse Wave is as follows.



The theoretical bearish appearance of the Extreme Impulse Wave is as follows.



The *Extreme Impulse Wave* is one of my favorite patterns due to its high reliability and simplicity. The market starts by shaping a regular leg (XA) which retraces and forms point B with no preferred ratio. Then, the AB leg retraces back **161.8%** to form point C before reversing and retracing **161.8%** or **224.0%** of the BC leg from where a reversal should occur (point D).

There is no preferred retracement for the XA or XC leg in relation to point D. This means that the reversal level is not a confluence of ratios but a simple retracement.

Figure 16-1 shows an example of an Extreme Impulse Wave pattern.

FIGURE 16-1 Signals from the pattern

The first reversal zone that can be called D1 does not have to be invalidated for the second reversal zone D2 to work, and this is evidenced by **Figure 16-1**. Notice how there was an initial reaction at D1 before seeing another meaningful reaction at D2.

The Extreme Impulse Wave starts to be noticed when the market breaks point B. In other words, you should keep an eye on the **161.8%** as first reactionary level. If eventually, D1 breaks, you can expect a reaction at D2 which is a marginally more powerful level.

Figure 16-2 shows an example of an Extreme Impulse Wave pattern.

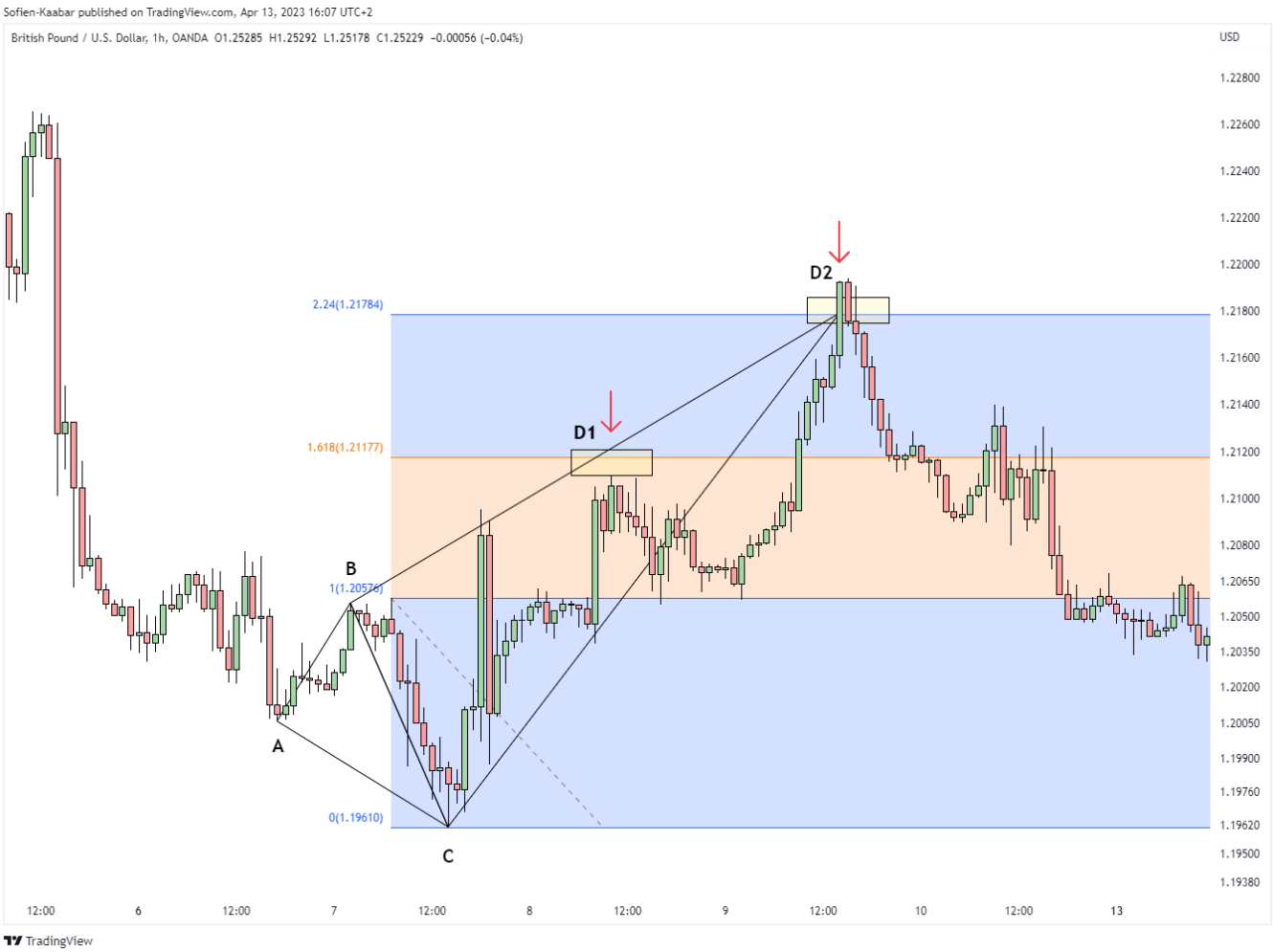


FIGURE 16-2 Signals from the pattern

Figure 16-2 shows a bearish configuration of the pattern. Notice how D2 provides a better reactionary level and a global top. It goes without saying that taking the Fibonacci retracements is done using the highs and lows unless you deem that a certain high or low is due to an extreme dislocation. Only in that case, you may instead use the close price.

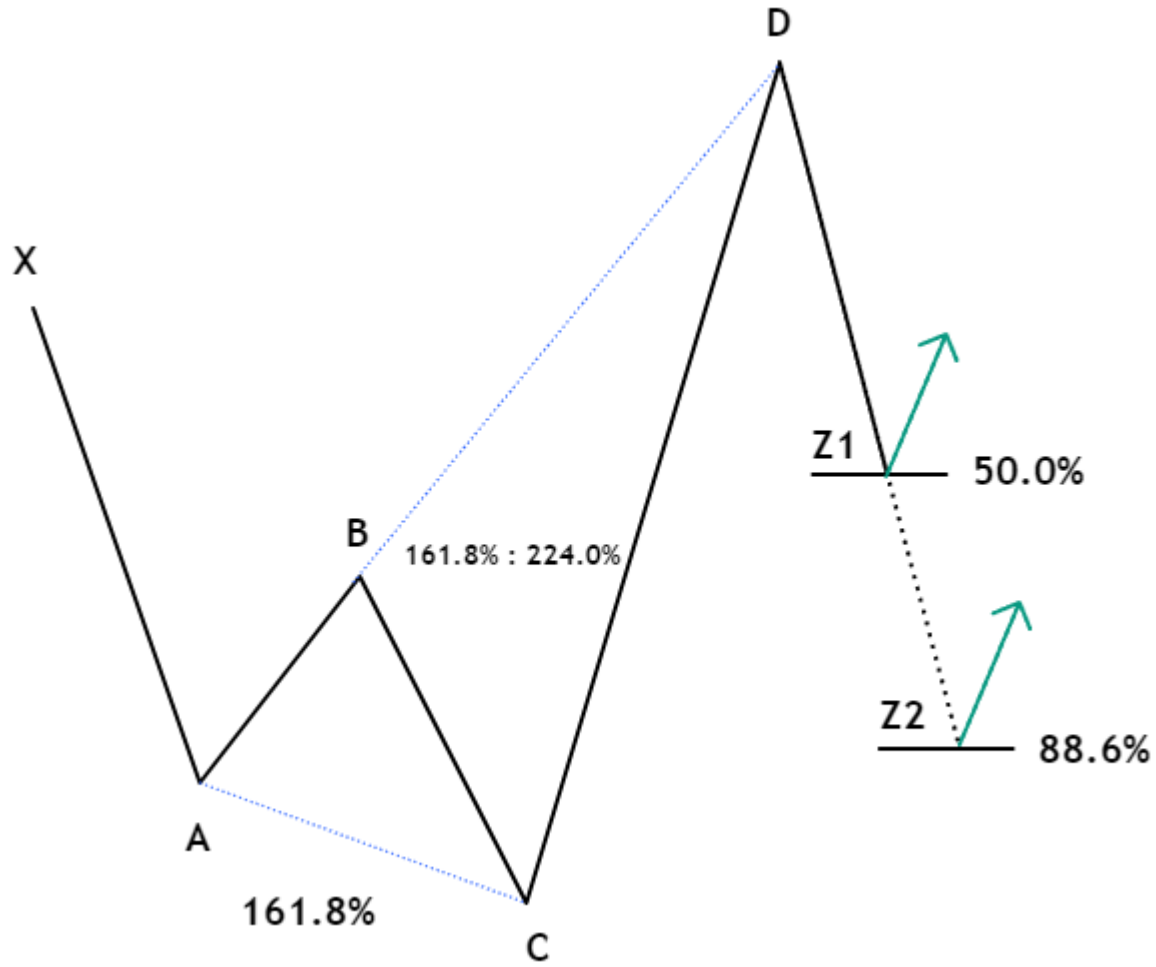
There is a hidden pattern in **Figure 16-2** that I will let you figure out on your own. This pattern has the same reversal zone as the Extreme Impulse Wave. By now, you may start looking at charts in terms of harmonic patterns (with a focus on ABCD and Gartley as the main configurations, but also on the Extreme Impulse Wave). Confluence of reversal zones is key in harmonic trading.

