X3 Pattern Framework for Profitable Patterns in the Financial Market

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1. Overview on Tradable Patterns in the Financial Market

Many traders are using patterns to trade on Forex, Stocks and Futures market. Patterns are the scientific evidence and record of underlying dynamics behind the financial market. The value of the patterns to the Scientific and non-Scientific Community is much more than just profitability. With the increased interest in price patterns for our every day trading, there is a need for comprehensive pattern notation. The purpose of this article is to provide the convenient but intuitive pattern notation to overcome the limitation of existing patterns notations. We will show you short but comprehensive pattern notation, which can be used to create a detailed analysis on the repeating patterns in the financial market.

2. Why Do We Need New Pattern Notation X3?

Firstly, profitable patterns in the financial market are not bounded by 4, 5 or 6 points only. The profitable patterns can have 10 or 15 points also or even more. They can come in various shape and in various complexity. For the time being, the community do not have intuitive and flexible pattern notation to adapt these new and more complex patterns for the future use. Most of them assume the fixed points for their patterns. For example, Elliott Wave theory uses the 12345 or ABC notation. For example, Wave .12345 and Wave .ABC patterns respectively consists of six points and four points. Likewise, Carny (1998) and Pesavento and Shapiro (1997) used XABCD notation for harmonic patterns. Many harmonic patterns consist of 4 to 6 points using XABCD notation. Either

the XABCD notation or the 12345 notation is limited to describe patterns that are more complex.

Secondly, profitable patterns are not bounded by Fibonacci ratios only. The profitable patterns can come from the domain of non-Fibonacci ratios as we have shown using EFW Index Distribution. We can definitely tell the Fibonacci ratio are good starting point but we have seen that profitable patterns can be tuned outside the Fibonacci ratio for better profitability.

Thirdly, as we have shown, the basic building block of the Fractal geometry is triangle in the financial market. The building block of the 12345, ABC and XABCD notation is the line instead of the triangle. I personally believe that pattern notation, using triangle as the building block, will provide the shortcut to many scientific discovery and to improved trading strategies.

Based on these three reasons, we introduce new flexible pattern notation with good expandability for the scientific and non-scientific use. Since our pattern notation uses the triangle as the building block, we call our new pattern notation as X3. Of course, the entire purpose of creating this new notation X3 is to have the “Quantum Leap” in our scientific knowledge about the financial market and the crowd behaviour.

3. How the New Notation X3 is different from other Approaches

Before, many pattern notations including Elliott Wave theory or Harmonic Pattern and others used the points and lines to describe the patterns. In our new notation, we use a triangle to describe the patterns to provide the shortcut to understand them. We found that using triangle gives an unlimited flexibility to describe any simple and complex patterns with the shortest possible description. Meaning of X3 is the triangle, which is made up from 3 points. Another important point is that the X3 notation is close to the mathematical description of each pattern. We hope this new pattern notation can serve the backbone of many mathematical studies behind the repeating patterns in the financial market in the future.

4. Definition of EFW, Shape Ratio and Momentum Ratio

New pattern notation X3 is heavily relying on our previous research on Equilibrium Fractal Wave. Equilibrium Fractal Wave (EFW) is simply a triangle shaped wave repeating while price is moving towards the equilibrium price. To someone less familiar with EFW, simply consider one EFW as one triangle made up from connecting 3 points. However, we only consider the four types of triangles as shown in Figure 4-2. You have to understand that we do not concern all different types of triangle here. In theory, there is subtle difference between triangle and Equilibrium Fractal Wave. However, just to get you the intuition, we will often call one EFW as one triangle interchangeably in this book.

EFW is the building block of trend and fractal wave patterns in the financial market. Technically, we can use the peak trough transformation to view EFW in the financial price series. Some common peak transformation can be done with ZigZag indicator or Renko charts. These tools can be accessed to most of people free of charge nowadays.

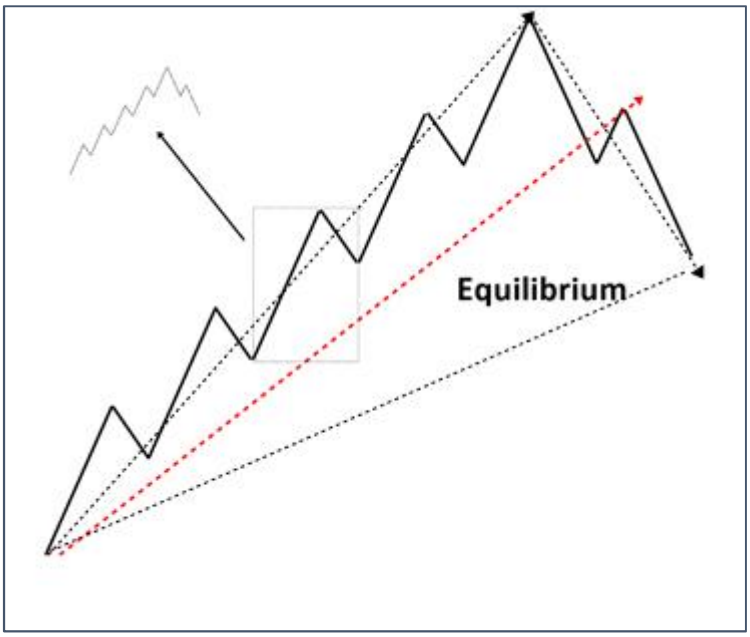

Figure 4-1: Equilibrium Fractal Wave propagation in the financial market.

While price is moving towards the equilibrium price, EFW can have four shapes in general. Most of patterns in the financial markets can be achieved by combining any of these four shapes.

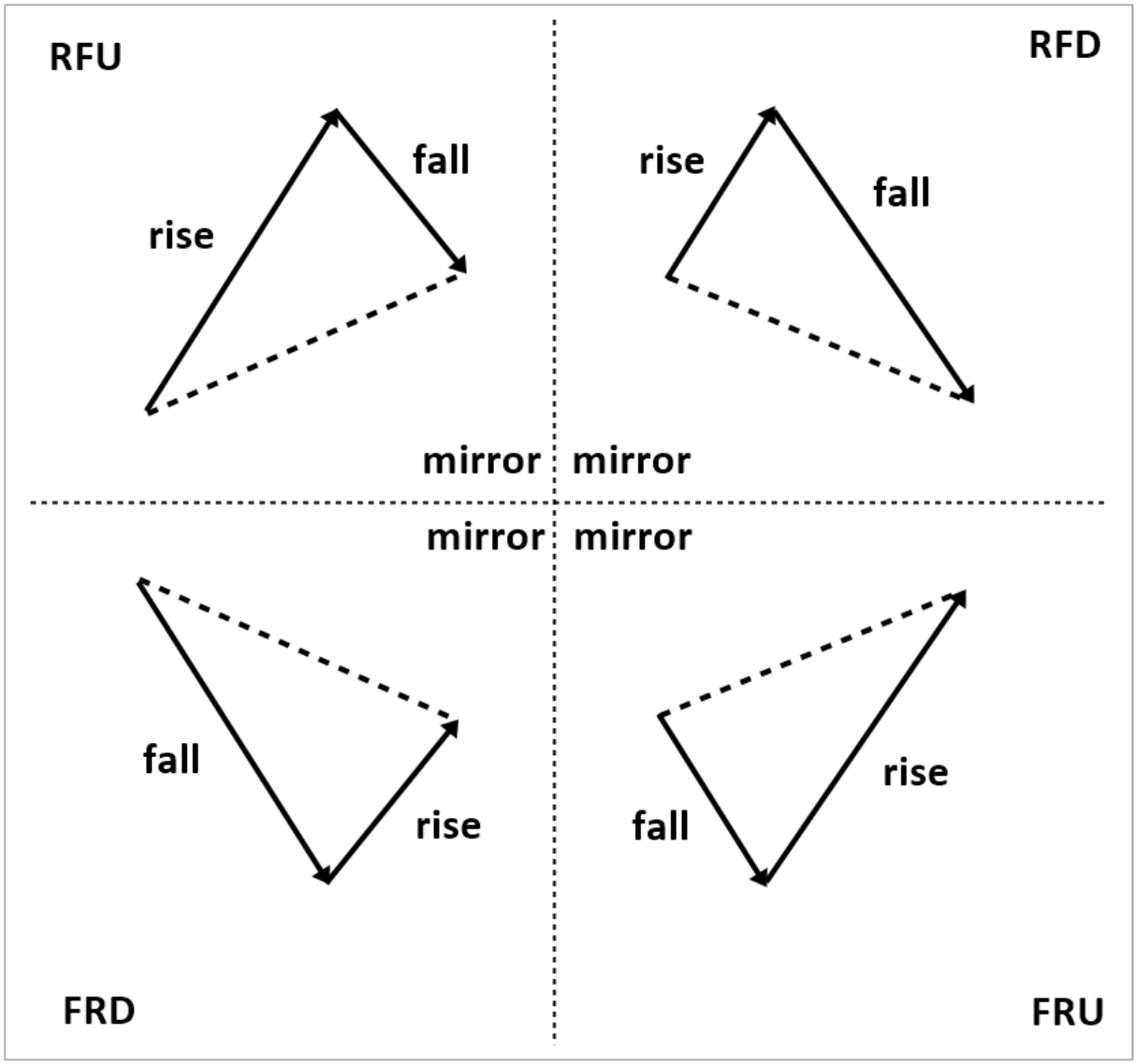

Figure 4-2: Four shapes of EFW in the financial market.

The two important quantities for EFW (i.e. triangle) are shape ratio and momentum ratio. Shape ratio describes the shape of each EFW. The definition is like below:

Shape ratio of EFW = Y2/Y1 = current move in price units (Y2)/ previous move in price units (Y1).

