

Continuation or Reversal: Deciphering the Role of Structure Blocks in Intraday Forex Market Dynamics

Emilis Strimaitis

emilis@strimaitis.com

<https://strimaitis.com>

Abstract. This whitepaper presents a comprehensive analysis of structure blocks in the forex market, focusing on the likelihood of continuation or reversal events. The study examined 18 major currency pairs and identified patterns in the formation of bullish and bearish structure blocks, to discover potential trading edges. The data, collected from 9,822 structure blocks, revealed that the probability of continuation is consistently higher than reversal, particularly for the first structure block. These findings provide valuable insights for forex traders, allowing them to make more informed decisions and manage risk more effectively. However, traders should also consider the limitations of this study, including the analysis of a specific time frame and a limited number of currency pairs, and incorporate other technical and fundamental analysis tools to support their trading strategies.

1. Introduction

The goal of this research was to analyze the structure blocks, their formation during price action, and the likelihood of them undergoing a continuation (where a structure block of the same type is created next) or reversal (where a structure block of an opposing type is created next). In this research, we observe whether there are any similarities among structure blocks and the statistical patterns they form on different Forex market major pairs.

Furthermore, if a significant statistical pattern is present, we aim to identify whether it occurs only on certain currency pairs and whether this pattern can be transformed into a trading edge.

The research data were collected by analyzing 18 Forex currency pairs - AUDCAD, AUDJPY, AUDNZD, AUDUSD, CHFJPY, EURAUD, EURCAD, EURCHF, EURGBP, EURJPY, EURUSD, GBPCHE, GBPJPY, GBPUSD, NZDUSD, USDCAD, USDCHF, and USDJPY.

2. Definition of a Pullback Point

There are two types of pullback points - bullish pullback points and bearish pullback points.

A bullish pullback point is formed when a candle close is above the previous candle high.

A bearish pullback point is formed when a candle close is below the previous candle low.

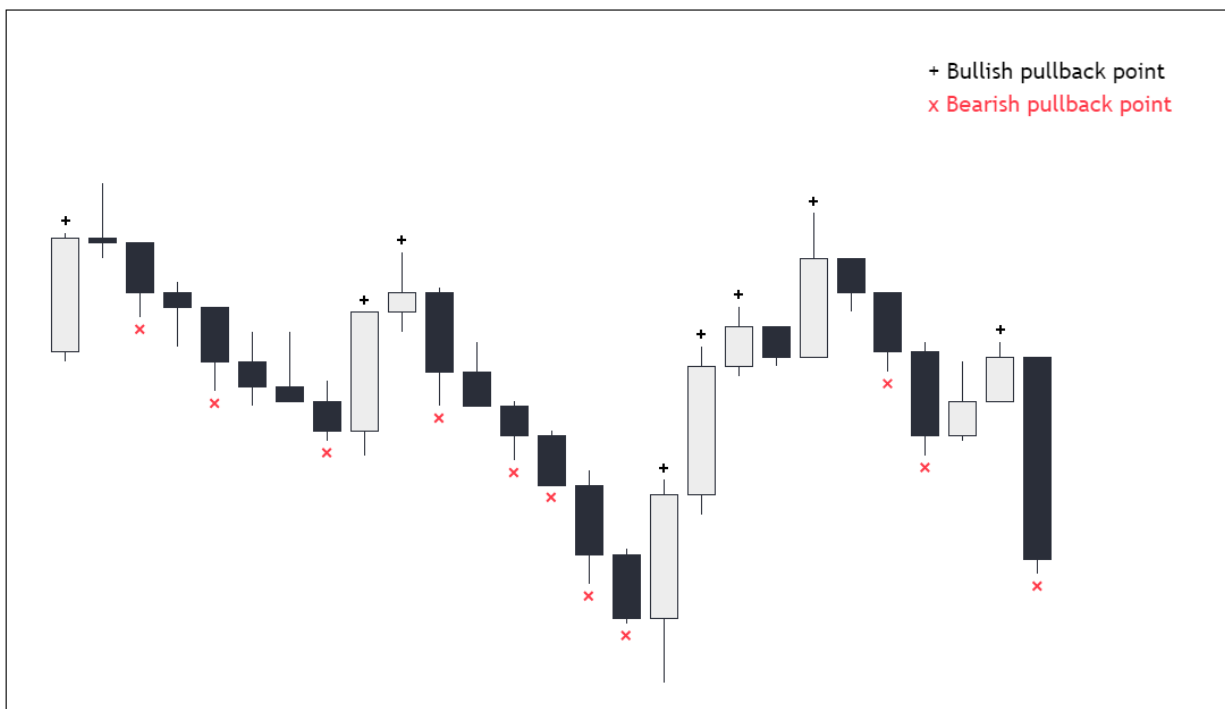


Figure 1: Bullish and Bearish Pullback Points - Illustration of how bullish and bearish pullback points are formed based on candle closes and previous candle highs/lows.

