

Investigating the Merits of Support and Resistance Strategy: Evidence From International Financial Markets

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ABSTRACT

Support and resistance strategy is widely recognized in financial markets as it revolves around identifying specific price levels on a chart where the buying and selling pressure is historically significant. By analyzing these historical price actions and market trends, traders can utilize fundamental analysis strategies to predict future price movements. The aim of this study was to empirically explore the merits of a support and resistance strategy in financial markets due to its perceived significant impact on active market participants. A probability algorithm and Sharpe ratio model was utilized for six financial markets from June 13, 2018 to June 13, 2023. The findings revealed that market participants in the JSE and DAX can use support and resistance strategy to enhance the value of their portfolio than a buy and hold approach. This can be achieved by determining the entry and exit points for trades, setting the entry point slightly above the support level to confirm a potential price reversal and selling near a resistance level. A stop-loss orders should also be utilized in along with the above mentioned steps to manage risk.

Keywords: Support and Resistance, Financial Markets, Breakout Strategy, Fundamental Analysis, Technical Analysis.

1. INTRODUCTION

Support and resistance are two key concepts in technical analysis used to identify potential levels where the price of an asset may reverse its direction (Osler, 2000). Traders and investors extensively rely on these concepts to make informed decisions regarding entry and exit points for their trades. Support and resistance indicators are also widely employed by traders and investors to make decisions about buying, selling and holding assets in financial markets. Accordingly, support refers to a price level at which the demand for an asset is considered strong enough to prevent it from declining further (Evens, 2012). It is often seen as a "floor" for the price as it tends to act as a barrier that prevents the price of a security from falling below a particular level. Traders believe that when the price reaches a support level, there is a higher likelihood of it rebounding or reversing downward. Support levels often represent psychological barriers where market participants perceive the price of their security as attractive leading to increased buying activity (Enow, 2023). Traders and investors often look for support levels to establish long positions or add to existing ones by anticipating a potential price rebound. The strength of an asset can vary with strong support levels by experiencing multiple bounces off a particular price while weaker support levels may be broken more easily. Conversely, resistance on the other hand refers to a price level at which the supply of an asset is considered strong enough to prevent it from rising further (Evens, 2012). It is seen as a "ceiling" for the price as it tends to act as a barrier that prevents the price from surpassing that level. Traders believe that when the price reaches a resistance level, there is a higher likelihood of it encountering selling pressure and reversing its uptrend. Resistance levels can be identified by observing areas where the price has historically struggled to break through as it represents areas where market participants perceive the price as overvalued or face psychological barriers to buying. Traders and investors look for resistance levels to establish short positions or exit existing ones and therefore expecting a potential price reversal. Similar to support, resistance levels can vary in strength with stronger levels providing more significant barriers to price advances.

One interesting aspect of support and resistance is the phenomenon of reversal. Once a support level is broken, it often becomes a resistance level and vice versa. This occurs due to a shift in the market sentiment and the behavior of market participants. When a support level is breached, it signifies a change in the balance between buyers and sellers (Chung & Bellotti, 2021). Market participants who previously held

long positions may exit while new participants may enter with short positions leading to increased selling pressure. As a result, the broken support level becomes a resistance level acting as a barrier to further price advances. Conversely, when a resistance level is breached, it signifies a shift in sentiment favouring buyers. Market participants who were previously hesitant to buy may now enter the market leading to increased buying pressure. The broken resistance level then transforms into a support level providing a floor for the price preventing it from falling further. The significance of support and resistance levels lies in the fact that they represent areas where market participants have shown a strong interest in buying or selling an asset. These levels can act as psychological or technical barriers influencing the behavior of traders and leading to potential price reactions (Roberts et al., 2021). Breakouts above resistance or below support levels are considered significant events and may indicate a change in the overall market sentiment or trend. Therefore, the aim of this study was to empirically explore the merits of support and resistance strategy in financial markets due to its perceived significant impact on active market participants. This study explores the following research questions; does a support and resistance strategy outperform a buy and Hold strategy? How can market participants use a support and resistance strategy to enhance performance? In providing answers to the above questions, this study makes a provides valuable insights to traders and investors by allowing them to identify potential entry and exit points for their trades. Also, this study is the first as per the author's knowledge to explore the merits of support and resistance strategy relative to a buy and hold style in international financial markets, hence a noteworthy contribution. The section below highlights the literature review.