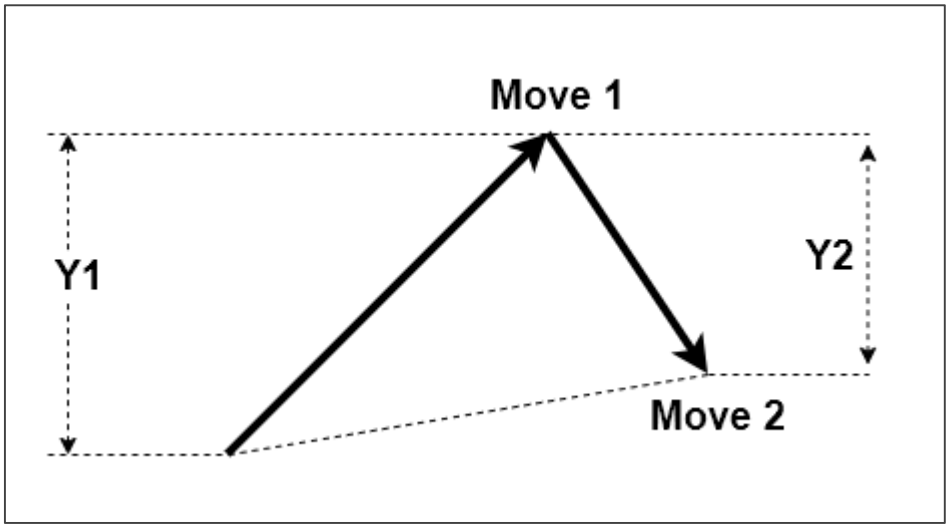

Figure 4-3: Shape ratio = Y2/Y1.

Momentum ratio describes the advancement (or momentum) of current EFW against previous EFW. The definition is like below:

Momentum ratio of EFW = Y3/Y1 = latest price move of current wave in price units (Y3)/ first movement of previous wave in price units (Y1) where Y3 and Y1 are in the same direction.

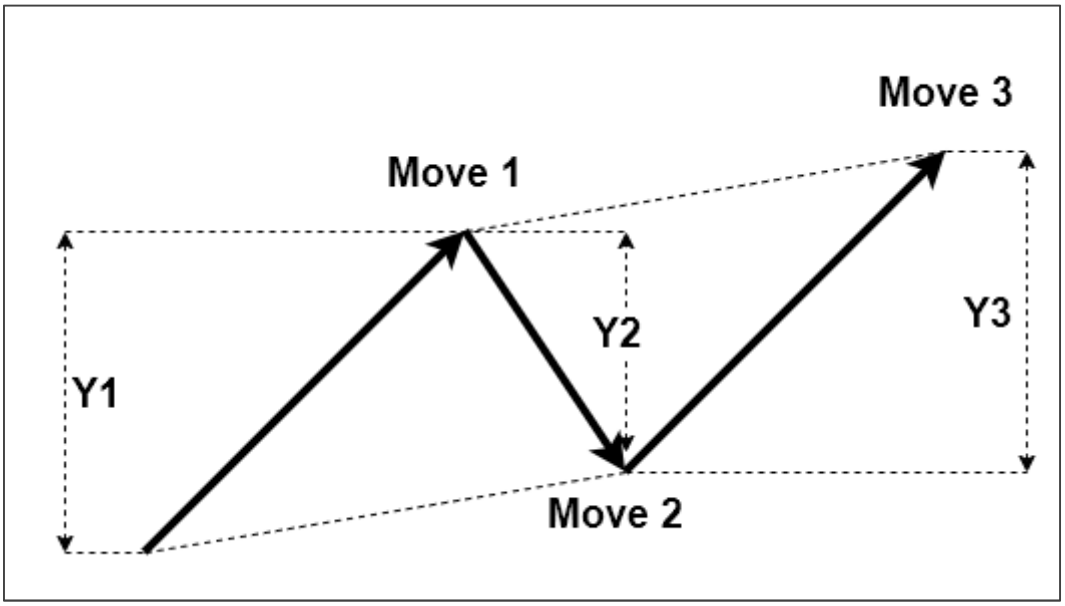

Figure 4-4: Momentum ratio = Y3/Y1.

5. Scientific Lag Notation for Shape Ratio and Momentum Ratio

Any simple or complex patterns based on the peak trough (high low) analysis can be described using the lag operator of shape ratio and momentum ratio. Lag operator is simply used to refer the previous quantity of shape ratio and momentum ratio. For example, shape ratio lag 0 is the latest shape ratio and shape ratio lag 1 is the previous shape ratio. Likewise, momentum ratio lag 0 is the latest momentum ratio and momentum ratio 1 is the previous momentum ratio. Here are the short notations for each ratios.

S0 = Shape ratio Lag 0

S1 = Shape ratio Lag 1

S2 = Shape ratio Lag 2

S3 = Shape ratio Lag 3

…

Sn = Shape ratio Lag n

M0 = Momentum ratio Lag 0

M1 = Momentum ratio Lag 1

M2 = Momentum ratio Lag 2

M3 = Momentum ratio Lag 3

…

Mn = Momentum ratio Lag n

Likewise, we can describe each EFW with lag operator too. You might prefer to replace EFW to T as in Triangle.

T0=EFW0 = EFW at Lag 0

T1=EFW1=EFW at Lag 1

T2=EFW2 = EFW at Lag 2

T3=EFW3 = EFW at Lag 3

Tn =EFWn = EFW at Lag n

When we write T0: 3, T0: 3 indicates 3 triangles from Triangle 0. Also if we write T4: 6, T4: 6 indicates 6 triangles from Triangle 4.

For an example, S0: 0.618 (S0 = 0.618) describe the current shape ratio of 0.618. S1: 1.272 (S1 = 1.272) describes the previous shape ratio of 1.272. Likewise, M0: 0.500 (M0 = 0.500) describes the current momentum ratio of 0.500. M1: 1.618 (M1=1.618) describes the previous momentum ratio of 1.618.