3. Definition of Ranges

Pullback points mark the beginning and end of a range.

A bullish range is formed when the price creates a bullish pullback point, followed by a bearish pullback point, and when the price moves up again and closes above the previous bullish pullback point.

A bearish range is formed when the price creates a bearish pullback point, followed by a bullish pullback point, and when the price moves down again and closes below the previous bearish pullback point.

Any other price action or pullbacks occurring within the high of the bullish pullback point or low of the bearish pullback point is considered intermediary price action.

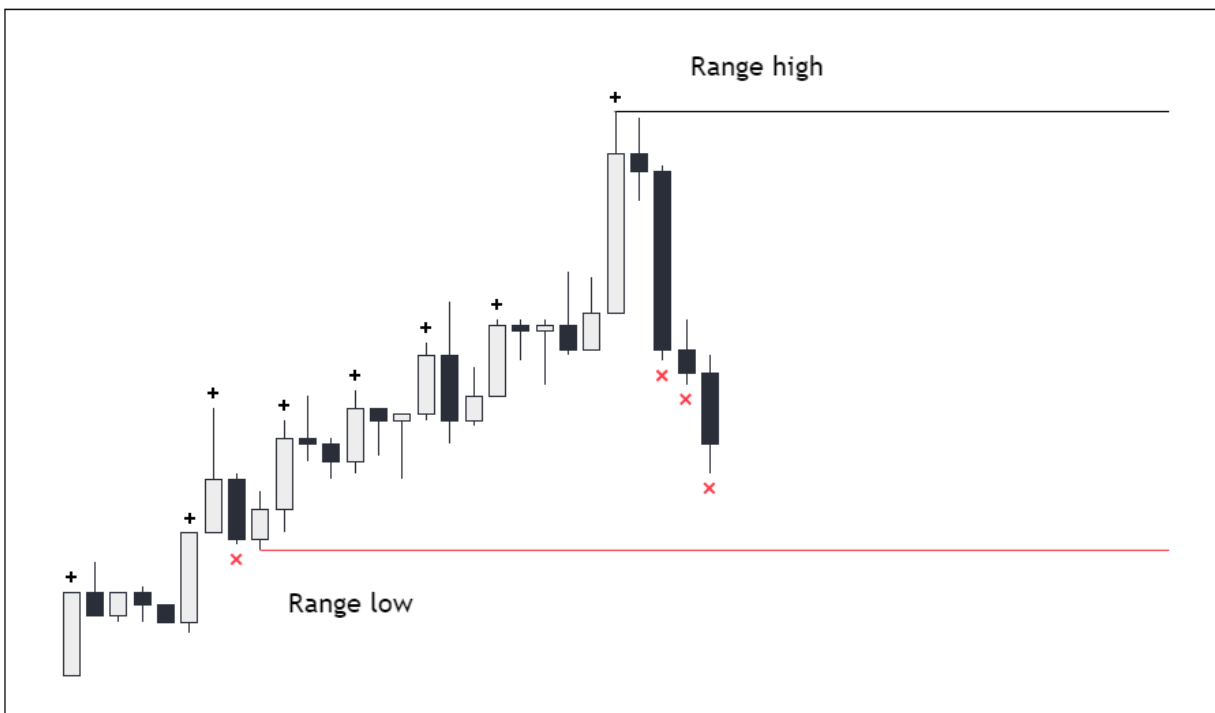


Figure 2: Bullish and Bearish Ranges - Depiction of how bullish and bearish ranges are formed using pullback points and price action.

4. Definition of a Structure Block

There are two types of structure blocks - bullish structure blocks and bearish structure blocks. The structure block perimeter is defined with the help of pullback points. Each structure block has a pair of pullback points - bearish and bullish. A structure block is formed when a new range is created.