2. LITERATURE

2.1 Theoretical Foundations

Support and resistance levels are rooted in the Dow Theory which postulates that price movements are driven by trends (Benjamin, 1942). The Dow theory is a foundational concept in technical analysis that provides insights into the behaviour of financial markets (Zhu & Zhou, 2009). Developed by Charles H. Dow in the late 19th and early 20th centuries, this theory forms the basis for understanding trends and price movements in stock markets. The Dow theory emphasizes that financial markets move in trends and these trends can be classified into primary, secondary and minor trends. Primary trends represent the long-term direction of the market lasting from months to years. It can be bullish (upward), bearish (downward) or in a consolidation phase (sideways). Secondary trends are a countertrend movement within the primary trend usually lasting from weeks to months. It corrects the primary trend but does not change its overall direction. Conversely, minor trend refers to short-term fluctuations within the secondary trend often lasting a few days to a few weeks. The Dow theory emphasizes the importance of confirming trends across multiple indices and stresses that for a trend to be significant, it should be observed for a considerable amount of time. Also, the strength of the trend is confirmed if both averages are moving in the same direction.

Support and resistance levels play a crucial role in the Dow theory as it recognizes that certain price levels act as barriers to price movements (Blyler, 2013). Support levels are price levels at which buying pressure tends to overcome selling pressure causing prices to bounce back from further declines (Hendershott & Menkveld, 2014). Resistance levels on the other hand represent price levels at which selling pressure tends to overcome buying pressure leading to price reversals (Latane & Richard, 2012). The Dow theory believe that volume and the number of shares traded should confirm the direction of price movements. During bullish periods in financial markets, increasing volume and price increase signifies strength while decreasing volume during price declines indicates weakness. Similarly, during bearish periods, increasing volume and price declines suggests strong selling pressure while decreasing volume during price increase implies reduced selling pressure. The Dow theory suggests that the previous trend is likely to continue until clear signs of a reversal emerge. Reversals are indicated by the violation of support or resistance levels and confirmed by volume patterns. The crux of the Dow theory is that all relevant information affecting market prices is reflected in the averages. It assumes that market participants incorporate available information into their buying and selling decisions making it difficult to consistently beat the market based on new information. The concept of behavioural finance also provides insights into the psychological factors underlying support and resistance trading (Enow, 2023). Investors' cognitive biases

such as anchoring and herding influences investors decision-making leading to the formation of support and resistance levels. Several studies have employed statistical techniques to identify and validate support and resistance strategy (Enow, 2022). These studies utilized various indicators such as moving averages, trend lines and Fibonacci retracements to detect key levels in price charts. Traders analyze historical price data to identify areas where the stock price has previously reversed or consolidated. These levels become potential support areas as traders believe that past buying interest could repeat itself in the future. Moving averages such as the 50-day or 200-day trends are popular technical indicators used to identify support levels. When the stock price approaches or dips below a moving average, it often attracts buying interest from traders who consider the price to be undervalued. To further the frontier of support and resistance, this study aimed at providing a robust empirical analysis on the merits of support and resistance in financial markets as opposed to a buy and hold strategy. The next section highlights the methodology used in achieving the aim.

3. METHODOLOGY

An algorithm model known as the probability of bouncing proposed by Chung & Bellotti (2021) was used to investigate the merits of support and resistance strategy in the Johannesburg stock exchange (JSE index), Nasdaq index, the French stock market index (CAC 40 index), Frankfurt stock exchange (DAX index), Japanese stock index (JPX-Nikkei 225) from June 13, 2018 to June 13, 2023. The algorithm model is based on the notion that the more times a price has previously bounced off a particular support or resistance level, the higher the probability that it will do so again in the future. Also, the presence of specific price patterns such as double tops, double bottoms and triangles near support or resistance levels provides additional confirmation of potential runs in this model. This pattern which indicates a struggle between buyers and sellers can suggest a higher probability of a reversal and captures the number of runs in the support level as well as resistance level. According to Chung & Bellotti (2021) the mathematical expression for the probability of a reversal is given by;

$$p(S) = \frac{p(x_{t+\delta} > b)}{p(x_{t+\delta} < a) + p(x_{t+\delta} > b)}$$

For the expression for resistance level is given by

$$p(R) = \frac{p(x_{t+\delta} < a)}{p(x_{t+\delta} < a) + p(x_{t+\delta} > b)}$$

Where, p(S) is the probability of support and p(R) is the probability of resistance, a and b are integers from 1 till infinity (Chung & Bellotti, 2021). Upon calculating the risk and return trade off from the number of runs, a sharp ratio was used to benchmark the performance for a support and resistance strategy to that of a buy and hold style. A sharp ratio is given by ;

$$S_r = \frac{Return}{Risk}$$

The required data was daily share prices retrieved from yahoo finance which provides real time data. The section below highlights the results and discussion.

4. RESULTS AND DISCUSSION

The results and analysis are presented and discussed below in table 1.