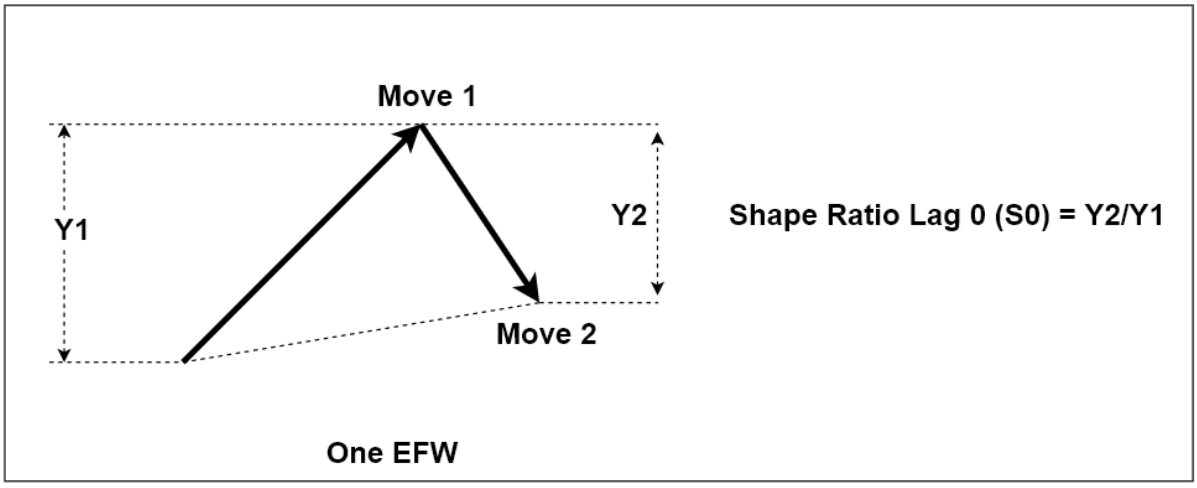

Figure 5-1: Shape ratio for one ascending Equilibrium Fractal wave

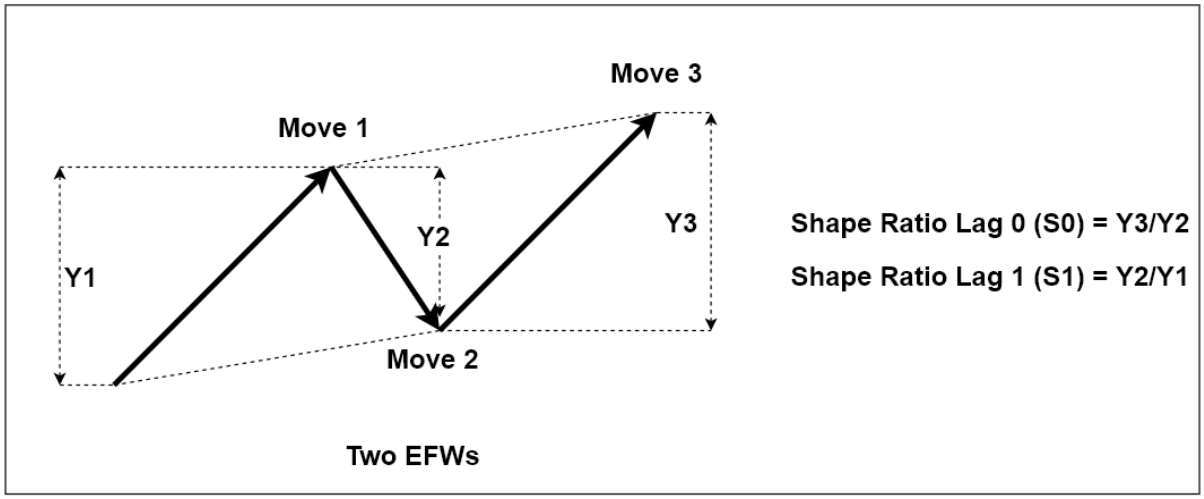

Figure 5-2: Shape ratios for two ascending Equilibrium Fractal waves

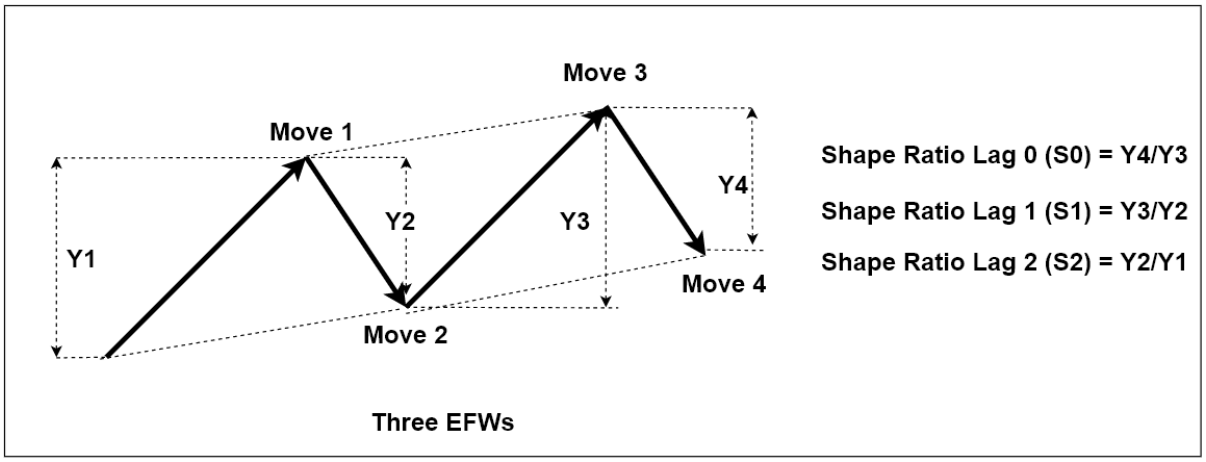

Figure 5-3: Shape ratios for three ascending Equilibrium Fractal waves

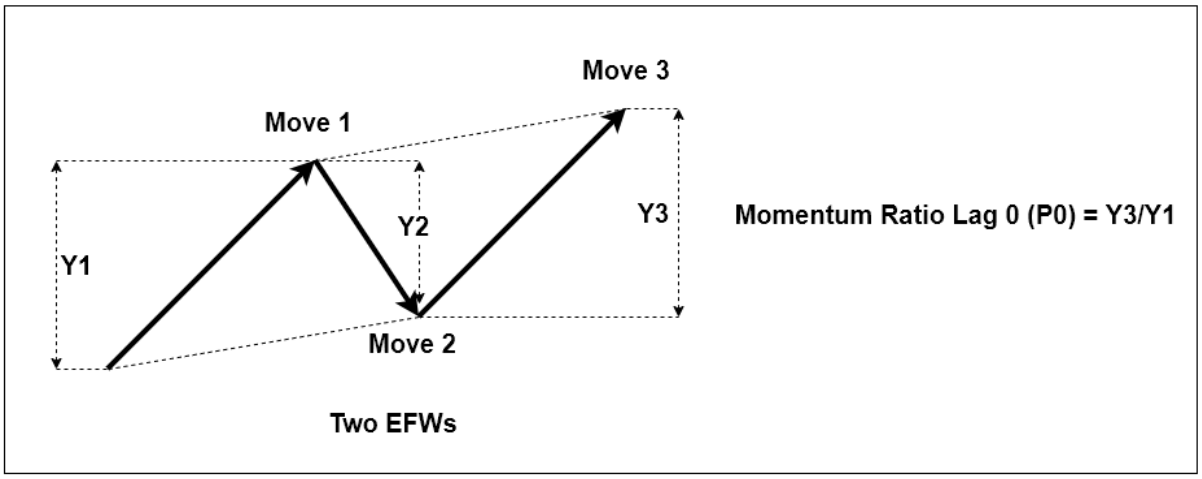

Figure 5-4: Momentum ratio for two ascending Equilibrium Fractal wave

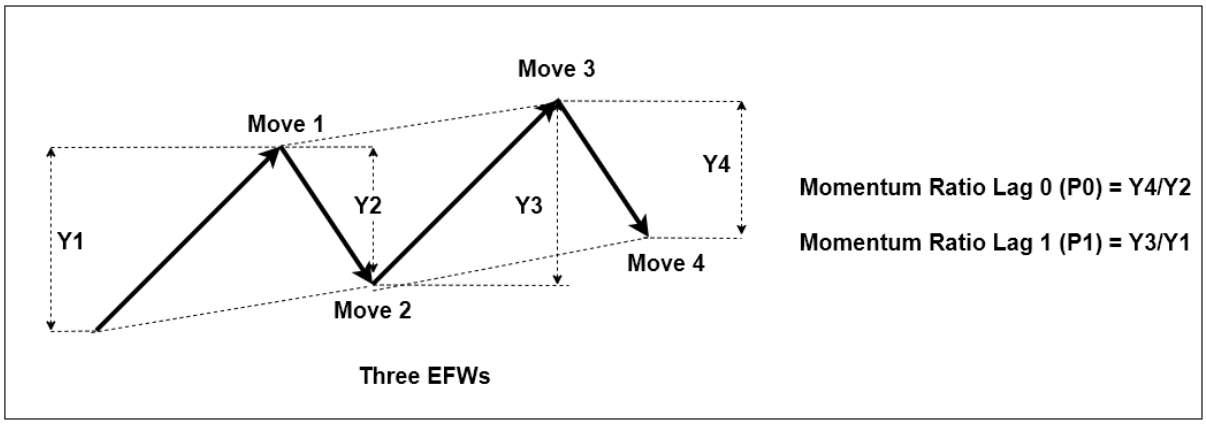

Figure 5-5: Momentum ratios for three ascending Equilibrium Fractal waves

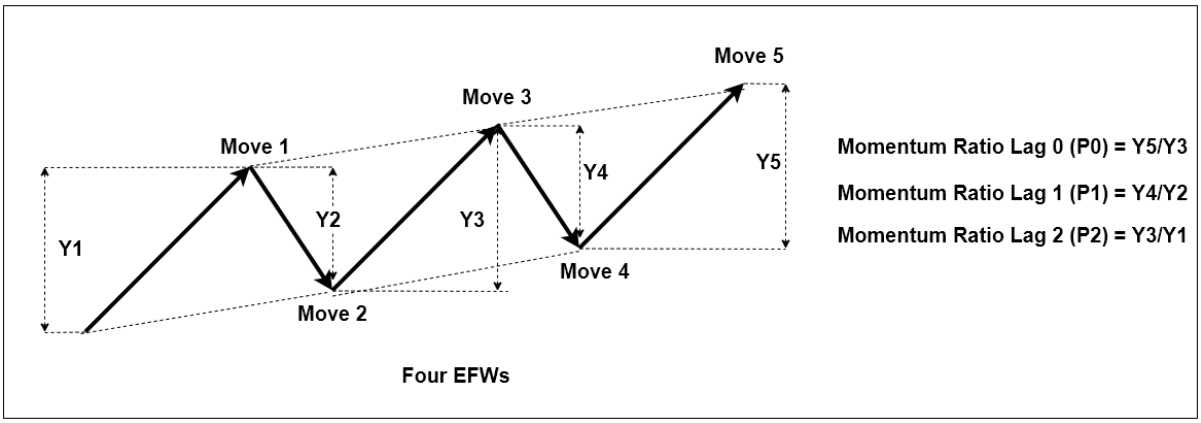

Figure 5-6: Momentum ratios for four ascending Equilibrium Fractal waves

6. Closing Shape Ratio to Describe the Structure of Pattern

Several EFWs (i.e. triangles) can make up one bigger EFW (triangle). In this case, closing shape ratio exists. Closing shape ratio is the shape ratio of bigger triangle, which is made up from several smaller triangles. Like the shape ratio and momentum ratio, closing shape ratio can be expressed using lag operator.

C0 = Closing shape ratio at Lag 0

C1 = Closing shape ratio at Lag 1

C2 = Closing shape ratio at Lag 2

C3 = Closing shape ratio at Lag 3

Cn = Close shape ratio at Lag n

The common closing shape ratio can be found when 3 EFWs are combined or 5 EFWs are combined. For an example, when 3 EFWs are combined to make up one bigger EFW with shape ratio 0.618, we can simply express 3 EFWs like below:

C0: 0.618 to T0: 3

This notation indicates that 0.618 ratio is assigned to the triangle (i.e. EFW) made up from 3 smaller triangles (i.e. EFWs) from Triangle 0.

When 5 EFWs are combined to make up one bigger EFW with shape ratio 1.272, we can simply express 5 EFWs like below:

C0: 1.272 to T0: 5

This notation indicates that 1.272 ratio is assigned to the triangle made up from 5 triangles.

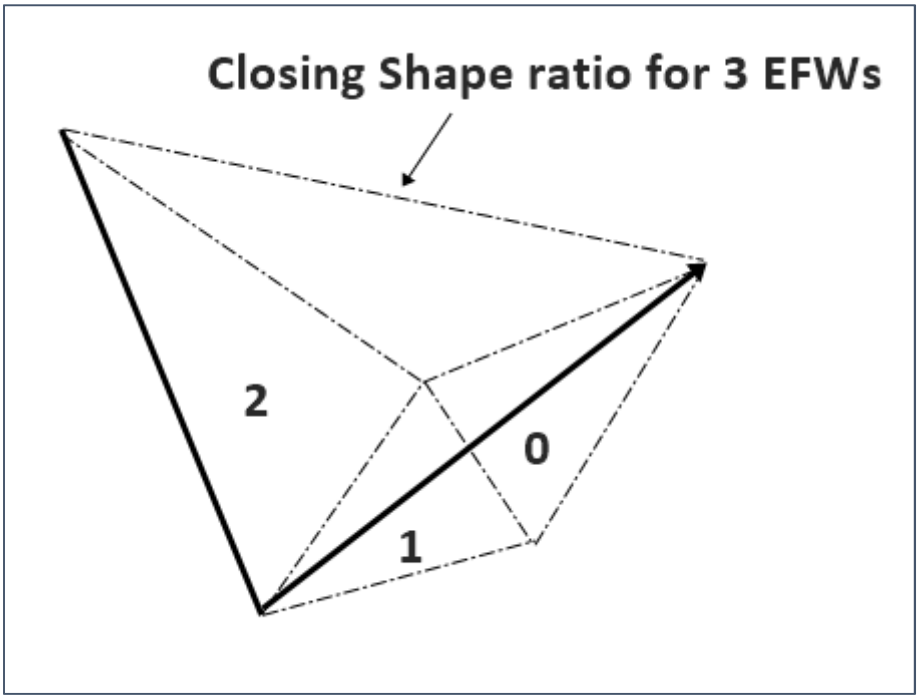

Figure 6-1: Closing shape ratio illustration for 3 EFWs.

Figure 6-2: Closing shape ratio real world example for 3 EFWs.