When a new bullish range is formed, a bullish structure block is also formed. First, the low of the structure block is determined by the lowest low that comes after the last bearish pullback. The high is determined by the highest price point that comes before the last bearish pullback and before the bullish pullback. That highest point position also shares the same Y-axis properties as the left side of the structure block. The right side of the structure block shares the same Y-axis as the candle that broke the previous range and created a new one.

When a bearish range is formed, a bearish structure block is also formed. First, the high of the structure block is determined by the highest high that comes after the latest bullish pullback. The low is determined by the lowest price point that comes before the last bullish pullback and after the bearish pullback. The lowest point also shares the same Y-axis properties as the left side of the structure block. The right side of the structure block shares the same Y-axis as the candle that broke the previous range and created a new one.

When the price action forms a structure block, it can do one of three things - form a new continuation structure block (if the previous block was a bullish structure block, it will form a bullish structure block 2), form an opposing - bearish structure block (it would form a bearish structure block 1), or the price can stay in the range indefinitely, never making a new structure block. A structure block can only become a greater number continuation structure block, a first opposing structure block, or not form a structure block indefinitely.

For example, a bullish structure block 3 can only become a bullish structure block 4, a bearish structure block 1, or remain a bullish structure block 3 indefinitely.

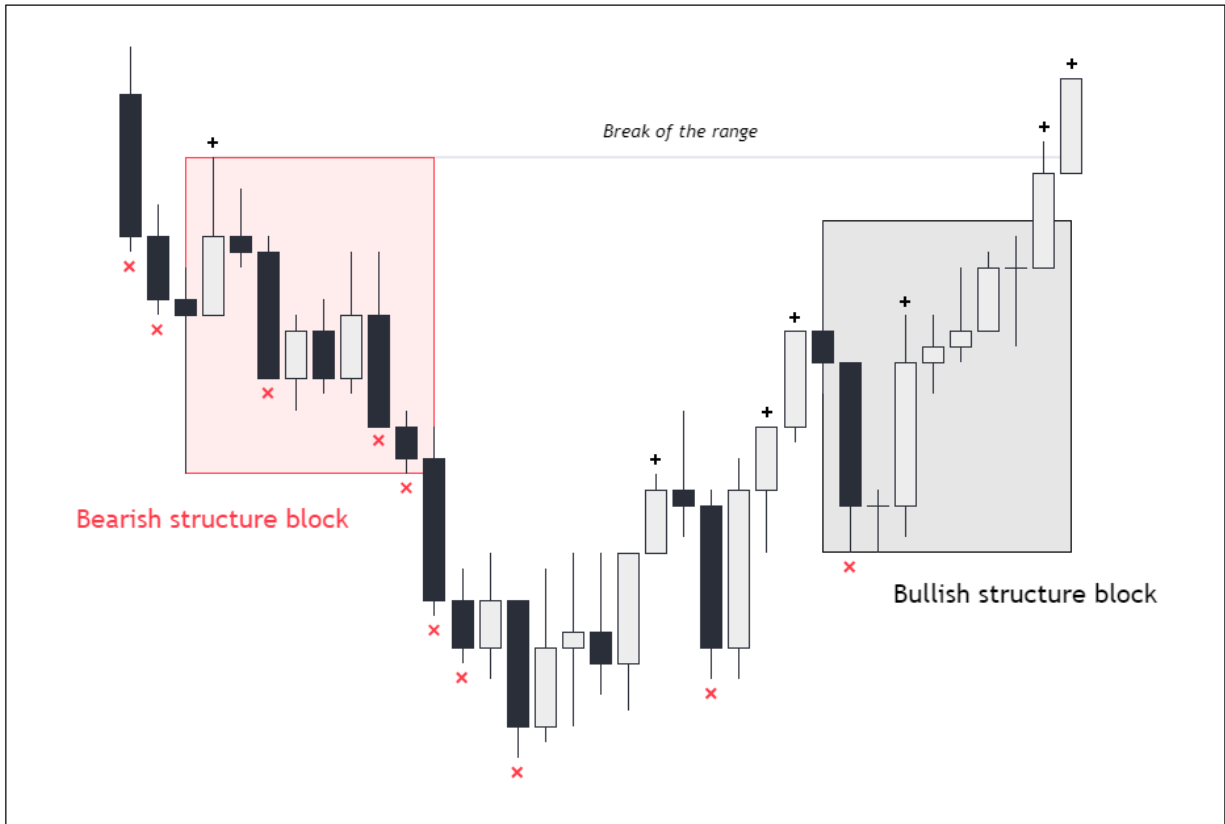


Figure 3: Bullish and Bearish Structure Blocks - Visual representation of the formation and components of bullish and bearish structure blocks, including their pullback points and price action.