TOPIC 17 THE 5-0 PATTERN

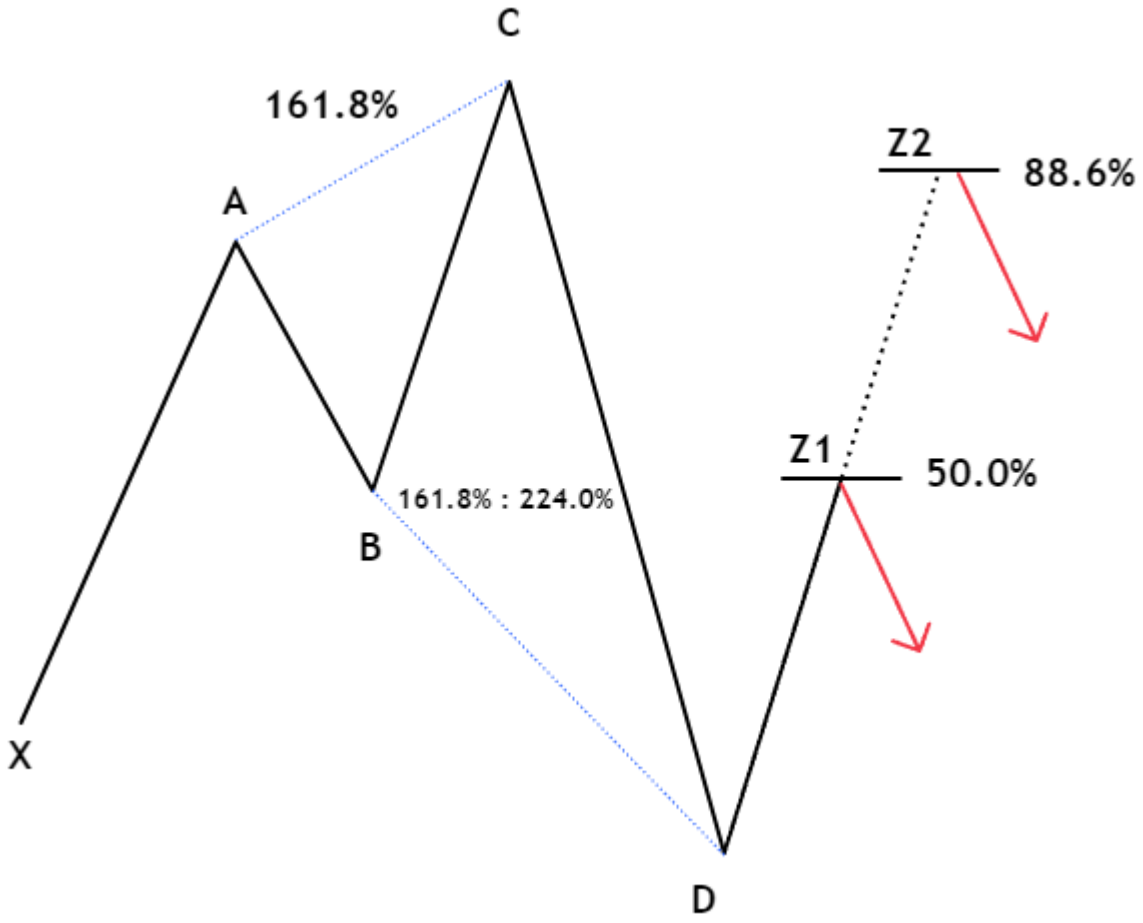
The *5-0 pattern* is the continuation of the Extreme Impulse Wave. It may be seen as the target level from where a reverse reaction is expected. It too, has two ratios to monitor, however, the whole process of the Extreme Impulse Wave pattern must be initiated from the start. It is defined as follows (keep in mind that the below definition starts from the beginning):

- An XA leg occurs with no preferred retracement level.
- The AB leg retraces back **161.8%** which forms point C.
- The BC leg retraces back **161.8%%** (D1) or **224.0%** (D2) which forms point D.
- The CD leg retraces back **50.0%** (Z1) or **88.6%** (Z2).

The theoretical bullish appearance of the 5-0 pattern (which comes after a bearish extreme impulse wave) is as follows.



The theoretical bearish appearance of the 5-0 pattern (which comes after a bullish extreme impulse wave) is as follows.



The 5-0 capitalizes on the success of the extreme impulse wave in providing the reaction from whichever point (D1 or D2). The pattern answers to the question: What's next? And where should I exit profitably the trade taken from the extreme impulse wave pattern? Basically, the 5-0 pattern is always on the other side of the successful reaction done by the first pattern:

- A bullish 5-0 pattern is validated after a successful reaction from the bearish extreme impulse wave pattern. It has two support levels, Z1 and Z2.
- A bearish 5-0 pattern is validated after a successful reaction from the bullish extreme impulse wave pattern. It has two support levels, Z1 and Z2.

Figure 17-1 shows an example of an 5-0 pattern.

FIGURE 17-1 Signals from the pattern

In the most recent chart, the market has shaped a perfect reactions on the tops given by the bearish extreme impulse wave and then reached Z1 support (defined as **50.0%** retracement from the bottom to the top of the first pattern). The Z1 support may be slightly weaker than the Z2 support but it depends on the aggressiveness or conservatism of the trader. Some traders believe that the reaction should occur sooner, which makes Z1 more appropriate for them. Other traders, want a better support so that they enhance their probability of success, which makes Z2 more appropriate for them.

Figure 17-2 shows an example of an 5-0 pattern.

FIGURE 17-2 Signals from the pattern

As every other harmonic pattern, the 5-0 pattern can also be valid on a narrow time horizon. This can be seen in **Figure 17-2** where the pattern didn't take a lot of time space to be valid and provide its expected reaction. You can notice again here that the resistance level that has provided the real reaction is Z1.

Figure 17-3 shows an example of an 5-0 pattern.