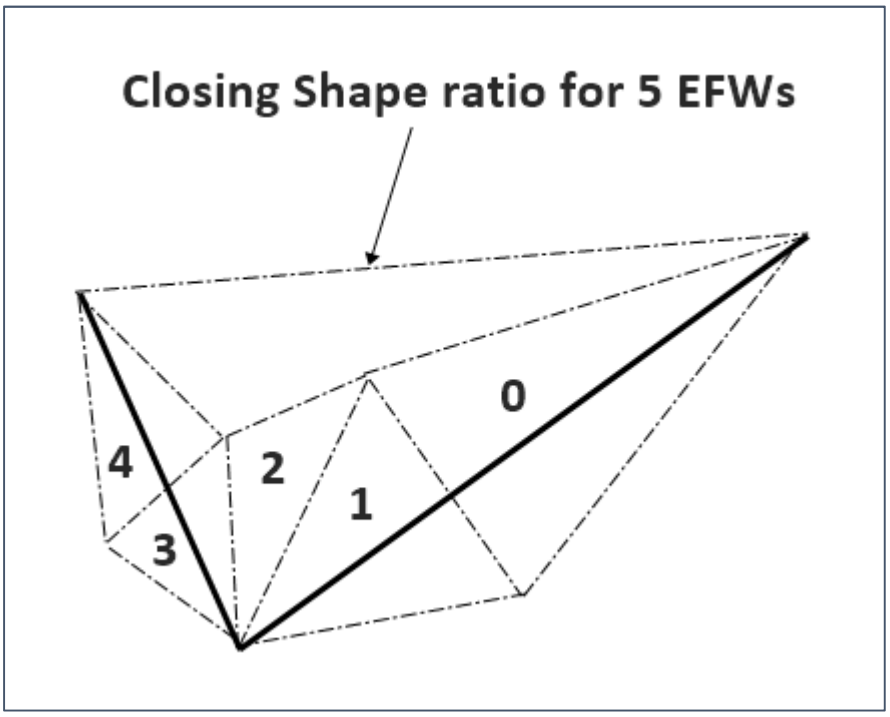

Figure 6-3: Closing shape ratio illustration for 5 EFWs.

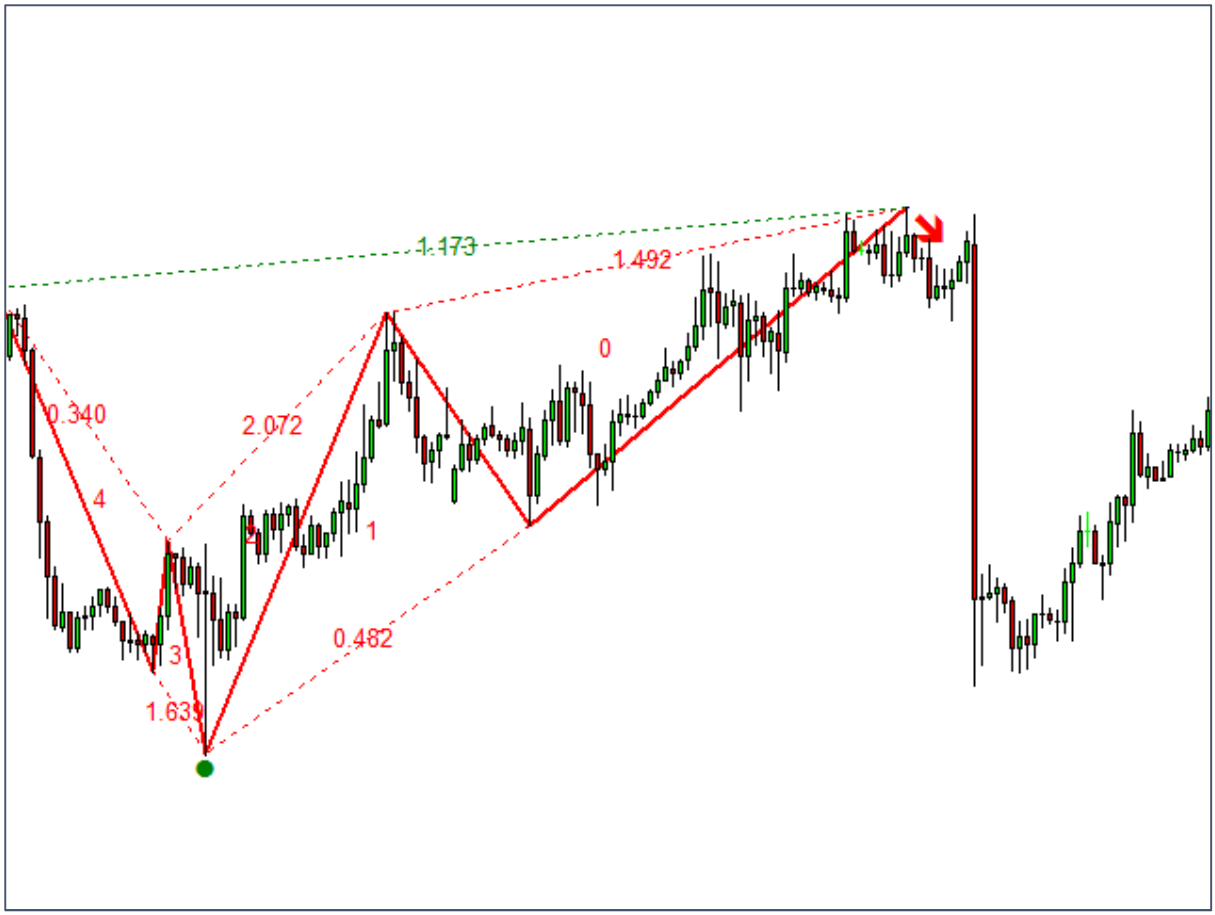

Figure 6-4: Closing shape ratio real world example for 5 EFWs.

When 3 EFWs are combined to make up one bigger EFW with shape ratio 0.500 and then we have another 3 EFWs to make up another bigger EFW with shape ratio 0.618, then these 6 EFWs can be expressed it like below:

C0: 0.500 to T0: 3, C1: 0.618 to T3: 3

7. Factored Momentum Ratio to Describe Structure of Pattern

Sometimes we need to relate momentum ratio for different EFW rather than the adjacent EFW. For example, this sort of relationship is found frequently, when we describe the impulse wave in Elliott Wave Theory.

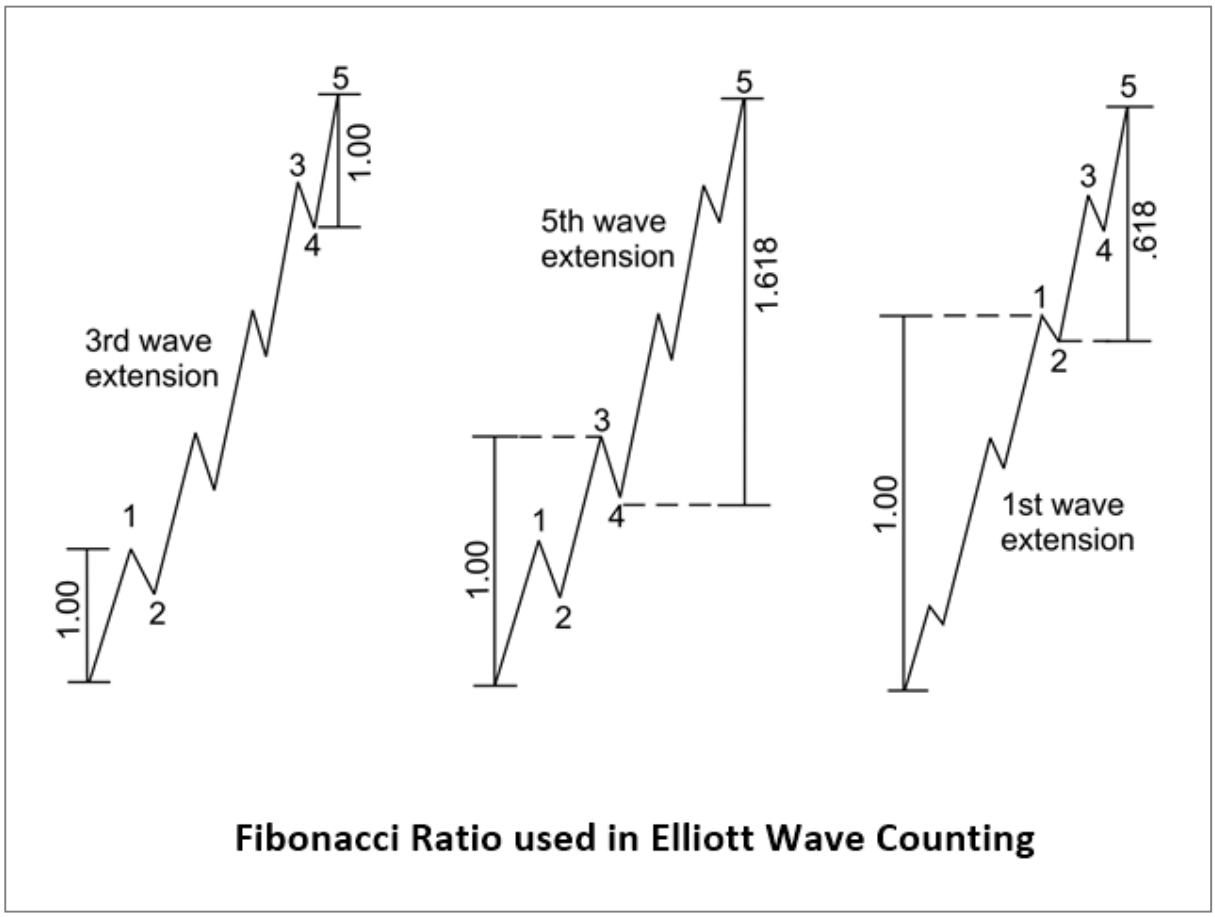

Figure 7-1: Elliott wave 12345 pattern structure.

Like the shape ratio and momentum ratio, factored momentum ratio can be expressed using lag operator.

F0 = Factored Momentum ratio at Lag 0

F1 = Factored Momentum ratio at Lag 1

F2 = Factored Momentum ratio at Lag 2

F3 = Factored Momentum ratio at Lag 3

Fn = Factored Momentum ratio at Lag n

To describe the Elliott Wave with 3rd Wave Extension, we can describe it simply using Factored Momentum Ratio.

F0: 1.000 to T0: 1 by T7: 1

This notation assigns:

Momentum Ratio 1.000 = (Right Swing of triangle 0)/(Left Swing of triangle 7).

