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Technical Analysis Methods And Trading Strategies In Cryptocurrency And Gold Markets: Evidence From An Empirical XAU/USD Case Study

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Abstract

This paper examines technical analysis methods and trading strategies applied to gold (XAU/USD) markets. The study focuses on trend-oriented logic, market structure, and the confirmatory role of momentum indicators such as RSI and MACD. The empirical section is based on a real XAU/USD H1 trading case, incorporating actual entry and exit prices, a structured buy–take table, and profit calculations. The findings demonstrate that technical indicators are methodologically more reliable when used as confirmation tools within a structure-first framework rather than as standalone predictive instruments.

Keywords: Cryptocurrency, gold (XAU/USD), technical analysis, RSI, MACD, market structure, trading strateg.

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1. Introduction

The increasing volatility of cryptocurrency markets and the sustained strategic importance of gold have intensified academic interest in technical analysis–based trading strategies. Cryptocurrencies exhibit frequent regime shifts and evolving market microstructure, which complicates the stability of indicator-driven strategies [ ]. Empirical reviews of cryptocurrency trading research emphasize that many technical trading rules suffer from overfitting and data-snooping bias when evaluated without rigorous methodology [ ].In contrast, gold remains a globally liquid asset with strong macroeconomic sensitivity and safe-haven characteristics. Recent gold price forecasting studies increasingly rely on structured and hybrid frameworks rather than simple indicator rules. These differences motivate the need for a unified yet flexible methodological approach.

2. Methodology

Data and Timeframe.

The empirical analysis is conducted on XAU/USD (gold) using the H1 timeframe on the MetaTrader platform. All calculations are based exclusively on real historical price data and actual executed trade levels, including clearly defined entry (BUY) and exit (TAKE) points. No simulated prices, hypothetical trades, or synthetic datasets are employed, which aligns with empirical recommendations in technical trading research emphasizing data realism and transparency [ ].

The H1 timeframe is selected because it provides a balance between short-term market responsiveness and structural price stability, making it suitable for identifying trend continuation and correction phases in the gold market. This choice is consistent with recent empirical studies highlighting the importance of intraday structure and reduced noise in financial market analysis [ ].

Fibonacci Urvin–Based Technical Framework.

The primary analytical method applied in this study is the Fibonacci Urvin framework, which defines key horizontal price zones derived from dominant impulsive and corrective price movements. These zones function as decision areas for trade entry (BUY) and exit (TAKE), rather than as precise prediction points, consistent with modern structure-based trading approaches [ ].

As illustrated in Figure 2, three long positions (BUY-1, BUY-2, BUY-3) are executed within a lower Fibonacci Urvin support zone, while exit targets (TAKE-1, TAKE-2, TAKE-3) are aligned with upper resistance zones identified in advance. The alignment of entry and exit levels with these predefined structural zones demonstrates that price structure, rather than indicator signals alone, governs trade placement, a conclusion supported by recent empirical and hybrid trading studies [1].

This framework allows for a flexible yet disciplined interpretation of market reactions and reflects the growing academic emphasis on structure-driven technical analysis over isolated indicator-based strategies [ ].