Structure blocks were first conceptualized as "Mentblocks" by Anton Jere Calmes [1].

5. Data Used in the Research

The total dataset for the research consisted of 9,822 structure blocks - 100 structure block data points per one of the 18 currency pairs for structure blocks 1 to 4 (1,800 data points for structure block 1, 1,800 data points for structure block 2, 1,800 data points for structure block 3, 1,800 data points for structure block 4), 1,668 data points for structure block 5 (AUDCAD - 82, AUDJPY - 94, AUDNZD - 90, AUDUSD - 102, CHFJPY - 89, EURAUD - 96, EURCAD - 96, EURCHF - 86, EURGBP - 79, EURJPY - 119, EURUSD - 85, GBPCHF - 94, GBPJPY - 92,

GBPUSD - 93, NZDUSD - 91, USDCAD - 109, USDCHF - 81, USDJPY - 90), 954 data points for structure block 6 (AUDCAD - 46, AUDJPY - 48, AUDNZD - 52, AUDUSD - 57, CHFJPY - 48, EURAUD - 55, EURCAD - 49, EURCHF - 57, EURGBP - 44, EURJPY - 63, EURUSD - 53, GBPCHF - 54, GBPJPY - 49, GBPUSD - 46, NZDUSD - 63, USDCAD - 58, USDCHF - 51, USDJPY - 61).

When logging data, we recorded whether a bullish structure block was created or a bearish structure block - allowing us to understand whether it is more likely to get a continuation (a structure block of the same type) or a reversal (a structure block of an opposing type).

Data was collected using a 1-minute timeframe. This timeframe was chosen to collect the most accurate and largest dataset. This research is meant to analyze intraday price action.

In addition, the 1-minute timeframe was selected to have the highest amount of data available. Even on a 1-minute timeframe, structure blocks 5 and structure blocks 6 had an incomplete amount of data (1,668 structure block 5 data points and 954 structure block 6 data points, versus 1,800 other structure block data points).

For example, if a 1-hour timeframe had been chosen, there would not have been enough data to properly analyze the behavior of higher number structure blocks (e.g., structure block 6 - whether it would become structure block 7 or an opposing structure block 1).

Structure blocks were recorded by analyzing the historical price action of 24 hours per day, 5 days per week, until 100 blocks were collected per currency pair, per structure block (up to the 6th structure block inclusive). Data were collected starting from March 30th, 2023, and going backward. Data was collected using the TradingView [2] platform using the price action data provided by FXCM [2].

6. Data Analysis

Below is the data for each of the 18 currency pairs per structure block.

Bull-bear ratio - a statistical representation of whether there were more bullish structure blocks or bearish ones. If the number is above 1, there were more bullish structure blocks;

if the number is below 1, there were more bearish structure blocks. A number equal to or close to 1 indicates an equal distribution of bullish and bearish structure blocks.

Bullish reversal chance - a probability expressed in percentage measuring whether a bullish structure block was followed by a bearish structure block.

Bullish continuation chance - a probability expressed in percentage measuring whether a bullish structure block was followed by a bullish structure block.

Bearish reversal chance - a probability expressed in percentage measuring whether a bearish structure block was followed by a bullish structure block.

Bearish continuation chance - a probability expressed in percentage measuring whether a bearish structure block was followed by a bearish structure block.

Average reversal chance - a combined bullish and bearish structure block reversal probability expressed in percentage.

Average continuation chance - a combined bullish and bearish structure block continuation probability expressed in percentage.