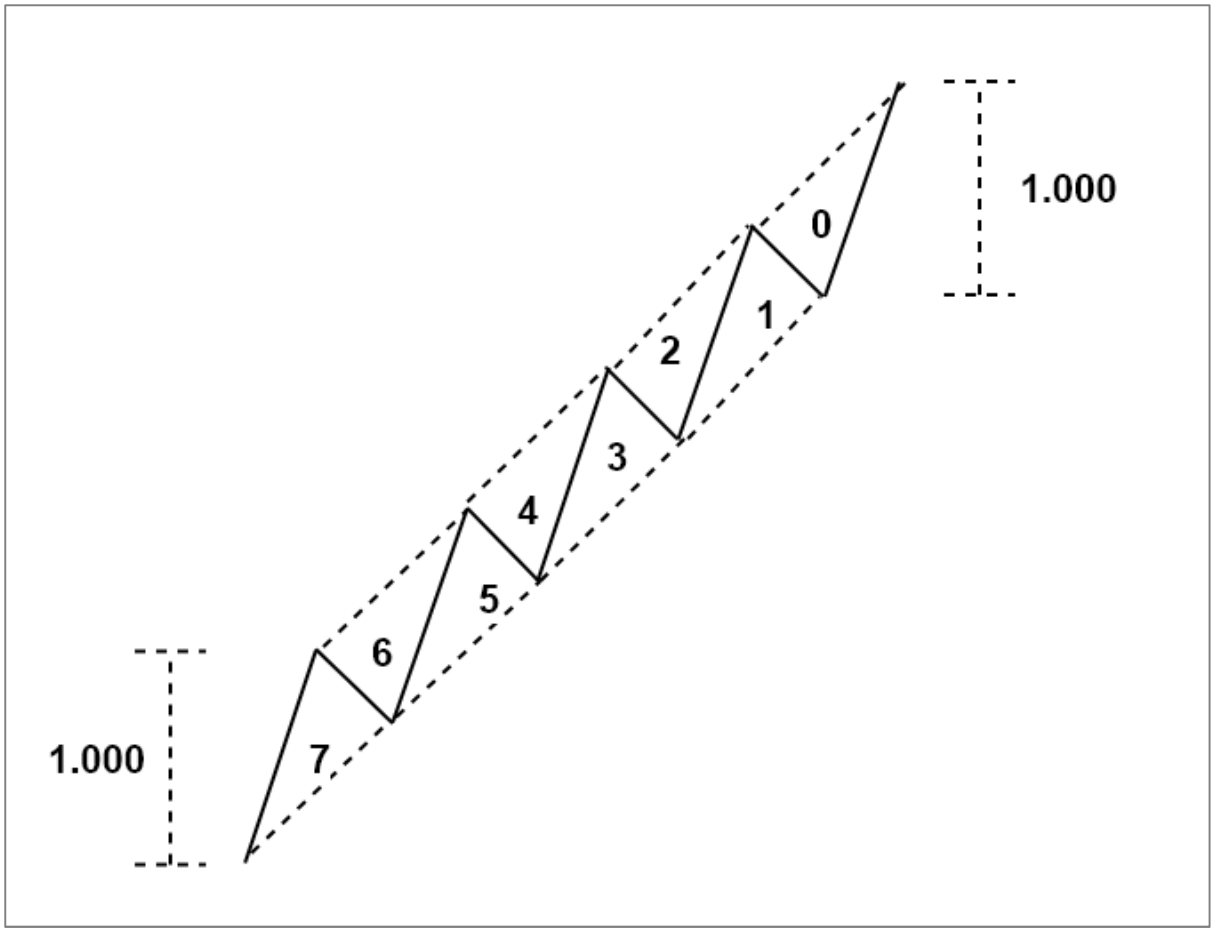

Figure 7-2: Diagram for F0: 1.000 to T0: 1 by T7: 1.

To describe the Elliott Wave with 5th Wave Extension, we can describe it simply using Factored Momentum Ratio.

F0: 1.618 to T0: 4 by T6: 2

This notation assigns:

Momentum Ratio 1.618 = (Right Swing between triangle 0 and triangle 3)/(Left Swing between triangle 6 and triangle 7).

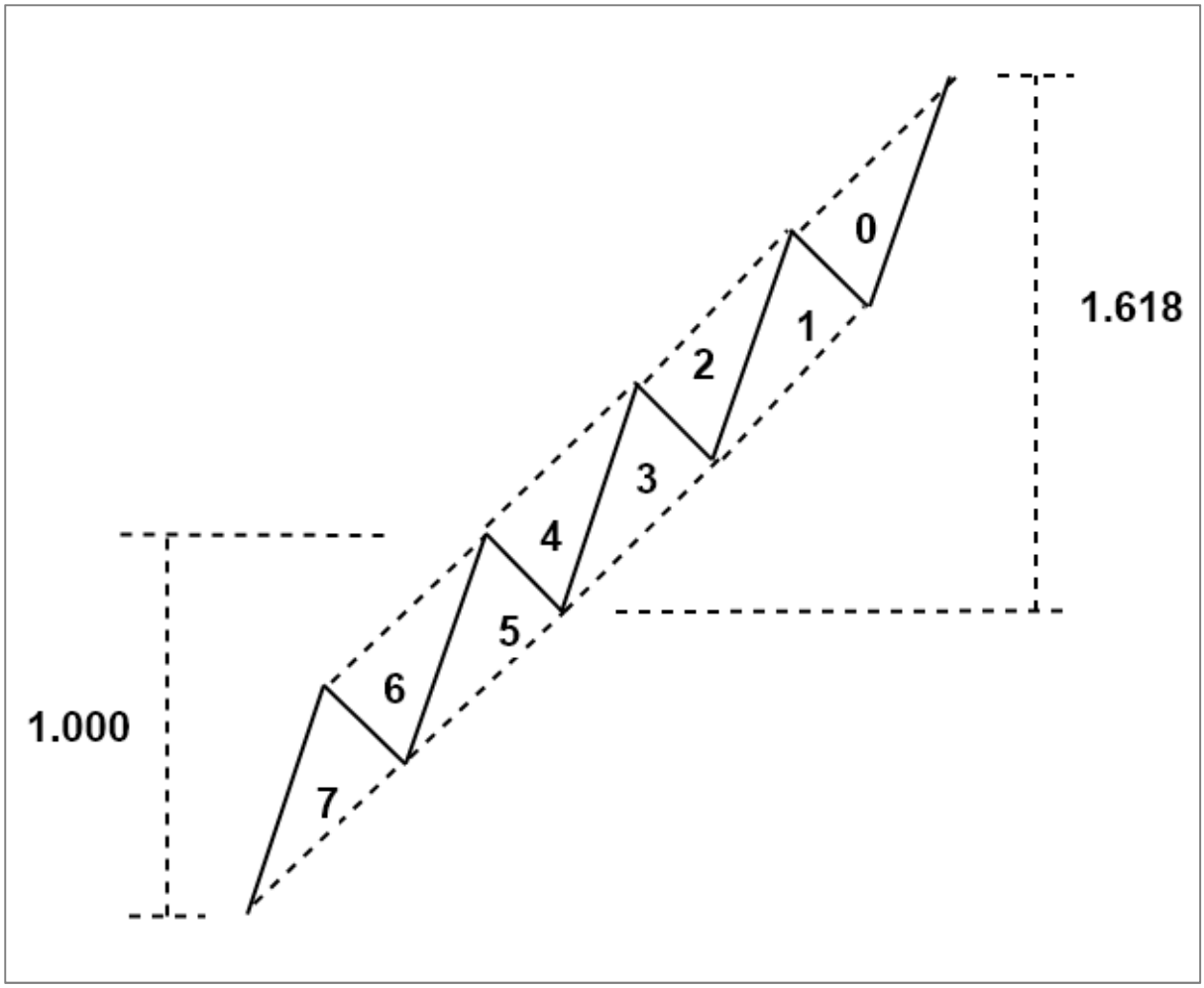

Figure 7-3: Diagram for F0: 1.618 to T0: 4 by T6: 2

8. Converting Number of Points to Number of EFWs

When the pattern has n points, the pattern has the n-2 EFWs. For example, 5 points harmonic patterns have 3 EFWs (i.e. 3 triangles) always. 4 points AB=CD patterns has 2 EFWs (i.e. 2 triangles). The 6 points Elliott Wave .12345 pattern has 4 EFWs (i.e. 4 triangles). Whenever you need to convert points into EFWs, use the following equation:

Number of EFWs = Number of Points in the pattern – 2.

9. X3 Pattern Notation with Name, Structure and Ideal Ratios

When we describe the patterns in the financial market, there are three parts to be included. The three parts including name, structure, and ideal ratios must be included to disclose their structure in details. Of course, name of the pattern will be given by the pattern discoverer. Structure of the pattern must be intuitive and easy to understand. In structure, the number of EFW must be stated using N.

For example,

- N1 = 1 EFW pattern = 1 triangle pattern and
- N5 = 5 EFWs pattern = 5 triangle pattern.

Then any closing shape ratio should be stated in the structure too if there is any to describe. An ideal ratio contains the specific ratio corresponding to each EFW. Of course, this will be reported by the pattern discoverer. If the structure and ideal ratios are different from original pattern, then you should give the different name for the pattern or at least you should put “variation” to differentiate it from the original pattern. This is important because the variation can perform better or worse than original pattern. I personally think that the variation should be considered as a different pattern if they perform significantly different from the original pattern.

9.1 Pattern with 1 EFW (3 points) Examples

Name: 0.618 Fibonacci Retracement Pattern

Structure: N1

Ideal Ratios: S0: 0.618

Description: S0 = A/B = 0.618

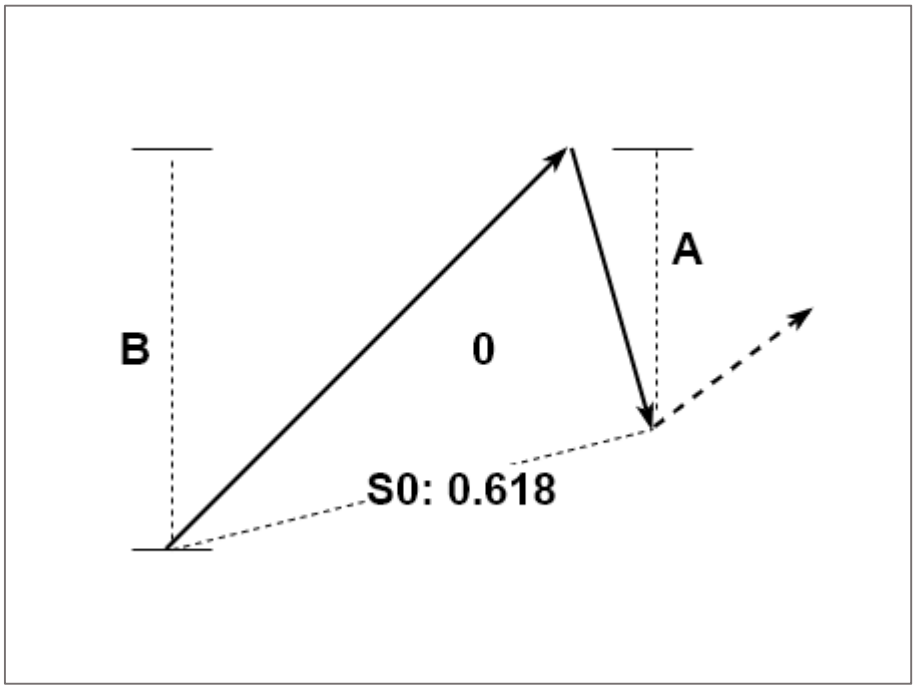

Figure 9-1: A Triangle with 0.618 Shape ratio.