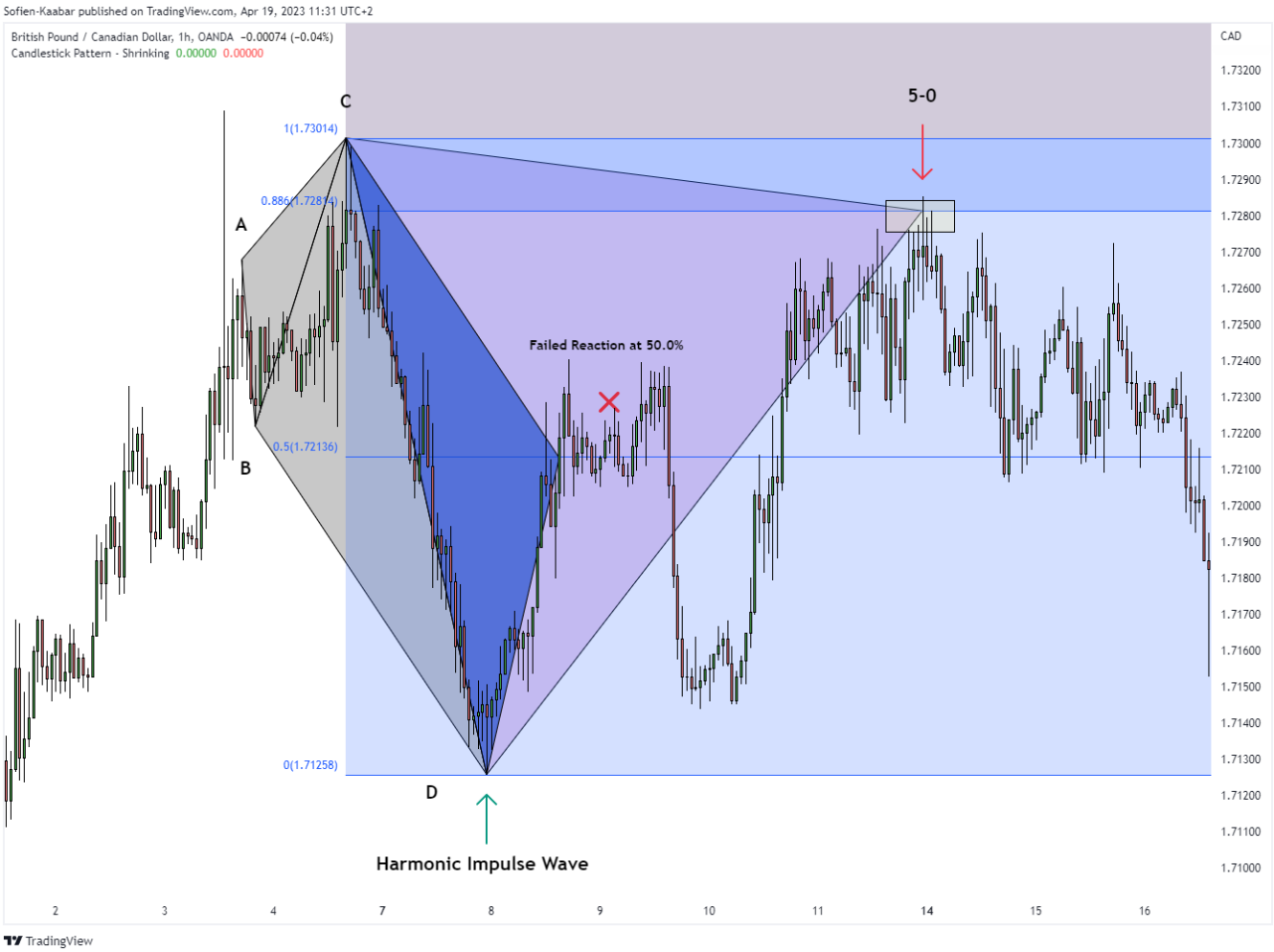


FIGURE 17-3 Signals from the pattern

A failure of reaction at Z1 makes Z2 the next level from where a significant reaction should occur. This is intuitive and conservative traders may like this configuration as they will have the opportunity to play the pattern. This is only possible if it reaches **88.6%** as nothing guarantees that it will.

To sum up, when taking into account the different harmonic patterns in existence, it is possible to have multiple trading opportunities across markets. When considering the perfect ratios and combining them with the optimal situations (for example, a tight reversal zone and a pattern compatible with the trend), they become powerful trading tools that ultimately may turn into full systems if combined with proper risk management.

TOPIC 18 HARMONIC POTENTIAL AND INVALIDATION

The *harmonic potential* is the target area following a harmonic reaction from the reversal zone. The harmonic potential offers a basic guide as to where a trader may place their take-profit orders in case of pure harmonic trading. On the other hand, the *harmonic invalidation* is the threshold where the pattern is invalidated and is said to have failed to deliver a reaction. The expected reaction of harmonic patterns can be set in two ways:

- The Fibonacci ratio way can be used to set the potential but to a lesser extent, the invalidation.
- The Average true range way can be used to set the potential and the invalidation of the pattern.

Harmonic potential and invalidation are basically risk management techniques to ensure a first hand optimization of harmonic trading. *Risk management* in trading refers to the process of identifying, assessing, and mitigating the potential risks associated with trading activities. The goal of risk management is to limit the losses that can occur from trading, while also maximizing potential profits.

Let's start the Fibonacci ratio way. Simply put, you can calculate the potential (target) of a harmonic pattern by retracing its two extreme points (highs and lows) and retaining two ratios: **38.2%** (as a first target) and **61.8%** (as a second target).

For example, to calculate the potential of an ABCD pattern, you would need to retrace from point A to point D. Then, you may target **38.2%** of the move as a level from where you exit the position at a gain. This process is the same for other harmonic patterns. The technique of retracing to find the targets can be further explained in *Scott Carney's* books.

Figure 18-1 shows the potential of an ABCD pattern using the Fibonacci ratio way.

FIGURE 18-1 Harmonic targets

The Fibonacci ratio way is simple but may have drawbacks from time to time which can be a very close target or a very far one depending on the past price action.

To understand the second way, you must understand the concept of volatility and the average true range first. *Volatility* refers to the degree of variation or fluctuation in the price of a financial instrument over time. It is a statistical measure of the dispersion of returns for a given security or market index. Higher volatility implies that the price of an asset can fluctuate rapidly and unpredictably in a short period, while lower volatility suggests that the price remains relatively stable.

Volatility is often related to risk and panic. Typically, during market crises, volatility rises as people jump off the boat by selling as fast as possible. Volatility can be estimated using various methods, namely the standard deviation but also using the average true range (ATR), which is the technical analyst's preferred way.

The *Average true range* (ATR) is a technical indicator commonly used to measure volatility in financial markets. The ATR is calculated by taking the average of the true range calculations over a given period. The *true range* is defined as the maximum of the following:

- The difference between the high and the low of the current period
- The absolute value of the difference between the high of the current period and the closing price of the previous period
- The absolute value of the difference between the low of the current period and the closing price of the previous period.

To calculate the ATR, you can follow these chronological steps:

1. Choose a lookback period which will be used to calculate the ATR.
2. Calculate the true range for each day over the selected period.
3. Calculate the average true range by taking the smoothed moving average of the true ranges over the selected period.

A *smoothed moving average* is a type of moving average that is designed to reduce the noise and volatility in the data. Like other moving averages, it is a calculation of the average price of a security or other financial instrument over a specified period of time. However, instead of simply calculating the average price over the specified period, a smoothed moving average applies a mathematical formula that reduces the impact of the most recent prices in the calculation.

It's worth noting that the smoothed moving average, the ATR, and the RSI all have been developed by *Welles Wilder Jr*. The ATR can be used in several ways and especially in risk management (for example, setting the stop and target orders).

Figure 18-2 shows the 14-period ATR applied on the S&P 500 index.

FIGURE 18-2 14-period ATR applied on the S&P 500 index (daily time frame)

Using the ATR in risk management is actually very straightforward. Remember, it is the average fluctuations of points for a given period of time and therefore, you can use its values as multiple of stops and targets. Consider the two following examples:

- Trader A wants to buy a stock at $**100** with a **14**-period ATR of $**10**. She wants to use **2x** ATR as a target and **1x** ATR as a stop. Therefore, she places her target at $**120** and her stop at $**90**. Trader A is risking $**10** to gain $**20** which is good risk management.
- Trader B wants to buy a stock at $**50** with a **14**-period ATR of $**2**. He wants to use **2x** ATR as a target and **3x** ATR as a stop. Therefore, he places his target at **$54** and his stop at **$44**. Trader B is risking $**6** to gain **$4** which is suboptimal risk management.

Figure 18-3 shows a bullish opportunity on the ABCD using the ATR approach.

FIGURE 18-3 14-period ATR applied on the S&P 500 index (daily time frame)

The ABCD seen in Figure 18-3 had an expected reversal zone around D which has seen a bit of excess around it before the market recognized it and reversed. Using the ATR, you could set the stop and target levels as seen in the previous two examples. The blue line refers to the entry price, the red line refers to the stop level, and the green line refers to the target. Notice how using the ATR allows you to let the market make some noise around the reversal point. This way, you are sure not to get stopped because of excess volatility.

You want to get stopped because you were wrong and not because you failed to take into account some white noise around your good level.

Figure 18-4 shows a bearish opportunity on the ABCD using the ATR approach.

FIGURE 18-4 14-period ATR applied on the S&P 500 index (daily time frame)

Similar to the previous chart, **Figure 18-4** shows an example of a market that reversed perfectly at its reversal level (the D point) with not much excess. You can also notice that to respect good risk management habits, the stop is twice as close to the entry level as the target level is. This means that statistically speaking, if the odds were even, you are more likely to get stopped than to hit your target. Doing so allows you to remain in the game for more time so that your strategy shows its added-value and starts to show its fruits. By risking significantly less money than you expect to gain, you can hope for a few winning trades that will completely offset the losses. Naturally, when you have a risk-reward ratio of **2.00**, you would hope for a hit ratio that is higher than **33.33%** (assuming equal size positions). Normally, you would hope for a higher hit ratio while still using a good risk-reward ratio (which is around **2.00**).

Figure 18-5 shows a stopped view after the market touched the ATR stop level.

FIGURE 18-5 A stopped view after the market touched the ATR stop level

It is not important if the market returns to shape the expected reaction after having touched the stop. The important thing is to stick to the framework which on the long-term, will provide its fruits. Discipline in trading is paramount and you cannot treat every trade as if it were a member of your family.

I am not aware of an invalidation using Fibonacci ratios but I would not recommend it as it is difficult to calibrate it to every trade. Also, wicks can render the calculation extremely subjective. It is important to know the potential and limitations of harmonic patterns so that you have a basic framework to start with. These rules of thumb have been created to facilitate harmonic trading but it is ultimately up to you to create your risk management system.

Figure 18-6 shows a stopped view after the market touched the ATR stop level.