STRUCTURE BLOCK 1	AVERAGE	AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	1.10	0.89	1.38	1.13	1.17	1.50	0.92	0.89	1.13	1.13	1.27	1.04	0.89	1.44	1.17	1.13	0.75	1.00	1.04
Bullish reversal chance	35%	30%	26%	40%	30%	28%	44%	38%	34%	38%	30%	34%	35%	26%	38%	24%	52%	34%	41%
Bullish continuation chance	65%	70%	74%	60%	70%	72%	56%	62%	66%	62%	70%	66%	65%	74%	62%	76%	48%	66%	59%
Bearish reversal chance	39%	24%	42%	46%	38%	48%	40%	32%	40%	44%	42%	36%	29%	44%	46%	29%	38%	34%	43%
Bearish continuation chance	61%	76%	58%	54%	62%	52%	60%	68%	60%	56%	58%	64%	71%	56%	54%	71%	62%	66%	57%
Average reversal chance	37%	27%	34%	43%	34%	38%	42%	35%	37%	41%	36%	35%	32%	35%	42%	26%	45%	34%	42%
Average continuation chance	63%	73%	66%	57%	66%	62%	58%	65%	63%	59%	64%	65%	68%	65%	58%	74%	55%	66%	58%

Table 1: Structure Block 1 Data - Summary of the data collected for structure block 1, including bull-bear ratio, continuation and reversal chances, and average probabilities for all 18 currency pairs.

The bull-bear ratio is 1.10, indicating that there were more bullish structure blocks in this sample size of 1,800 blocks. Both bullish and bearish continuation chances are much higher than

reversal chances: 35% versus 65% for bullish continuation and 39% versus 61% for bearish continuation. The combined continuation chance is 63% versus 37% reversal chance. Individual pair reversal chances range from 26% (NZDUSD) to 45% (USDCAD), and continuation chances range from 55% (USDCAD) to 74% (NZDUSD).

It is worth noting that none of the pairs had a higher than 50% chance of reversal when the first structure block was formed. This data indicates that the first structure block is 1.7 times more likely to undergo a continuation than a reversal.

STRUCTURE BLOCK 2	AVERAGE																		
		AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	1.04	1.02	1.04	0.87	0.92	1.17	1.13	0.89	1.17	1.38	1.17	1.13	0.96	1.22	1.13	1.04	0.82	0.89	0.79
Bullish reversal chance	45%	55%	45%	54%	51%	34%	45%	44%	49%	34%	35%	43%	43%	38%	51%	50%	49%	46%	49%
Bullish continuation chance	55%	45%	55%	46%	49%	66%	55%	56%	51%	66%	65%	57%	57%	62%	49%	50%	51%	54%	51%
Bearish reversal chance	47%	56%	47%	47%	47%	40%	51%	38%	57%	50%	42%	49%	41%	47%	57%	52%	40%	40%	38%
Bearish continuation chance	53%	44%	53%	53%	53%	60%	49%	62%	43%	50%	58%	51%	59%	53%	43%	48%	60%	60%	62%
Average reversal chance	46%	56%	46%	50%	49%	37%	48%	41%	53%	42%	38%	46%	42%	42%	54%	51%	44%	43%	43%
Average continuation chance	54%	44%	54%	50%	51%	63%	52%	59%	47%	58%	62%	54%	58%	58%	46%	49%	56%	57%	57%

Table 2: Structure Block 2 Data - Summary of the data collected for structure block 2, including key metrics and probabilities for each currency pair.

STRUCTURE BLOCK 3	AVERAGE																		
		AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	1.13	1.38	1.13	1.17	1.22	1.00	0.85	1.08	0.96	1.56	1.13	1.38	1.04	1.00	1.13	1.13	1.17	1.00	1.04
Bullish reversal chance	43%	35%	38%	49%	48%	47%	56%	38%	43%	35%	39%	40%	49%	49%	43%	32%	34%	51%	45%
Bullish continuation chance	57%	65%	62%	51%	52%	53%	44%	62%	57%	65%	61%	60%	51%	51%	57%	68%	66%	49%	55%
Bearish reversal chance	48%	50%	43%	57%	58%	47%	48%	40%	39%	56%	43%	56%	51%	49%	48%	40%	45%	51%	47%
Bearish continuation chance	52%	50%	57%	43%	42%	53%	52%	60%	61%	44%	57%	44%	49%	51%	52%	60%	55%	49%	53%
Average reversal chance	45%	43%	40%	53%	53%	47%	52%	39%	41%	45%	41%	48%	50%	49%	45%	36%	39%	51%	46%
Average continuation chance	55%	57%	60%	47%	47%	53%	48%	61%	59%	55%	59%	52%	50%	51%	55%	64%	61%	49%	54%

Table 3: Structure Block 3 Data - Summary of the data collected for structure block 3, including key metrics and probabilities for each currency pair.