Name: 0.500 Fibonacci Retracement Pattern

Structure: N1

Ideal Ratios: S0: 0.500

Description: S0 = A/B = 0.500

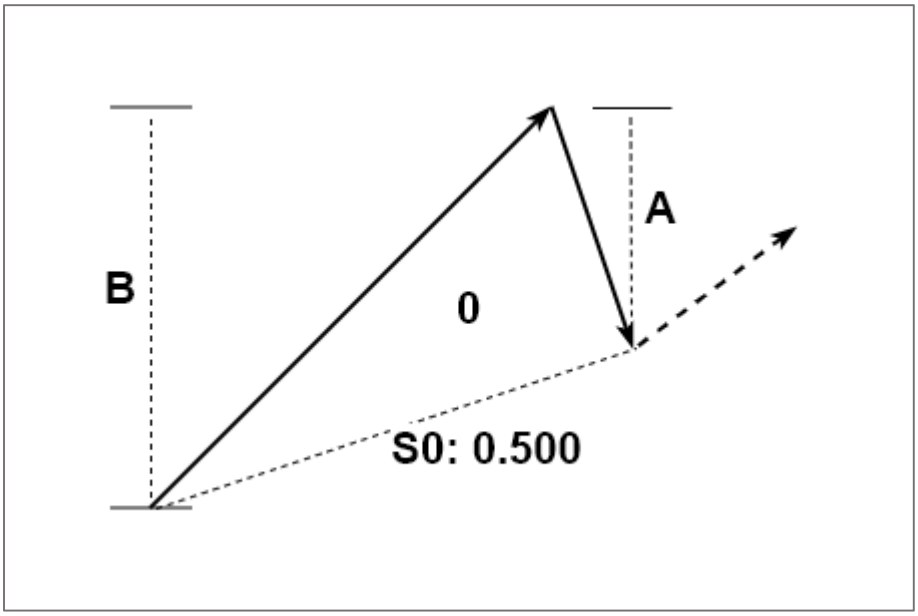

Figure 9-2: A Triangle with 0.500 shape ratio.

9.2 Pattern with 2 EFWs (4 points) Examples

Name: 0.782 Fibonacci Expansion Pattern (A/B = 0.782)

Structure: N2

Ideal Ratios: M0: 0.782

Description: M0 = A/B = 0.782

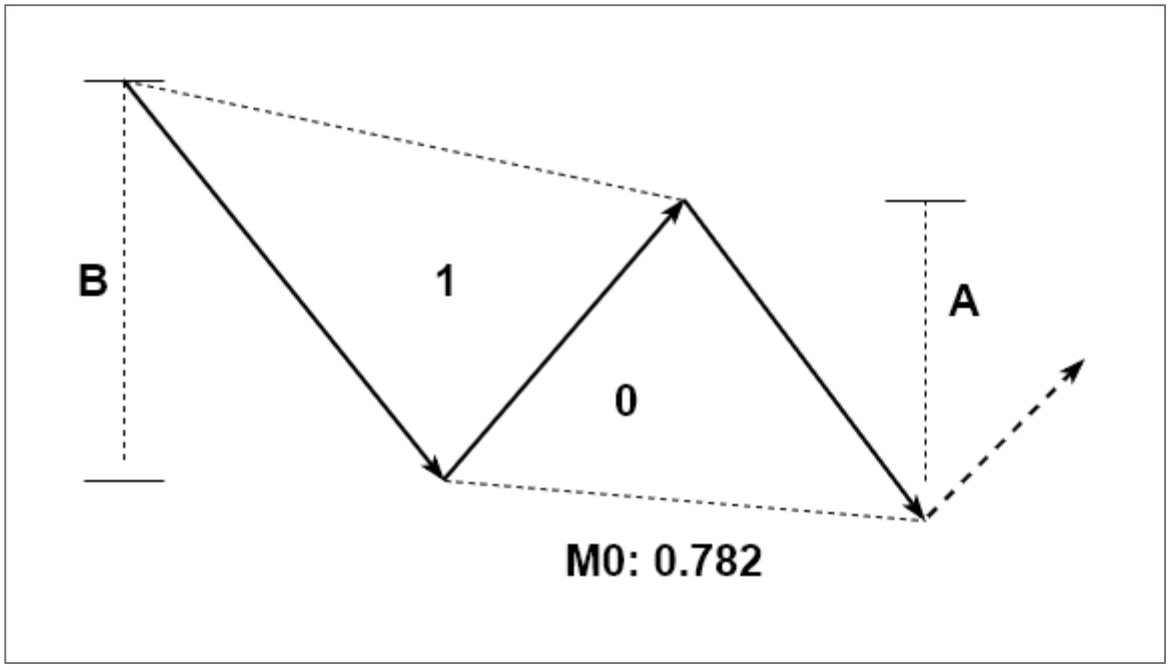

Figure 9-3: Two Triangles with 0.782 momentum ratio.

Name: 1.000 Fibonacci Expansion Pattern

Structure: N2

Ideal Ratios: M0: 1.000

Description: M0 = A/B = 1.000

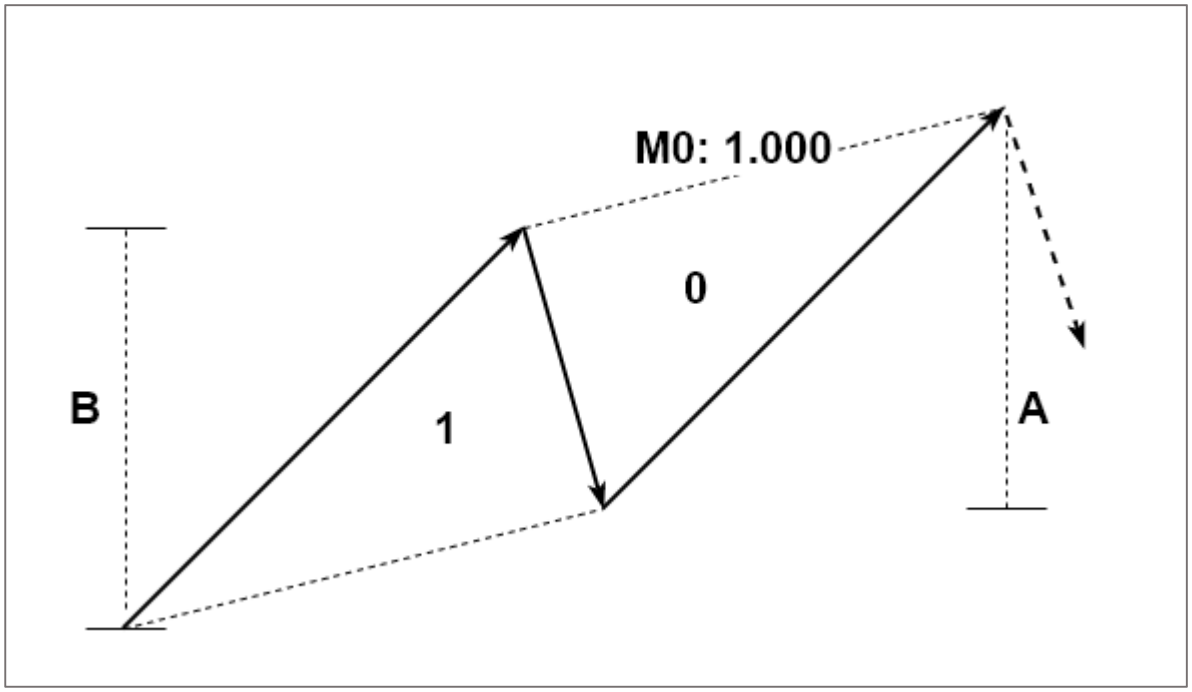

Figure 9-4: Two Triangles with 1.000 momentum ratio.

Name: Two Triangles with different shape

Structure: N2

Ideal Ratios: S0: 0.7, S1: 0.5

Description: two Triangles with random shape ratio

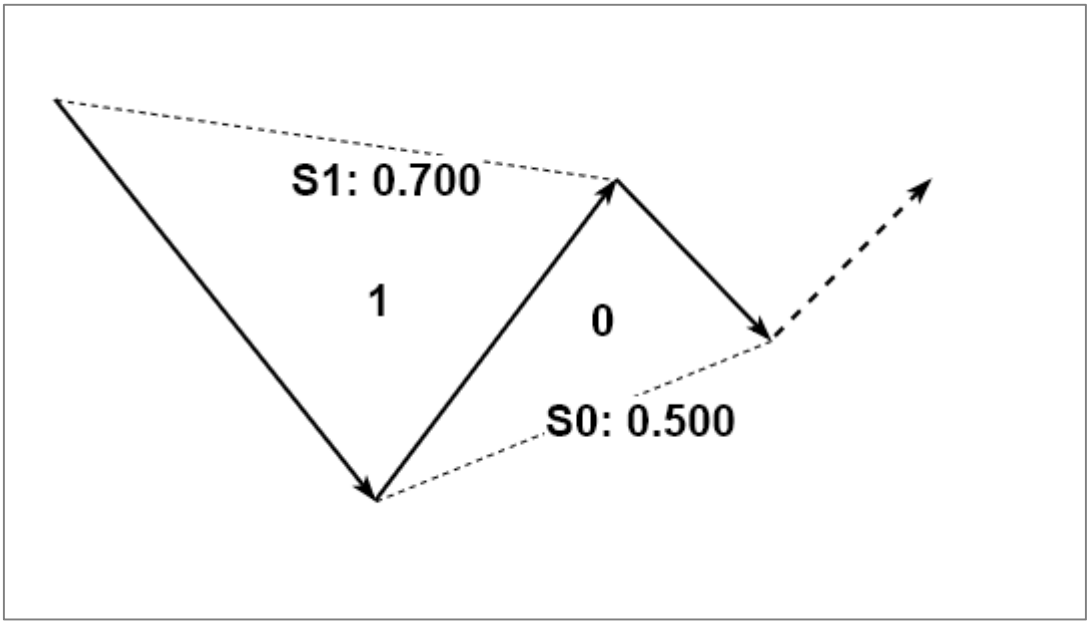

Figure 9-5: Two Triangles with different shape.