FIGURE 18-6 A stopped view after the market touched the ATR stop level

To sum up, it is important to know the potential and limitations of harmonic patterns so that you have a basic framework to start with. These rules of thumb have been created to facilitate harmonic trading but it is ultimately up to you to create your risk management system.

PART 4

FIBONACCI-BASED STRATEGIES

Unlike trading techniques (like retracing a movement using Fibonacci levels), trading strategies are more complex and usually involve more indicators or a combination of trading techniques. This part covers some hands-on trading strategies that specifically use Fibonacci tools and indicators to find trade configurations. Naturally, a trading system must consist of the following elements:

- *The directional part*: This is the core of the system and it is the strategy that is supposed to predict the next move. This is what is discussed in this part.
- *The risk management part*: Every trading strategy must have a risk management component where proper tools are used to minimize the risk of ruin and to ensure the continuity of the activity. The most basic risk management tool is the stop-loss order.
- *The position sizing part*: The sizing part is important and can be either objective (for example, by using mathematical functions) or subjective (for example, conviction-wise).

Traders are unique and they have their own preferences when it comes to organizing the trading framework, the previous three elements are simply an example. It is important to know that the strategies presented in this part are for educational purposes only and they are unlikely to provide consistent returns across all markets. They are however useful in that they can be optimized for better results. After all, they do combine a set of powerful techniques.

This part contains the following topics:

- **Topic 19**: The ABCD & Fibonacci Moving Average
- **Topic 20**: The Fibonacci Step Timing
- **Topic 21**: The Fibonacci Volatility Timing Strategy
- **Topic 22**: The Golden Fibonacci Double Strategy
- **Topic 23**: The Harmonic RSI Strategy

TOPIC 19 THE ABCD & FIBONACCI MOVING AVERAGE

Simplicity in trading is very important and direct combinations of indicators and price action tools may yield decent trade setups. This strategy combines the following two elements:

- The Fibonacci moving average
- The ABCD harmonic pattern

A trend following indicator[7] and a reversal technique[8] can give very powerful signals if they point towards the same direction. The strategy relies on the ability of the ABCD pattern to provide decent reactionary zones while confirming the zone with the Fibonacci moving average. Therefore, the trading conditions are as follows:

For a bullish opportunity

Whenever the market reaches the reversal zone of an ABCD pattern while entering the Fibonacci moving average from the above.

For a bearish opportunity

Whenever the market reaches the reversal zone of an ABCD pattern while entering the Fibonacci moving average from the below.

If you have read **Topic 6** and **Topic 10**, you should find this strategy to be quite simple to understand. A half price action and half indicator strategy, it uses the strength of reversal zones of the ABCD pattern and combines it with a powerful trend indicator and filter. The *filter* part comes from the fact that for bullish signals, the market must be still above the Fibonacci moving average. Similarly, for bearish signals, the market must be still below the Fibonacci moving average.

[7] For more details, see Kaabar, Sofien. *Trend Following Strategies in Python*. 2021.
[8] For more details, see Kaabar, Sofien. *Contrarian Trading Strategies in Python*. 2022.

Figure 19-1 shows a bullish example of the strategy.

FIGURE 19-1 Signals from the pattern

The example shows a falling market that has shaped an ABCD pattern right as it enters the moving average zone. Notice the strong reversal from the D point. The steepness of the Fibonacci moving average is not that significant in determining the reversal. The important element is the zone. However, it helps to identify whether the market is ranging or trending, but this is done subjectively by looking at the latest interactions between the market and the Fibonacci moving average.

The nested ABCD pattern also works quite well with the Fibonacci moving average but of course, all these conditions reunited are hard to get. When the strategy is composed of a nested ABCD, you can expect stronger and quicker reactions from the reversal zone.

Figure 19-2 shows a bearish example of the strategy with a nested ABCD.

FIGURE 19-2 Signals from the pattern

The target of the strategy is the same as the one discussed in **Topic 18**. Therefore, you can simply target the **38.2%** of the full ABCD pattern or use the ATR way. My recommendation lies with the ATR part. You can use the following rules of thumb for a basic risk management regarding this strategy:

- *For the stop-loss*, you can set at least a 2x ATR multiple from the candlestick that enters the reversal zone.
- *For the target*, you can set at least twice the stop-loss ATR (for example, 4x or 5x ATR) from the candlestick that enters the reversal zone.

You can also use the farthest moving average line as a stop if you prefer a tighter level.

Figure 19-3 shows a bearish example of the strategy where the farthest moving average line was used as a stop-loss.

FIGURE 19-3 Signals from the pattern

The above Figure shows an invalidated configuration. The stop-loss is the red line and the target level is the green line. The issue with setting the stop-loss around the farthest line is that it may be too tight. This means that you must be sure of the imminent reaction which is impossible to do. At the very least, you can do this with a nested ABCD but it's not recommended. Let's have a look at the strategy with both types of risk management.

Figure 19-4 shows an example of the strategy.

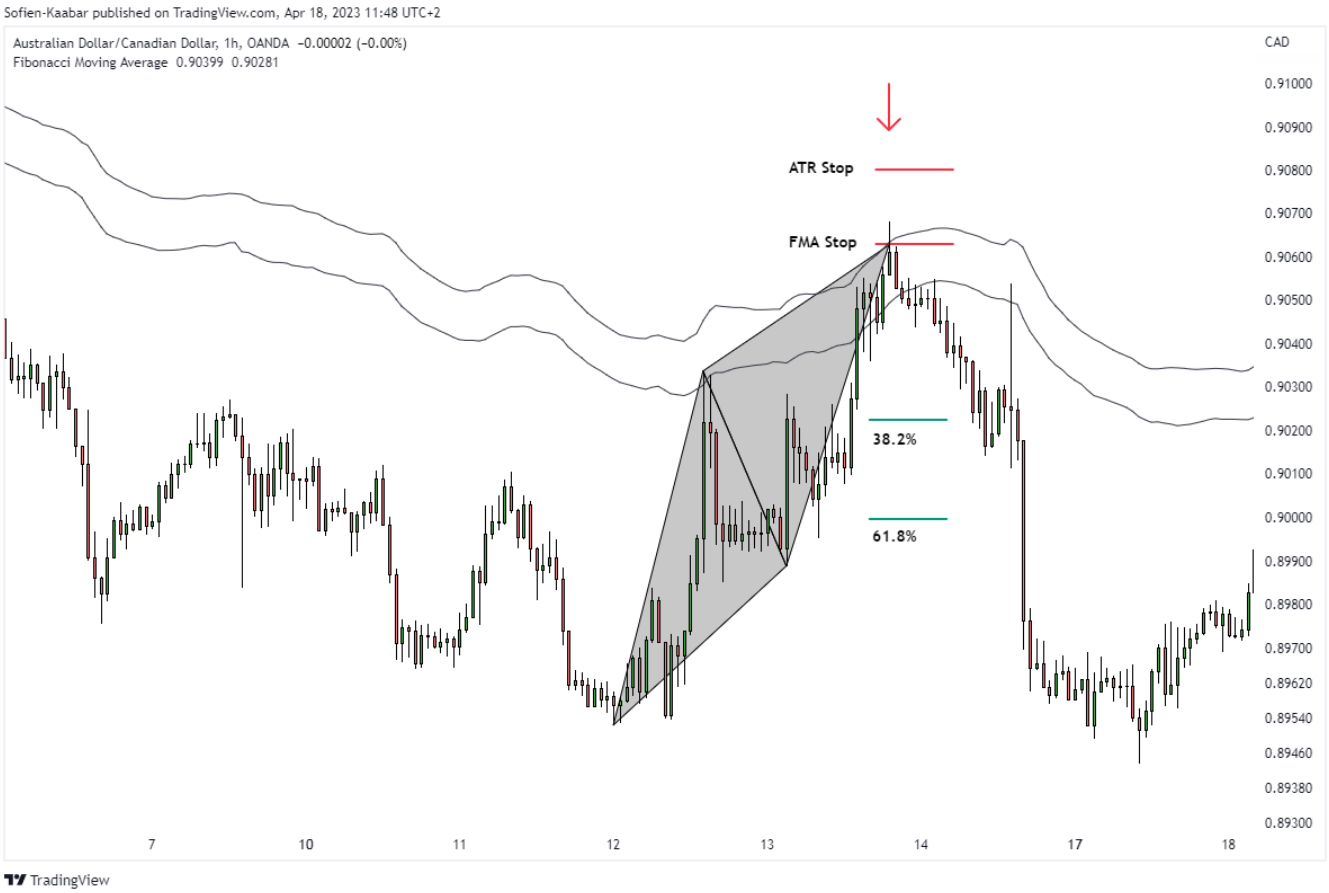


FIGURE 19-4 Signals from the pattern

The ATR stop as seen in **Figure 19-4** gives the price action more margin for any noise around the reversal zone. Then, you can target any type of potential you want (using the Fibonacci ratio way or the ATR way).