STRUCTURE BLOCK 4	AVERAGE																		
		AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	0.97	0.79	0.89	0.75	1.17	0.85	0.79	0.92	1.17	1.08	0.85	1.13	1.08	0.69	1.00	1.38	0.85	1.13	0.85
Bullish reversal chance	48%	53%	45%	57%	42%	46%	54%	56%	41%	50%	50%	40%	37%	54%	44%	35%	56%	51%	49%
Bullish continuation chance	52%	47%	55%	43%	58%	54%	46%	44%	59%	50%	50%	60%	63%	46%	56%	65%	44%	49%	51%
Bearish reversal chance	45%	40%	38%	43%	49%	37%	42%	52%	49%	55%	40%	45%	37%	35%	42%	51%	49%	57%	42%
Bearish continuation chance	55%	60%	62%	57%	51%	63%	58%	48%	51%	45%	60%	55%	63%	65%	58%	49%	51%	43%	58%
Average reversal chance	46%	46%	42%	50%	45%	42%	48%	54%	45%	52%	45%	42%	37%	45%	43%	43%	53%	54%	45%
Average continuation chance	54%	54%	58%	50%	55%	58%	52%	46%	55%	48%	55%	58%	63%	55%	57%	57%	47%	46%	55%

Table 4: Structure Block 4 Data - Summary of the data collected for structure block 4, including key metrics and probabilities for each currency pair.

STRUCTURE BLOCK 5	AVERAGE																		
		AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	1.10	0.86	1.04	1.31	1.08	1.28	1.18	1.09	1.21	1.14	0.75	0.93	1.41	1.14	1.11	1.02	1.02	0.65	1.50
Bullish reversal chance	44%	47%	52%	35%	43%	47%	39%	47%	28%	42%	54%	47%	35%	49%	48%	45%	46%	55%	32%
Bullish continuation chance	56%	53%	48%	65%	57%	53%	61%	53%	73%	58%	46%	53%	65%	51%	52%	55%	54%	45%	68%
Bearish reversal chance	47%	38%	54%	50%	47%	60%	47%	51%	39%	47%	38%	42%	51%	56%	53%	45%	47%	33%	52%
Bearish continuation chance	53%	62%	46%	50%	53%	40%	53%	49%	61%	53%	62%	58%	49%	44%	47%	55%	53%	67%	48%
Average reversal chance	46%	42%	53%	43%	45%	53%	43%	49%	33%	45%	46%	44%	43%	53%	51%	45%	47%	44%	42%
Average continuation chance	54%	58%	47%	58%	55%	47%	57%	51%	67%	55%	54%	56%	57%	47%	49%	55%	53%	56%	58%

Table 5: Structure Block 5 Data - Summary of the data collected for structure block 5, including key metrics and probabilities for each currency pair.

STRUCTURE BLOCK 6	AVERAGE																		
		AUDCAD	AUDJPY	AUDNZD	AUDUSD	CHFJPY	EURAUD	EURCAD	EURCHF	EURGBP	EURJPY	EURUSD	GBPCHF	GBPJPY	GBPUSD	NZDUSD	USDCAD	USDCHF	USDJPY
Bull-bear ratio	1.05	1.00	1.00	0.73	0.78	1.00	1.29	1.04	1.59	1.10	1.17	1.04	1.25	0.69	0.59	1.03	0.93	1.68	0.97
Bullish reversal chance	46%	48%	46%	58%	47%	40%	47%	39%	34%	56%	44%	48%	42%	48%	60%	39%	43%	41%	43%
Bullish continuation chance	54%	52%	54%	42%	53%	60%	53%	61%	66%	44%	56%	52%	58%	52%	40%	61%	57%	59%	57%
Bearish reversal chance	45%	48%	46%	42%	33%	33%	60%	38%	57%	63%	52%	50%	52%	25%	33%	40%	39%	66%	38%
Bearish continuation chance	55%	52%	54%	58%	67%	67%	40%	62%	43%	37%	48%	50%	48%	75%	67%	60%	61%	34%	62%
Average reversal chance	46%	48%	46%	50%	40%	37%	53%	39%	46%	60%	48%	49%	47%	37%	47%	40%	41%	53%	41%
Average continuation chance	54%	52%	54%	50%	60%	63%	47%	61%	54%	40%	52%	51%	53%	63%	53%	60%	59%	47%	59%

Table 6: Structure Block 6 Data - Summary of the data collected for structure block 6, including key metrics and probabilities for each currency pair.