Name: AB=CD Simple

Structure: N2, T0 = T1

Ideal Ratios: S0: 1.618, S1: 0.618

Description: AB=CD pattern with fixed shape ratio

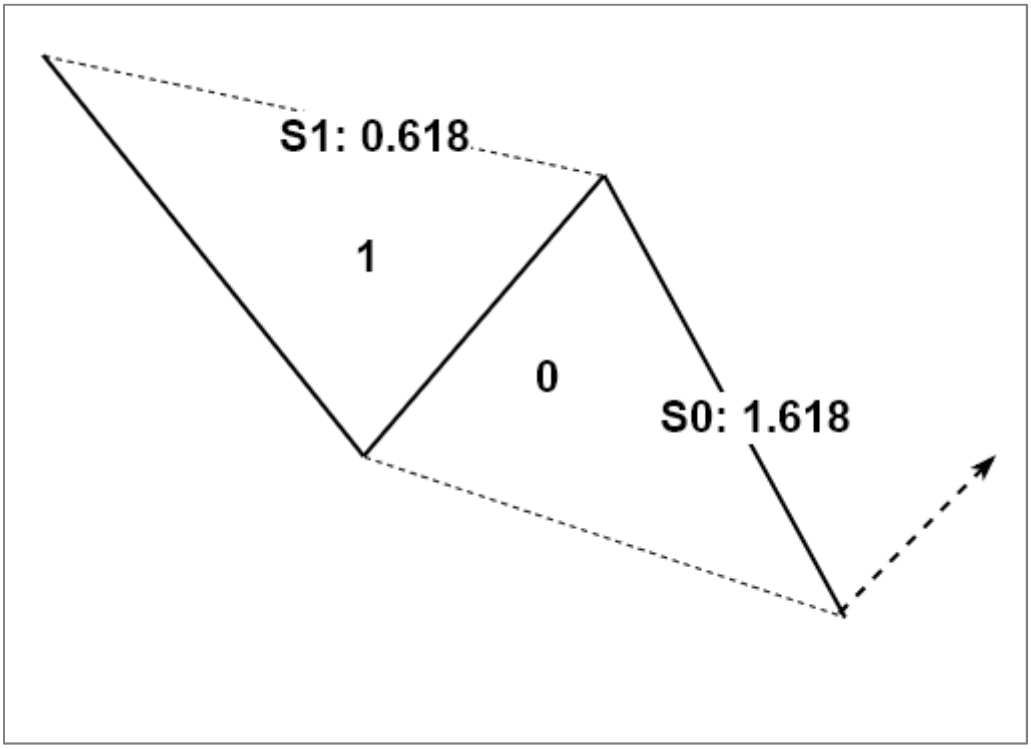

Figure 9-6: Two Triangles with AB=CD Simple.

Name: AB=CD with Range

Structure: N2

Ideal Ratios: S0: 1.272-1.618, S1: 0.618

Description: AB=CD pattern with first shape ratio given for range and second shape ratio fixed

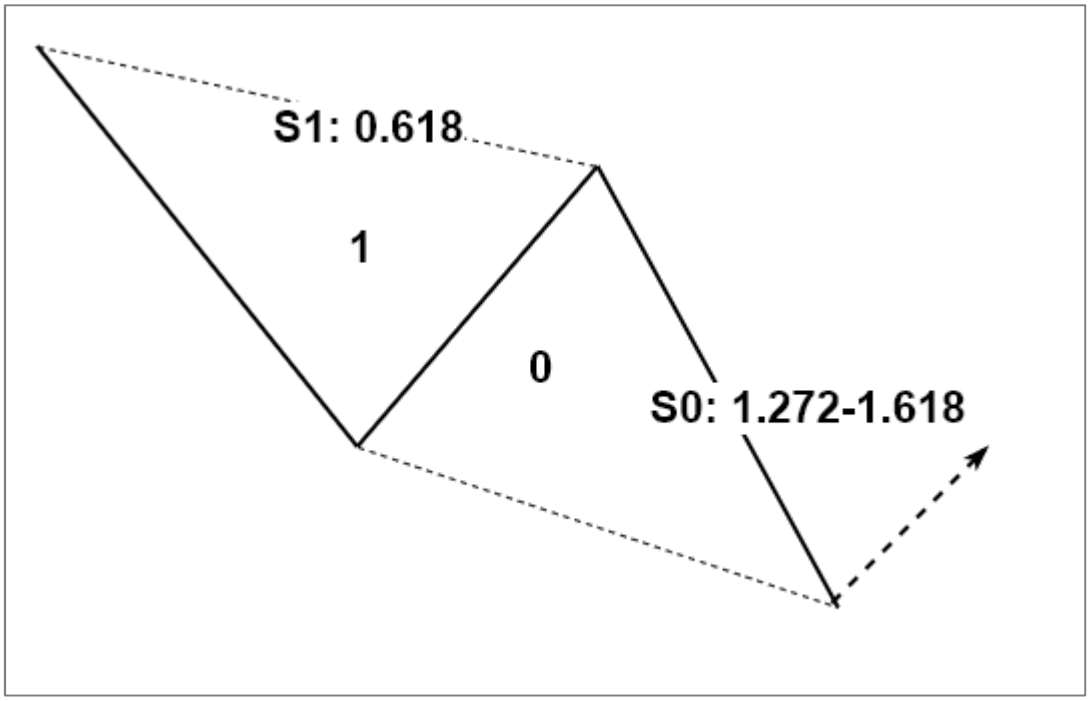

Figure 9-7: Two Triangles with AB=CD with Range.

9.3 Pattern with 3 EFWs (5 points) Examples

Name: Gartley Variation 1

Structure: N3, C0: 0.618 to T0: 3

Ideal Ratios: S0: 1.618, S1: 0.382 - 0.886, S2

Description: Gartley pattern with first and second shape ratio defined

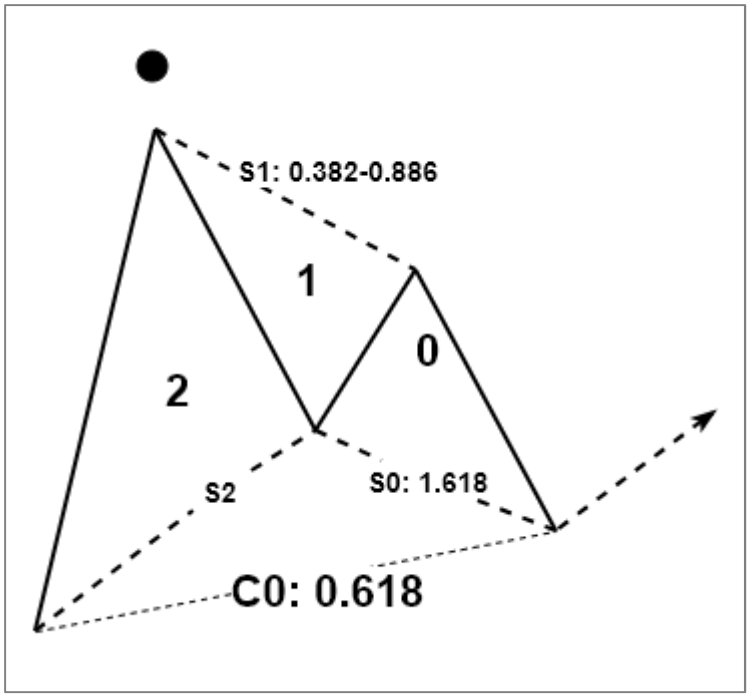

Figure 9-8: Gartley Pattern Variation 1.

Name: Gartley Variation 2

Structure: N3

Ideal Ratios: S0: 1.618, S1: 0.382 - 0.886, S2: 0.618

Description: Gartley pattern with all three shape ratios defined

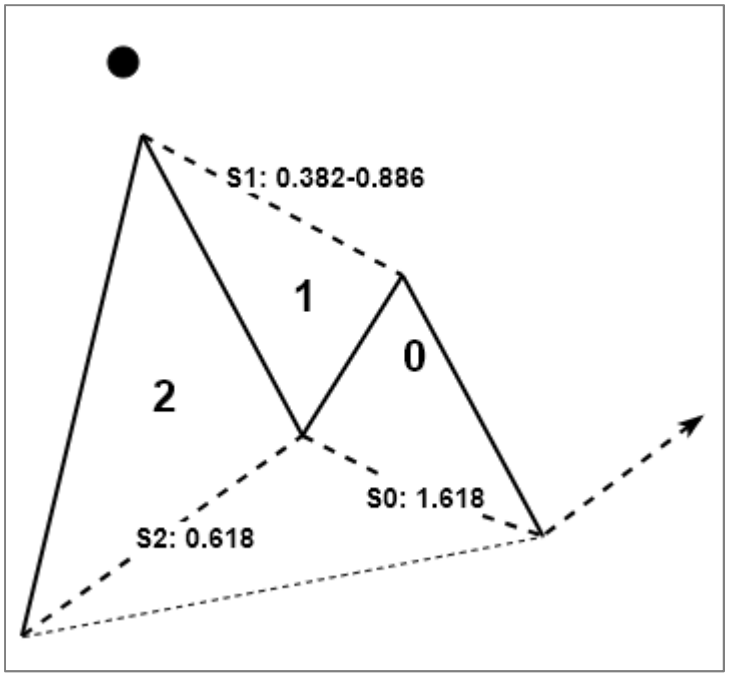

Figure 9-9: Gartley Pattern Variation 2.