To sum up, this strategy combines trend following and contrarian techniques to deliver a diversified point of view (price action and technical indicator-wise). Remember to back-test your ideas and your strategies before assuming that they will work. Typically, trading strategies do not last long and do not work on all markets which means that your risk management system is and should always be the main protagonist in your trading framework.

TOPIC 20 THE FIBONACCI STEP TIMING

After having seen a harmonic pattern with a trend following pattern, let's see how to combine the Fibonacci timing pattern with a trend following technique such as the Fibonacci step indicator. As the Fibonacci step indicator tends to closely follow the price more than the Fibonacci moving average, it makes sense to combine it with a timing technique. As you have seen in **Topic 9**, the Fibonacci timing pattern depends on a countdown method which forecasts local tops and bottoms. The aim of this strategy is to combine these signals with the Fibonacci step indicator so that they occur during the reversal zones. The strategy therefore combines the following two elements:

- The Fibonacci step indicator
- The Fibonacci timing pattern

Therefore, the trading conditions are as follows:

For a bullish opportunity

> Whenever the market shapes a bullish Fibonacci timing pattern while entering the Fibonacci step indicator from the above.

For a bearish opportunity

> Whenever the market shapes a bearish Fibonacci timing pattern while entering the Fibonacci step indicator from the below.

There is a famous saying that goes as follows: *the trend is your friend*. This is a common phrase in trading that emphasizes the importance of following the direction of the market trend when making trading decisions. The reason why the trend is often seen as a friend to traders is that market trends tend to persist for extended periods of time, providing traders with a high probability of success when they trade in the direction of the trend. This is because the underlying market conditions that drive the trend are typically driven by fundamental factors such as economic data, corporate earnings, or political events, which can continue to influence market sentiment over a prolonged period.

When traders identify a trend and trade with it, they are able to capitalize on the momentum of the market, which can lead to higher profits and reduced risk. In contrast, trading against the trend can be much riskier, as traders are essentially betting that the market will reverse course, which can be difficult to predict and may result in significant losses.

Figure 20-1 shows a few signals from the strategy. The red crosses denote signals that should not exist as the second condition is not met.

FIGURE 20-1 Signals from the strategy

As can be seen from the chart in **Figure 20-1**, the signals that can be acted on are the ones that satisfy the conditions. For example, the first signal was valid because the timing occurred when the market was inside the Fibonacci step indicator's reversal zone. By having a bearish pattern, you know that the market sees the zone as resistance. Even though, all four signals in **Figure 20-1** have worked quite well, the ones retained were only the first and the last one.

Figure 20-2 shows more signals from the strategy that highlights the filtering effect.

FIGURE 20-2 Signals from the strategy

The filtering effect is needed to remove bad signals (and sometimes good signals, unfortunately) that come against the current prevailing trend. In **Figure 20-2**, the strategy has provided very good entry points to follow the trend upwards. All that was needed is a touch of risk management to make the strategy more complete. Of course, one should not rely solely on technical analysis to predict the market's direction as fundamental analysis is needed to further confirm the direction. This book does not really discuss fundamental analysis, but let's take the chance and talk about a few things to keep in mind when trading. *Fundamental analysis* is a method of analyzing the intrinsic value of an asset by examining its underlying economic and financial factors.

There are several fundamental analysis techniques that you should keep in mind:

- *Economic Indicators*: Economic indicators are statistics that provide insight into the overall health of an economy. Some of the most important economic indicators to follow when trading currencies include GDP, inflation rates, interest rates, employment data, and trade balance.
- *Central Bank Policies*: Central banks play a critical role in currency markets, as they are responsible for setting interest rates and implementing monetary policies. As such, it's essential to keep an eye on central bank announcements and speeches, as these can provide valuable insight into the direction of a particular currency.
- *Political Developments*: Political events can have a significant impact on currency markets, as changes in government policies can affect a country's economic performance. It's essential to stay up-to-date on political developments in countries whose currencies you are trading.
- *Market Sentiment*: Market sentiment refers to the overall mood of traders in the market. When traders are optimistic about a particular currency, it may rise in value, while a pessimistic sentiment can cause the currency to fall.

Figure 20-3 shows more signals from the strategy that highlights the filtering effect.

FIGURE 20-3 Signals from the strategy

The last signal which shows a question mark around it denotes a situation where a signal is given when the market was breaking the Fibonacci step indicator's support zone. In this case, it's better to await a close within the zone which would then show that the market has recognized the support area.

Figure 20-4 shows more signals from the strategy that highlights the filtering effect.

FIGURE 20-4 Signals from the strategy

The chart shows that it's important to disregard the signals when they are not confirmed by the Fibonacci step indicator or in other words, any trend filter for that matter. This means that you can actually substitute the Fibonacci step indicator with the Fibonacci moving average or even a simple moving average as long as it's long enough to capture the global trend (a simple rule of thumb would be to set a minimum lookback period of 100).

To sum up, the main aim of this strategy is to combine the Fibonacci timing pattern with a trend filter to enhance its signals. You can actually start to see a pattern here by my insistence on combining the different reversal techniques with a trend filter in order to improve their signals.

TOPIC 21 THE FIBONACCI VOLATILITY STRATEGY

Volatility always has a place in trading be that in forecasting or risk management. This strategy uses two indicators that you previously seen in **Topic 6** and **Topic 8**. The strategy relies on the concept of dynamic support and resistance levels and how to strengthen them using the confluence method.

The *confluence method* is when several indicators point to the same area, making it more likely to provide a market reaction. The strategy therefore combines the following two elements:

- Fibonacci volatility bands
- The Fibonacci moving average

The trading conditions are as follows:

For a bullish opportunity

Whenever the market enters the Fibonacci moving average zone from the above where the lower Fibonacci volatility band also lies.

For a bearish opportunity

Whenever the market enters the Fibonacci moving average zone from the below where the upper Fibonacci volatility band also lies.

Figure 21-1 shows a few signals from the strategy.

FIGURE 21-1 Signals from the strategy

Even though this strategy combines a trend following and a reversal indicator together, it really works best on ranging markets. This is because of the nature of both indicators; the Fibonacci moving average tends to be far from the market when it is in a steep trend (due to its formula) which makes both indicators far from each other. Take a look at **Figure 21-4** to understand how far both indicators can be sometimes.

Figure 21-2 shows a few signals from the strategy.

FIGURE 21-2 Signals from the strategy

The strategy may not have many signals and it tests the patience of the trader but it's conservative in nature and combines volatility with averaging to detect strong reversal zones such as in **Figure 21-2**. Naturally, the target of the strategy should be the other volatility band but as mentioned in the previous Topic, it is important to follow the fundamental bias and use technical analysis as a timing tool.

This does not mean that there are not any successful pure technical strategies out there, in fact, there is a bunch of them, but since trading is a numbers game, it may be better to try to align all odds in your favor.

Speaking of successful technical trading strategies. Why are they often omitted from courses and books? The short answer is because every strategy has a life span and while readers may enjoy the first moments when it outperforms (if it's provided), subsequent readers will see that it fails by time as the market constantly changes its dynamic.

Think of the market as a door that constantly changes its lock. Strategies (which are keys in this example) need to adapt and evolve in order to unlock the markets. This is harder than it seems which is why successful technical strategies are evolutionary in nature and must be opportunistic in order to squeeze as much profit as possible from the phase where the markets are being nice.

Figure 21-3 shows a few signals from the strategy.

FIGURE 21-3 Signals from the strategy

Figure 21-4 shows how far can both indicators become during certain market phases.

FIGURE 21-4 How far can both indicators become during certain market phases

To sum up, this conviction enhancement strategy uses zones from the Fibonacci volatility bands and the Fibonacci moving average to find supply and demand areas helpful in knowing from where should the market react. As can be seen in **Figure 21-4**, the signals may be quite rare during certain market regimes. It is unlikely that you will find multiple signals using this strategy, but it helps to keep in mind in case the market regime is favoring it.

TOPIC 22 THE GOLDEN FIBONACCI DOUBLE STRATEGY

You might have already seen this one coming but simplicity often delivers. This strategy is named this way because it uses **61.8%** in retracements and projections. You need two tools:

- A Fibonacci retracement tool.
- A Fibonacci projection tool.

The main idea is to find opportunities that correspond to a continuation in the initial impulsive move. The trading conditions are as follows:

For a bullish opportunity

Whenever the market retraces back **61.8%** from the initial bullish impulsive move. At the same time, the retracement (correction) must be done in three waves where the **61.8%** projection lies around the **61.8%** retracement level, thus creating a demand zone.

For a bearish opportunity

Whenever the market retraces back **61.8%** from the initial bearish impulsive move. At the same time, the retracement (recovery) must be done in three waves where the **61.8%** projection lies around the **61.8%** retracement level, thus creating a supply zone.