The structure blocks 2 to 6 share very similar data. Below is the combined data for structure blocks 2, 3, 4, 5, 6:

COMBINED DATA STRUCTURE BLOCKS 2-6	AVERAGE					
		STRUCTURE BLOCK 2	STRUCTURE BLOCK 3	STRUCTURE BLOCK 4	STRUCTURE BLOCK 5	STRUCTURE BLOCK 6
Bull-bear ratio	1.06	1.04	1.13	0.97	1.10	1.05
Bullish reversal chance	45%	45%	43%	48%	44%	46%
Bullish continuation chance	55%	55%	57%	52%	56%	54%
Bearish reversal chance	46%	47%	48%	45%	47%	45%
Bearish continuation chance	54%	53%	52%	55%	53%	55%
Average reversal chance	46%	46%	45%	46%	46%	46%
Average continuation chance	54%	54%	55%	54%	54%	54%

Table 7: Combined Data for Structure Blocks 2 to 6 - Comprehensive summary of the data collected for structure blocks 2 through 6, including average probabilities and key metrics.

The bull-bear ratio is slightly above 1, indicating that there were more bullish structure blocks in the sample size of 8,022 blocks. Both bearish and bullish structure block continuation chances are very similar: 55% and 54%, versus 45% and 46% reversal chances. On average, there is a 54% chance of continuation. The similarity of the data across structure blocks, regardless of how many structure blocks are formed in a row, indicates that structure blocks are more likely to undergo a continuation rather than reversal.

Below is the combined data for each structure block and average representation, including structure block 1:

COMBINED DATA STRUCTURE BLOCKS 1-6	AVERAGE	STRUCTURE BLOCK 1	STRUCTURE BLOCK 2	STRUCTURE BLOCK 3	STRUCTURE BLOCK 4	STRUCTURE BLOCK 5	STRUCTURE BLOCK 6
Bull-bear ratio	1.06	1.10	1.04	1.13	0.97	1.10	1.05
Bullish reversal chance	43%	35%	45%	43%	48%	44%	46%
Bullish continuation chance	57%	65%	55%	57%	52%	56%	54%
Bearish reversal chance	45%	39%	47%	48%	45%	47%	45%
Bearish continuation chance	55%	61%	53%	52%	55%	53%	55%
Average reversal chance	44%	37%	46%	45%	46%	46%	46%
Average continuation chance	56%	63%	54%	55%	54%	54%	54%

Table 8: Combined Data for Structure Blocks 1 to 6 - Comprehensive summary of the data collected for all structure blocks, including average probabilities, key metrics, and overall trends.

Observing the data, it can be seen that the data is very consistent across all structure blocks, except for structure block 1. Structure block 1 has a much higher chance of continuation: 63% versus an average of 54% for structure blocks 2 to 6. It is a significant 9% increase in the probability of continuation.

7. Conclusion

From the data, we can conclude that structure blocks are far more likely to undergo a continuation rather than a reversal. Structure block 1 has the highest continuation probability at 63%, which is a 9% increase compared to the average continuation probability of 54% for structure blocks 2 to 6. This information can be utilized by traders to make informed decisions when trading forex markets, as it indicates a higher likelihood of the current trend continuing when a structure block is formed.

However, it is essential to keep in mind that this study has limitations, as it only analyzed a specific time frame and 18 currency pairs. Market conditions, global economic events, and other factors can influence the outcomes. Additionally, this study does not guarantee future success, and traders should always incorporate other technical and fundamental analysis tools to support their trading decisions.

In summary, the findings of this study provide valuable insights into the behavior of structure blocks in forex markets. Traders can use this information as part of their trading strategies, understanding that there is a higher probability of continuation when a structure block is formed, particularly for structure block 1. This knowledge can potentially improve trading performance by allowing traders to make more informed decisions and better manage risk.

References

- [1] Calmes, A. J. (n.d.). Mentfx LLC. Retrieved from <https://www.mentfx.com>
- [2] TradingView. (n.d.). TradingView. Retrieved from <https://www.tradingview.com>
- [3] FXCM. (n.d.). Forex Capital Markets. Retrieved from <https://www.fxcm.com>