Name: Gartley Variation 3

Structure: N3, C0: 0.618 to T0: 3

Ideal Ratios: S0: 1.618, S1: 0.382 -0.886, S2: 0.618

Description: Gartley pattern with closing shape ratio defined

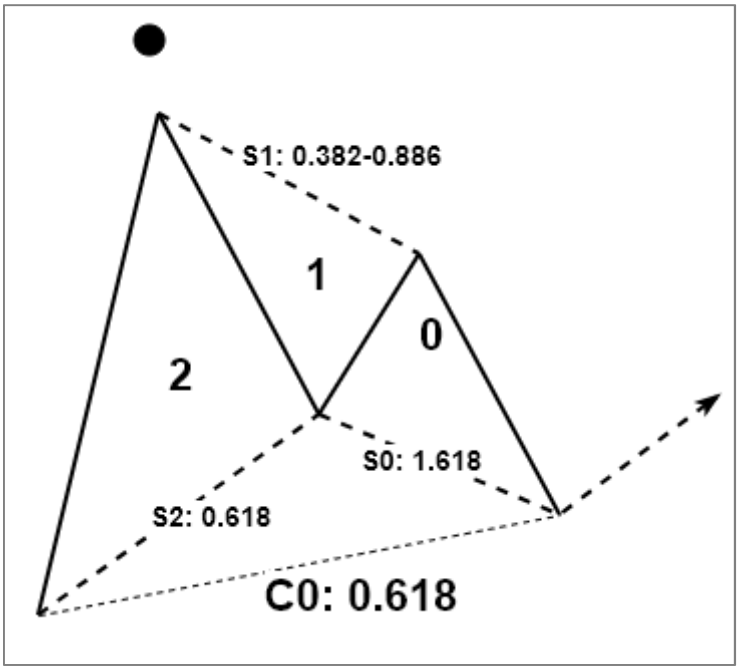

Figure 9-10: Gartley Pattern Variation 3.

9.4 Pattern with 4 EFWs (6 points) Examples

Name: Elliott Wave .12345 Pattern

Structure: N4, F0: 1.000 to T0: 1 by T3: 1

Ideal Ratios: S0: 1.618-2.618, S1: 0.382, S2: 1.618-3.000, S3: 0.618

Description: Elliott Wave .12345 pattern with extended Wave 3

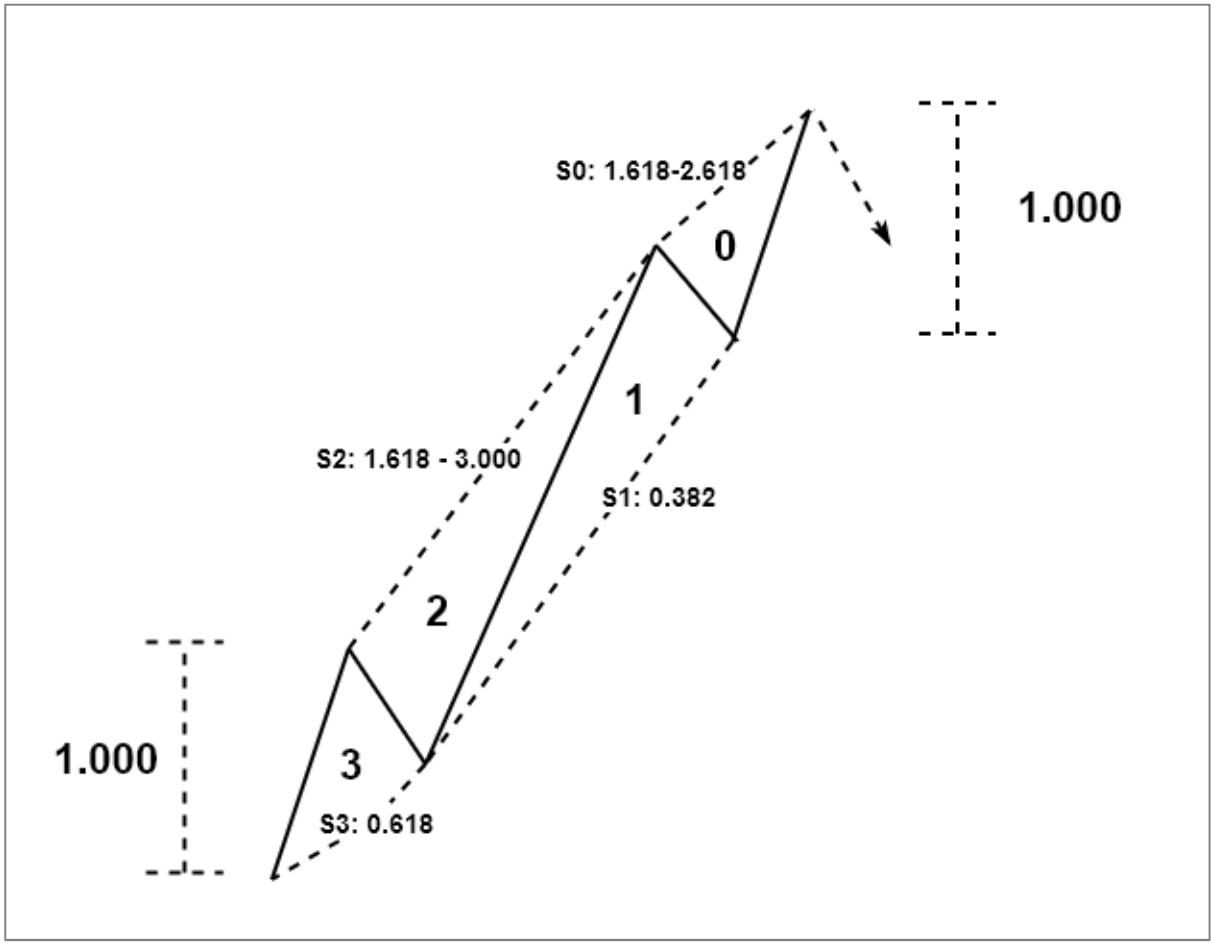

Figure 9-11: Elliott Wave .12345 Pattern with 3rd Wave Extension

9.5 Pattern with 7 EFWs (9 points) Examples

Name: Elliott Wave .12345ABC Pattern

Structure: N7, C0: 0.618 to T0: 7

Ideal Ratios: S0: 1.618, S1: 0.618, S2, S3: 1.618-2.618, S4: 0.382, S5: 1.618-3.000, S6: 0.618

Description: Elliott Wave .12345ABC pattern with extended Wave 3

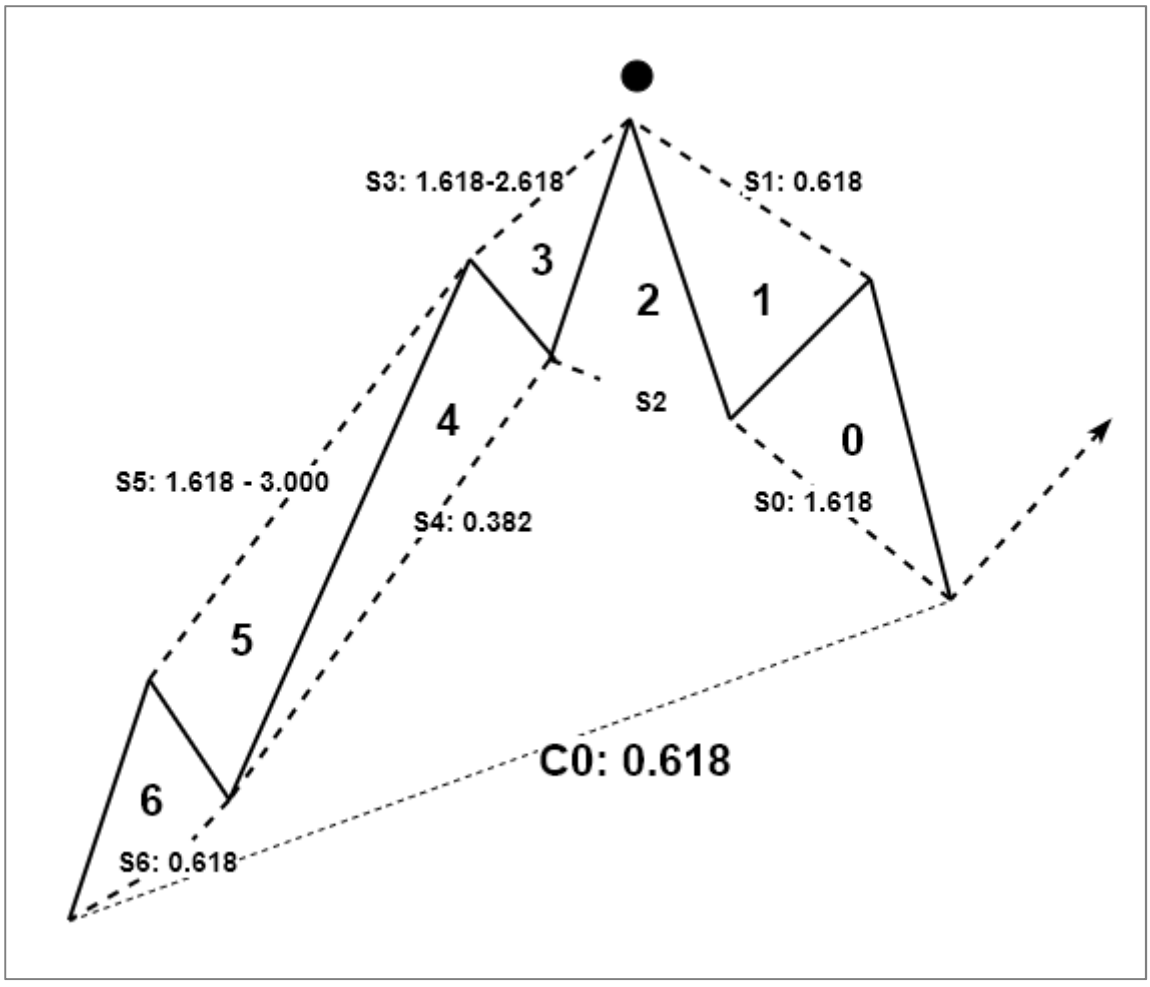

Figure 9-12: Elliott Wave .12345ABC Pattern

As you can see from the above examples, you can describe any tradable patterns in the financial market using X3 Pattern Notation just using short three lines for most of case. The communication is so much easier and it is even much more accurate. For the scientific advancement in understanding the financial market, we will need to study all existing patterns outside our knowledge. X3 pattern notation can help you to establish those patterns in systematic approach beyond what we found in last 100 years.