Figure 22-1 shows a bullish signal from the strategy.

FIGURE 22-1 A bullish signal from the strategy

The first part of the strategy searches for a **61.8%** retracement of an impulsive move. It is important to make sure that the move is clear (in the sense that many technical traders will attempt to retrace it). The second part is to monitor if the market retraced towards **61.8%** in a three-wave configuration. The final step is to make sure that the **61.8%** retracement level coincides with the **61.8%** projection level of the three-wave configuration. As shown in **Figure 22-1**, it is important to distinguish between retracement and projection. If you need a refresher, go back and read **Topic 1** and **Topic 2** again.

Figure 22-2 shows a bearish signal from the strategy.

FIGURE 22-2 A bearish signal from the strategy

Normally, the levels provided by the retracement and the projection levels form a zone. The tighter the zone, the stronger the level and the better the risk-reward ratio. Some traders are conservative in nature and prefer to see the initial reaction first before initiating the trade.

To sum up, this is a pure price action strategy that does not use any indicators. The benefit is that it uses the most powerful Fibonacci ratio and benefit from the invisible trend hand. Remember that the invisible trend had is the extra probabilistic push that helps your trade. In other words, you have a better chance of hitting your target if you buy during a bullish regime. Similarly, you have a better chance of hitting your target if you sell short during a bearish regime.

TOPIC 23 THE HARMONIC RSI STRATEGY

Conviction enhancers can be either technical indicators or exogenous fundamental factors (such as economic indicators, news, or sentiment information). This topic discusses increasing the conviction of the different harmonic patterns by using the RSI's divergence. *Divergences* are a technical concept where the current move is assumed to be exhausted if there is a directional divergence between the price action and the technical indicator. A *bullish divergence* is taking place whenever the market keeps shaping lower values while the indicator (most commonly, the RSI) starts to shape higher values. This implies an exhaustion in the bearish price action and signals that a bounce may be imminent. A *bearish divergence* is taking place whenever the market keeps shaping higher values while the indicator (most commonly, the RSI) starts to shape lower values. This implies an exhaustion in the bullish price action and signals that a pause may be imminent. **Figure 23-1** shows an example of the strategy with a bullish divergence.

FIGURE 23-1 Signals from the strategy

Figure 23-2 shows an example of the strategy on the Extreme Impulse Wave pattern.

FIGURE 23-2 Signals from the strategy

To sum up, you should always confirm the patterns you see with technical indicators. It is preferred to use the divergence technique as it implies an exhaustion in the current move which is what you are looking for with a pattern as it enters the reversal zone. This concludes the part on Fibonacci-based strategies. What you should retain is that smart combinations between the different Fibonacci tools may give you a powerful predictive system.

A simple framework to start with is to combine at least a Fibonacci-based price pattern with either a Fibonacci indicator or a Fibonacci tool (preferably, all three). In case you need a refresher on the used terminologies of the book, refer to the following examples:

- *Fibonacci tools*: Fibonacci retracements, projections, and fans.
- *Fibonacci indicators*: The Fibonacci moving average and step indicator.
- *Fibonacci-based patterns*: Harmonic patterns and the Fibonacci timing pattern.

PART 5

THE RAINBOW INDICATORS

The *Rainbow collection* is a set of seven modern technical indicators that I have developed with the aim of providing an uncorrelated opinion on the different market reactions. The reason I am including this part in this book is because the Rainbow indicators are easily combined with the Fibonacci methods that you have seen in the previous chapters and they are also constructed with a few Fibonacci ratios and lookback periods. It is important to set the expectations before diving right into using the indicators. First of all, the concept of an indicator working or not is flawed as they are not created with the purpose of providing positive returns across all markets and through all time horizons. A technical indicator is nothing but a brick that needs to be put into a fragile wall to solidify it. This means that a signal from an indicator is never enough to create a trade. Then, how should you use these indicators (or any indicator out there)? And what is the added value from using them? The answer to the first question is to consider that their signals are purely price-derived and therefore, they use the past outcomes to signal a future outcome, this adds a certain randomness to the future which means that you are unlikely to have the same results in the future since markets are impacted by a lot of different variables. When you see a signal from an indicator, it generally means that you have to combine it with other signals to form an opinion. Similarly, it is also better to make sure that the current market regime confirms this signal. The answer to the second question is that they provide a directional added value but not a trading added value as they do not tell you where to stop or where to target. This part contains the following topics:

- **Topic 24**: The Red Indicator
- **Topic 25**: The Orange Indicator
- **Topic 26**: The Yellow Indicator
- **Topic 27**: The Green Indicator
- **Topic 28**: The Blue Indicator
- **Topic 29**: The Indigo Indicator
- **Topic 30**: The Violet Indicator

TOPIC 24 THE RED INDICATOR

The first indicator in the Rainbow collection is the *Red indicator*. I have created this indicator as a fusion between the concept of extreme duration and volatility bands in the aim to detect as early as possible, the return to normality. From the previous topics, you should understand what volatility bands are and specifically Bollinger bands, the leaders of this type of indicators.

The Red indicator calculates Bollinger bands with a small tweak: instead of simple moving averages, exponential moving averages are used as the building blocks. The reason for choosing exponential moving averages is to reduce lag since they give more weight to the more recent values. Remember, the aim of the Red indicator is to minimize the lag time for the return to normality. The return to normality in terms of Bollinger bands is when the market reaches or breaches one of the bands but then comes back inside them (preferably around the moving average line).

The concept of *extreme duration* is a technique I use that imposes a minimum number of time periods outside of normality to consider the return to normality as a trading signal (in other words, a confirmed reversal). Hence, by applying the concept of extreme duration on Bollinger bands, you are imposing a minimum number of periods that the market must spend outside of normality (therefore, lower than the lower band or higher than the upper band) before considering the re-integration as a valid signal.

The exact conditions for the signals are as follows:

Bullish signal

> The close price must surpass the lower exponential Bollinger band after having spent at least five periods below it.

Bearish signal

> The close price must break the upper exponential Bollinger band after having spent at least five periods above it.

Figure 24-1 shows a few signals generated by the indicator.

FIGURE 24-1 A signal chart showing the opportunities detected by the indicator

The Red indicator generally gives less false signals than other comparable indicators but it is important to keep in mind the trend-friendly method of viewing trading signals. One thing to keep in mind is that a return to normality can be done in one candlestick that is so big that there is no more potential left (think of a bearish candlestick that re-integrates the upper Bollinger band and closes around the lower band). Therefore, an optimization method can be applied on the Red indicator which is to impose a condition that when the current close price surpasses (breaks) the lower (upper) exponential Bollinger band, it must not touch the **20**-period exponential moving average. This ensures that there is still potential left. Naturally, one would target the moving average as a first level but the Red indicator does not really have rule of thumb when it comes to targets.

Figure 24-2 shows a few signals generated by the indicator.

FIGURE 24-2 A signal chart showing the opportunities detected by the indicator

To sum up, the Red indicator is the equivalent of the Gartley pattern with regards to harmonic patterns, meaning that it is the star of the Rainbow collection. Make sure to keep in mind that there is no such thing as a perfect indicator and that all indicators are price-derived or volume-derived and therefore, an inherent lag is always present. However, on the brighter side, you should not take this as a negative affirmation as most of the time, what you need to predict the future, is the past since data is the new gold in this era.

TOPIC 25 THE ORANGE INDICATOR

The second indicator in the Rainbow collection is the *Orange indicator*. I have created this indicator out of the pure concept of extreme duration. From the previous topic, you should understand what extreme duration is. The Orange indicator calculates an RSI on the market price and applies the concept of extreme duration onto it. Therefore, the Orange indicator is composed of a **5**-period RSI with an oversold level at **23.6** and an overbought level at **76.4**. Now, naturally you may wonder, why **23.6** and **76.4** (a lesser known Fibonacci ratio)? Well, initially, they were **25** and **75** but since I am including the indicator in a Fibonacci trading book, I couldn't resist but slightly tweak them. There is no sizable difference between the initial barriers. The exact conditions for the signals are as follows:

Bullish signal

The RSI must surpass **23.6** after having been below it for at least five periods. At the same time, the current low price must be lower than the previous low price and the current close price must be below the previous high price.

Bearish signal

The RSI must breaks **76.4** after having been above it for at least five periods. At the same time, the current high price must be higher than the previous high price and the current close price must be above the previous low price.

Notice that the Orange indicator has an extra set of price-specific rules which describe the position of the price relative to the previous period. Let's discuss them in detail:

- For a bullish signal, the current low must be lower than the previous low. This ensures that the market is really exhausted or at least doing one last desperate attempt to continue lower. Also, the current close price must be below the previous high price. This ensures that there is potential left. It avoids big bullish candles that are event-specific.
- For a bearish signal, the current high price must be higher than the previous high price. This ensures that the market is really exhausted or at least doing one last desperate attempt to continue higher. Also, the current close price must be above the previous low price. This ensures that there is potential left. It avoids big bearish candles that are event-specific.