Table 1 Support and Resistance results

JSE			Nasdaq		
	Support	Resistance		Support	Resistance
Threshold	20%	80%	Threshold	20%	80%
Total	267	249	Total	230	246
Broken	0	0	Broken	3	1
Fulfilled	267	249	Fulfilled	227	245

Up	135	128	Up	118	137
Down	132	121	Down	112	109
	B&H	S&R		B&H	S&R
Return	-20.33%	7.75%	Return	29.65%	-10.01%
Risk	26.20%	17.87%	Risk	25.77%	16.20%
Sharpe ratio	-77.60%	43.34%	Sharpe ratio	115.05%	-61.83%
CAC 40			Nikkei 225		
	Support	Resistance		Support	Resistance
Threshold	20%	80%	Threshold	20%	80%
Total	218	247	Total	278	251
Broken	2	4	Broken	0	1
Fulfilled	216	243	Fulfilled	278	250
Up	128	140	Up	132	152
Down	90	107	Down	146	99
	B&H	S&R		B&H	S&R
Return	17.02%	-4.04%	Return	19.09%	-31.45%
Risk	20.83%	12.57%	Risk	19.46%	12.59%
Sharpe ratio	81.69%	-32.10%	Sharpe ratio	98.11%	-249.83%
DAX			BIST100		
	Support	Resistance		Support	Resistance
Threshold	20%	80%	Threshold	20%	80%
Total	246	242	Total	310	151
Broken	1	0	Broken	2	5
Fulfilled	245	242	Fulfilled	308	146
Up	123	128	Up	182	88
Down	123	114	Down	128	63
	B&H	S&R		B&H	S&R
Return	11.05%	13.57%	Return	-79.16%	-9.26%
Risk	21.39%	13.52%	Risk	51.92%	15.81%
Sharpe ratio	51.68%	100.38%	Sharpe ratio	-152.4%	-58.59%

B&H (buy and hold strategy); S&R (Support and Resistance strategy)

The findings in table 1 above presents interesting results from the data analysis. In the JSE, 267 days of support was identified as opposed to 249 days of resistance. This means that for a period of 5 years, there were 267 days where the price level at which the demand for JSE was considered strong enough to prevent it from declining further. On the contrary, there were 249 days in which the price level at which the supply of the JSE stock price was considered strong enough to prevent it from rising further. A much lower figure was observed in the Nasdaq, CAC 40, DAX and Nikkei 225. However, a much higher support and resistance days was observed in the BIST100 as seen in table 1. No violations in the support and resistance levels was found in the JSE while three violations of the support and one violations of the resistance levels was observed in the JSE. Two violations in support level and four violations in resistance was observed in the CAC 40 while one violation in support level and zero violations in resistance was observed in the DAX. In the Nasdaq, three violations in support level and one violation in resistance was observed. The stock market price is likely to increase than decrease following a support and resistance signal in the JSE, Nasdaq, CAC 40, DAX and BIST100 which was evident from the Up and Down values. However, the stock market price is rather likely to decrease following a support signal in the Nikkei 225. Looking at the returns, a support and resistance strategy realises a significantly high returns and lower risk in the JSE and the DAX. A buy

and hold strategy is much more superior in the Nasdaq and CAC 40. On the contrary, both strategies are not useful in the BIST100 as seen in negative Sharpe ratio value. By implication, market participants in the JSE and DAX can realise abnormal profits by monitoring price movements around their support and resistance levels and look for strong momentum that could signal breakouts.

5. CONCLUSION

Support and resistance strategy plays a significant role in financial markets enabling traders to make informed investment decisions. Despite their limitations, support and resistance strategy remain a valuable tool as traders can utilize this approach to devise trading strategies. Support and resistance approaches such as breakout strategies involve entering a trade when the price breaks through a particular level while reversal strategies aim to capitalize on price reversals. The aim of this study was to empirically explore the merits of support and resistance strategy in international financial markets. The findings revealed that support and resistance strategy can be very useful in the JSE and DAX realising superior returns than a buy and hold strategy. More specifically, the following steps are recommended for market participants willing to trade in the JSE and DAX so as to maximise the value of their portfolios; firstly, determine the entry and exit points for trades while setting the entry point slightly above the support level to confirm a potential price reversal. When selling near a resistance level, market participants should set their entry point slightly below the resistance level to confirm a potential price reversal or a slowdown in upward momentum. Also, stop-loss orders should be utilised to manage risk by setting them just below support levels for long trades or just above resistance levels for short trades.

6. LIMITATIONS OF STUDY

Identifying support and resistance levels in this study involved an assumption of 20-80 price range which may not be the case in price patterns and levels. This subjectivity may have introduced biases and impact the accuracy of predictions. Also, Support and resistance levels may become less reliable during periods of high market volatility such as the Covid-19 pandemic. Rapid price fluctuations can lead to false breakouts or breakdowns of these levels, making them less effective as trading signals.

7. FUTURE DIRECTIONS

Future research could focus on integrating various technical indicators and machine learning algorithms to enhance the accuracy of support and resistance level identification. It's important to note that support and resistance levels are not fixed or guaranteed to hold. They can be breached or broken leading to a continuation of the price movement. Therefore, future studies should use support and resistance levels in conjunction with other tools and indicators to increase the probability of accurate predictions.

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