Figure 25-1 shows a few signals generated by the indicator.

FIGURE 25-1 A signal chart showing the opportunities detected by the indicator

The Orange indicator has less frequent signals than the Red indicator and you must consider the trend in order to maximize its signals since a low-period RSI can from time to time give false signals when the trend is too strong. Also, remember that these indicators do not give much information on stops and targets which means you have to develop your own risk management system. Basically, the Rainbow indicators help with the expected direction after the signal but do not say much else. It is also important to remember that the RSI used in the Orange indicator has a low lookback period and hence, the reactions are expected to be limited, even though in **Figure 25-1**, the reactions seem to happen around global (massive) tops and bottoms. Do not forget to set your expectations right. A possible way of setting targets is to suppose that the target is reached whenever the RSI hits the other barrier (oversold or overbought level).

Figure 25-2 shows a few signals generated by the indicator.

FIGURE 25-2 A signal chart showing the opportunities detected by the indicator

To sum up, the Orange indicator is the epitome of the concept of extreme duration. Historically, the best results came in flat/ranging markets since the supply and demand forces are in implied equilibrium which gives the signals equal probabilities. Extreme duration is a concept that I frequently use since it tends to provide very interesting signals. This concludes the discussion on extreme duration when it comes to Rainbow indicators. It is recommended to combine the Red indicator with the Orange indicator in terms of signals but not in terms of frequency (as both are extremely unlikely to deliver signals that occur around the same time period).

TOPIC 26 THE YELLOW INDICATOR

The third indicator in the Rainbow collection is the *Yellow indicator*. I have created this indicator to represent short-term divergences. *Divergences* (as seen in **Topic 23**) are a technical concept where the current move is assumed to be exhausted if there is a directional divergence between the price action and the technical indicator. Generally, divergences rules are as follows:

- A *bullish divergence* is taking place whenever the market keeps shaping lower values while the indicator (most commonly, the RSI) starts to shape higher values. This implies an exhaustion in the bearish price action and signals that a bounce may be imminent.
- A *bearish divergence* is taking place whenever the market keeps shaping higher values while the indicator (most commonly, the RSI) starts to shape lower values. This implies an exhaustion in the bullish price action and signals that a pause may be imminent.

The Yellow indicator calculates a 2-period RSI and applies the concept of divergences but by using the simple successive technique which states that the divergence conditions must be successive with no pause between them.

The exact conditions for the signals are as follows:

Bullish signal

The current RSI (RSI[0]) must be above **8** while the previous RSI (RSI[1]) must be below **8** and the one before (RSI[2]) above **8** and the one prior to (RSI[3]) it below **8** with RSI[4] above **8**. At the same time, RSI[3] must be lower than RSI[1], and the close price[3] must be higher than the close price[1].

Bearish signal

The current RSI (RSI[0]) must be below **92** while the previous RSI (RSI[1]) must be above **92** and the one before (RSI[2]) below **92** and the one prior to (RSI[3]) it above **92** with RSI[4] below **92**. At the same time, RSI[3] must be higher than RSI[1], and the close price[3] must be lower than the close price[1].

Figure 26-1 shows a few signals generated by the indicator.

FIGURE 26-1 A signal chart showing the opportunities detected by the indicator

The indicator is very short-term in nature and needs to be used while knowing its limitations. First of all, it uses a **2**-period RSI which means that any expectation is unlikely to last more than a few candlesticks. Second of all, it has uncommon signals. However, it tends to do well even during trending markets since divergences are strong in trends.

As you may have understood, divergences can span over extended periods of time but simple divergences (like in the case of the Yellow indicator) need to have the conditions successive. This makes the signals far less common.

Figure 26-2 shows a few signals generated by the indicator.

FIGURE 26-2 A signal chart showing the opportunities detected by the indicator

The best use of the Yellow indicator is to confirm signals from other indicators. On its own, it may be too short-term to provide a real signal and this is due to the nature of its formula. Theoretically, there is a big difference between divergences and simple divergences. Divergences span over multiple candlesticks and may signal a huge reversal or a sizable reaction to occur, while simple divergences (which have successive conditions) tend to provide limited reactions and cannot be used to forecast global tops and bottoms.

This is why you need to set your expectations. The Yellow indicator is likely to provide reactions that resemble **Figure 26-2** as opposed to the ones you will see in **Figure 26-3**.

Figure 26-3 shows a few signals generated by the indicator.

FIGURE 26-3 A signal chart showing the opportunities detected by the indicator

The Yellow indicator has less frequent signals than the Red and Orange indicators. However, generally, it tends to provide adequate reactionary zones especially when combined with other indicators.

To sum up, the Yellow indicator reflects divergences from a simple standpoint. It is a short-term reversal indicator helpful in playing small moves if there is a confluence of elements advocating for this reversal.

TOPIC 27 THE GREEN INDICATOR

The fourth indicator in the Rainbow collection is the *Green indicator*. This indicator deals with the concept of slopes as a catalyst for a reversal. Occasionally, markets' slopes tend to flatten before reversing. But what is a slope? Mathematically speaking, the *slope* is a measure of the steepness of a line. It describes how much a line (price or value of a technical indicator) rises or falls as it moves chronologically. The slope is defined as the ratio of the change of price with regards to time. The slope is defined as the ratio of the change in the *y*-coordinate (vertical) to the change in the *x*-coordinate (horizontal) between any two points on the line. It is also called the gradient or the pitch of the line. The slope formula is given by:

$$Slope = \frac{y_i - y_{i-n}}{x_i - x_{i-n}}$$

The slope can be positive, negative, zero, or undefined, depending on the direction and steepness of the line. A positive slope indicates that the line is sloping upward from left to right, while a negative slope indicates that the line is sloping downward from left to right. A slope of zero indicates that the line is horizontal, while an undefined slope indicates that the line is vertical.

The Green indicator calculates a **13**-period RSI and then calculates a **5**-period slope on the RSI. It therefore measures the slope of the RSI (using Fibonacci lookback periods) with respect to its value five periods ago at every time step.

The exact conditions for the signals are as follows:

Bullish signal

The current slope on the **13**-period RSI surpasses zero while the **13**-period RSI is below **25**.

Bearish signal

The current slope on the **13**-period RSI breaks zero while the **13**-period RSI is above **75**.

Figure 27-1 shows a few signals generated by the indicator.

FIGURE 27-1 A signal chart showing the opportunities detected by the indicator

Preferably, the Green indicator must be used in a ranging market as it tends to underperform during a healthy trending market. As with any other contrarian technique, the preferred field is a market that does not have a specific trend bias to tilt the probability distribution. As with other Rainbow indicators, the Green indicator is best combined with others in order to enhance its signal quality. Unlike the Red or Orange indicators, the Green and Yellow indicators are somewhat dependent on another indicator to confirm what they are saying.

Figure 27-2 shows a few signals generated by the indicator.

FIGURE 27-2 A signal chart showing the opportunities detected by the indicator

The Green indicator's main advantage is its uncorrelated signals to any plain vanilla RSI signals. Depending on the slope, the Green indicator may give interesting opportunities for a reaction (generally short-term).

To sum up, the Green indicator searches for signals by using the concept of slopes applied on the RSI while it is deep in the overbought or oversold zone.

TOPIC 28 THE BLUE INDICATOR

The fifth indicator in the Rainbow collection is the *Blue indicator*. This indicator also deals with the concept of slopes as a catalyst for reversals. However, the Blue indicator calculates a **21**-period slope on the close price and then calculates a **21**-period RSI on the slope calculation. Finally, it adds a **200**-period moving average filter which is basically the trend-friendly aspect in action. The exact conditions for the signals are as follows:

Bullish signal

> The current slope must be between **30** and **35** after having been below **30**. At the same time, the current low price must be below the previous low price and the current close price must be above the current **200**-period moving average (applied on the close prices).

Bearish signal

> The current slope must be between **70** and **65** after having been above 70. At the same time, the current high price must be above the previous high price and the current close price must be below the current **200**-period moving average (applied on the close prices).

The technique where an indicator surpasses its oversold zone or breaks its overbought zone is called re-integration and is commonly used during ranging markets to confirm the reversal.

Figure 28-1 shows a few signals generated by the indicator.

FIGURE 28-1 A signal chart showing the opportunities detected by the indicator

The idea of applying the RSI's normalization technique on the slope calculation may give a different angle and an uncorrelated view. Basically, the RSI can be applied on pretty much any time series. You can apply the RSI on the close price, moving average values, and even on volume and volatility data.

In **Figure 28-1**, you can see just one signal in a span of one week which is too low for an hourly time frame. The Blue indicator has very few signals and needs to be confirmed with at least another Rainbow indicator so that its signal gets stronger.

Figure 28-2 shows a few signals generated by the indicator.

FIGURE 28-2 A signal chart showing the opportunities detected by the indicator

The Blue indicator takes into account the slope of the market as opposed to a technical indicator (as is the case with the Green indicator). Notice how the signals of the indicators generally come after big and volatile moves. The Blue indicator tries to fade an initial aggressive move.

TOPIC 29 THE INDIGO INDICATOR

The sixth indicator in the Rainbow collection is the *Indigo indicator*. This indicator may be more complex than the rest of the collection as it uses what is known as a *Fisher transform* as a signal generator. Any input data can be transformed into a Gaussian distribution using a mathematical technique called the Fisher Transform[9], which makes it simpler to evaluate and spot major shifts in trend or price momentum.

The Fisher Transform is based on the presumption that stock prices follow a skewed distribution with a strong tail rather than a normal distribution. It is simpler to use statistical analysis methods like mean reversion, trend analysis, and volatility estimates when the input data is transformed into a Gaussian distribution. The Indigo indicator uses a Fisher transform that includes the highs and lows in the calculation with a lookback period of **21**.

The exact conditions for the signals are as follows:

Bullish signal

The current Fisher transform must surpass **-3.618** after having been below it. At the same time, the current close price must be above the current **200**-period moving average.

Bearish signal

The current Fisher transform must breaks **3.618** after having been above it. At the same time, the current close price must be below the current **200**-period moving average.

[9] Created by *John F. Ehlers*.

Figure 29-1 shows a few signals generated by the indicator.

FIGURE 29-1 A signal chart showing the opportunities detected by the indicator

It is important to note that no indicator can guarantee profitable trades and that trading always carries risk. **Figure 29-1** shows that the Indigo indicator can have a relatively high frequency of signals when compared to the Rainbow indicators. Reaching the extreme barriers (-**3.618** and **3.618**) on the Fisher transform is a big signal that the current move may be outside the boundaries of normality. This is why a reversal is initiated whenever the Fisher transform behaves that way.

In its conditions, the Indigo indicator already takes into account the trend which is why you can take into account the signals regardless of the current market regime. In **Figure 29-1** and **Figure 29-2**, you can notice how the signals occur in tandem with the right trend.

Figure 29-2 shows a few signals generated by the indicator.

FIGURE 29-2 A signal chart showing the opportunities detected by the indicator

To sum up, the Indigo indicator uses the Fisher transform, an indicator created by *John Ehlers*, to detect reversal signals through Fibonacci barrier levels. Additionally, it uses a trend filter to improve the signals, therefore, it is adapted to the current trend. Typically, you do not need to monitor the current market regime as that information is already counted in the Indigo indicator. Of course, this is not to say that the filter makes it superior to any other indicator, but it is an addition that works well with the signals.

TOPIC 30 THE VIOLET INDICATOR

The seventh indicator in the Rainbow collection is the *Violet indicator*. This indicator uses a special type of moving averages called the *Hull moving average* (HMA). The HMA is a type of moving average that was developed by *Alan Hull* in **2005**. It is designed to reduce lag and improve the accuracy of moving average-based trading signals.

The HMA is calculated using weighted moving averages. A *weighted moving average* (WMA) is a statistical method used to calculate the average of a set of data points over a certain time period, with more weight given to the most recent data points. Unlike a simple moving average, where all data points are given equal weights, a weighted moving average allows for more flexibility in assigning different weights to different data points.

The formula for calculating the HMA is quite complex, but in essence, it involves calculating a weighted moving average of the price data and then applying a second weighted moving average to the result.

The exact conditions for the signals are as follows:

Bullish signal

The current close price must surpass the **20**-period HMA while the close prices of the previous **{1, 2, 3, 5, 8, 13, 21}** periods are below their respective HMA.

Bearish signal

The current close price must break the **20**-period HMA while the close prices of the previous **{1, 2, 3, 5, 8, 13, 21}** periods are above their respective HMA.

In case you are interested, here are the steps required to calculate the HMA:

- Choose a period for the HMA, for example, **20** periods.
- Calculate the WMA of half of the period, for example, **10** periods.
- Calculate the WMA of the full period, for example, **20** periods.
- Subtract the result from step **2** from twice the result from step **3**.
- Calculate the square root of the period chosen in step **1**.
- Calculate the WMA of the result from step **4** using the square root of the period chosen in step 1 as the period.

Figure 30-1 shows a few signals generated by the indicator.

FIGURE 30-1 A signal chart showing the opportunities detected by the indicator

The Violet indicator is the Rainbow indicator that deals with moving average cross techniques. It means that it detects the change in trend whenever there is an event related to the close price and the moving average. Like all technical indicators, the HMA has its weaknesses and limitations. Here are some of them:

- *Lagging*: While the HMA is designed to be less lagging than traditional moving averages, it can still lag behind price action. This means that there may be a delay in the signal it provides, which could result in missed opportunities or false opportunities.
- *Noisy*: Like any moving average, the HMA can produce false signals or noise during periods of market consolidation or choppy trading. This can lead to incorrect trading decisions and losses.
- *Sensitivity*: The HMA can be highly sensitive to sudden price spikes or drops, which can result in false signals or whipsaws.

Figure 30-2 shows a few signals generated by the indicator.

FIGURE 30-2 A signal chart showing the opportunities detected by the indicator

To sum up, the Violet indicator takes into consideration a type of moving average that tries to reduce lag and applies a technique on it that signals early reversals. This indicator may have more signals than other indicators and therefore, it may provide more opportunities. The Rainbow indicators are not supposed to be perfect indicators. In fact, they vary from one period to another in performance, just like any other indicator out there. The best way to use the Rainbow indicators is to combine them together and see whether there are signals that occur around the same time period or not. Ideally, they should occur around ±**3** time periods from each other for a signal to be strong. You can also combine the Rainbow indicators with classic indicators such as the MACD. Make sure you back-test your ideas before having any assumptions. One of the cons of these seven indicators is that they lack a target potential. You may say that even the RSI and other classic indicators do not come with a proper guide on where to place stops and targets, but is that really the main intention of a technical

indicator? The short answer is no. The long answer is that indicators are only there for directional help and not really to babysit traders and accompany them in every step.

To conclude, the Rainbow collection is composed of seven reversal indicators that are based on a few simple rules and borrow from the Fibonacci sequence or ratios. They can be summarized as follows:

The Red indicator

As a volatility bands' transformation, the Red indicator takes advantage of abnormal periods and tries to forecast the return back to normality and play it with as minimum lag as possible.

The Orange indicator

As the main extreme duration indicator, the Orange indicator benefits from a healthy number of signals and has relatively good signals during ranging markets.

The Yellow indicator

As a simple divergence detection method, the Yellow indicator tries to predict very short-term moves by using a short-term RSI.

The Green indicator

As a slope indicator, the Green indicator applies the slope function on technical indicators to get insights on expected reversals.

The Blue indicator

As a slope indicator, the Blue indicator applies the slope function on the close price instead to get insights on expected reversals in a more direct way.

The Indigo indicator

As an indicator that uses an exogenous and custom method that is the Fisher transform, the Indigo indicator applies Fibonacci barriers to detect market reversals.

The Violet indicator

As a moving average indicator, the Violet indicator uses specific rules to play reversal using the HMA.

CONCLUSION

This book was a humble attempt at simplifying Fibonacci trading and analysis through the use of examples and the introduction of a number of indicators and strategies. Hopefully, you have found it helpful and useful. The real question that most traders and technical analysts ask themselves is: Does Fibonacci really add value in trading? In other words, does it have a predictive ability? The answer to that is very complicated as it generally deals with subjectivity and expectations.

Fibonacci methods are well-known and therefore may have a self-fulfilling prophecy bias in them. This means that a **61.8%** retracement may be seen by a lot of traders that act on it which makes it more impactful. Back-testing methods such as retracements and projections can be quite hard as they are mostly subjective and dependent on the analyst's discretion. Other Fibonacci methods like the Fibonacci moving average are more easily back-tested and may give a glance on the expected performance.

As with every trading technique, you must create a complete framework that includes the right combination between predictive tools and risk management. This ensures that you follow a logical and adequate system designed for wealth appreciation.

Unfortunately, nothing is guaranteed in trading as top strategies occasionally underperform and go through difficult periods. Discipline is a personality trait that can be automated. *Discipline* is all about maintaining the initial plan and sticking to its conditions so that performance evaluation becomes clear and useful. Disciplined traders typically have great self-control and awareness. Luckily, even if you are an emotional trader, there are ways to automate your trading so that you avoid these flaws. Algorithmic trading eliminates errors made by humans and their subjective opinions.