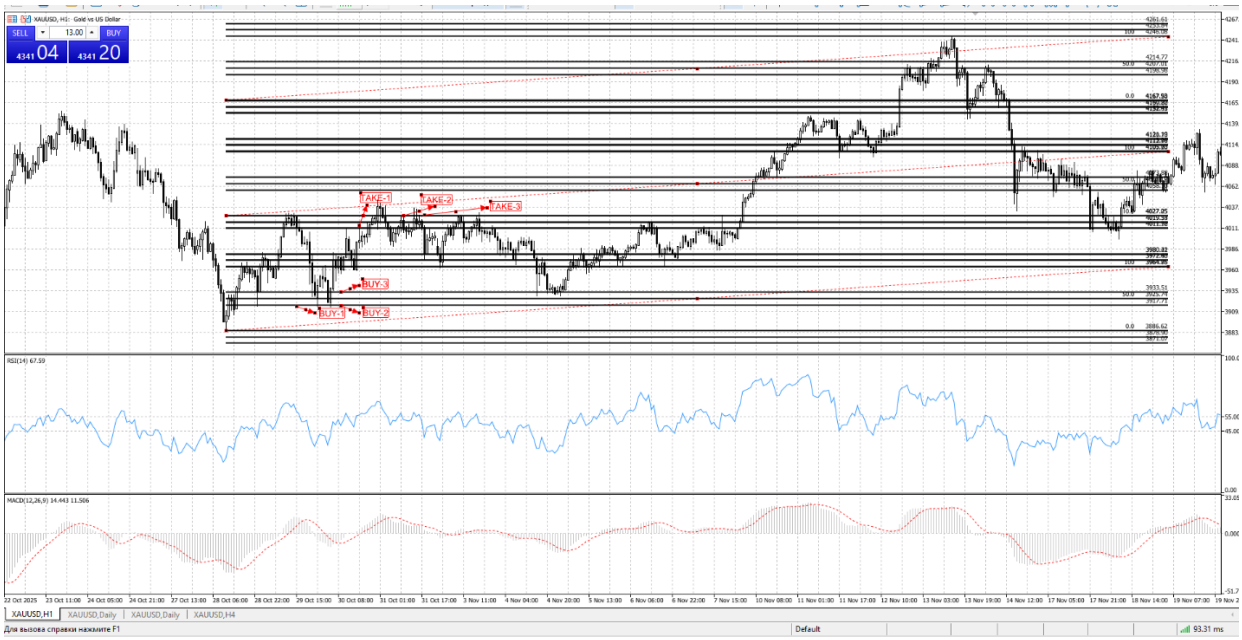

Figure 1.

Trade Execution and Profit Calculation

All positions are executed with a fixed lot size of 0.01. Profit is calculated as the difference between exit and entry prices.

Trade	Entry Type	Price Level	Exit Type	Exit Level	Price Difference (points)	Lot Size	Profit (USD)
1	BUY-1	P_1	TAKE-1	T_1	$(T_1 - P_1) \times 100$	L	$(T_1 - P_1) \times 100 \times L$

Trade	Entry Type	Price Level	Exit Type	Exit Level	Price Difference (points)	Lot Size	Profit (USD)
2	BUY-2	P_2	TAKE-2	T_2	$(T_2 - P_2) \times 100$	L	$(T_2 - P_2) \times 100 \times L$
3	BUY-3	P_3	TAKE-3	T_3	$(T_3 - P_3) \times 100$	L	$(T_3 - P_3) \times 100 \times L$
Total							**Σ Profit**

Trade	Entry Type	Entry Price	Exit Type	Exit Price	Price Difference	Lot Size	Profit (USD)
1	BUY-1	3917.71	TAKE-1	4011.22	93.51	0.01	**93.51**
2	BUY-2	3925.74	TAKE-2	4019.53	93.79	0.01	**93.79**
3	BUY-3	3933.51	TAKE-3	4027.25	93.74	0.01	**93.74**
Total							**281.04 USD**

Table 1

Empirical Result Description

Figure 1 and Table 1 present the empirical results of a real XAU/USD H1 trading case based on a structure-first technical framework. The analysis identifies a lower structural support zone, where three long positions (BUY-1, BUY-2, BUY-3) are executed at price levels 3917.71, 3925.74, and 3933.51, respectively. These entries are aligned with predefined horizontal levels derived from the Fibonacci Urvin framework, indicating accumulation within a stable bullish structure.

Exit points (TAKE-1, TAKE-2, TAKE-3) are positioned at 4011.22, 4019.53, and 4027.25, corresponding to upper resistance zones identified prior to trade execution. All positions are executed with a fixed lot size of 0.01, ensuring consistency in profit calculation.

The resulting price differences range from 93.51 to 93.79 USD, producing individual profits of 93.51 USD, 93.79 USD, and 93.74 USD, respectively. The total cumulative profit amounts to 281.04 USD. The close similarity of profit values across all three trades indicates structural consistency and controlled execution, rather than reliance on a single exceptional price movement.

Momentum indicators (RSI and MACD), shown in the lower panels of Figure 1, remain supportive of the prevailing bullish trend during the entry phase. However, indicators are used strictly for confirmation, while trade decisions are governed primarily by price structure and predefined horizontal zones.

Overall, the empirical result demonstrates that a structure-driven approach combined with Fibonacci Urvin levels and indicator confirmation can produce coherent and reproducible trading outcomes under real market conditions.

The similar profit values across all three trades confirm structural consistency rather than reliance on a single favorable price movement.

Indicator Confirmation

Momentum indicators are used only for confirmation: RSI (14) remains above 50 during entries, supporting bullish conditions. MACD (12,26,9) confirms positive momentum through sustained signal alignment.

Indicators do not generate signals independently and are applied strictly after Fibonacci Urvin levels are identified.

Methodological Focus: This methodology prioritizes price structure and predefined levels, with indicators serving a secondary role. The emphasis on actual price

levels and realized profit values ensures transparency and reproducibility.

3. Discussion

The results of this study indicate that structure-based technical analysis provides a more reliable methodological foundation than indicator-only approaches. The empirical XAU/USD case shows that trade decisions grounded in predefined structural zones are less sensitive to noise and discretionary bias than strategies relying solely on indicator signals [1].

The application of the Fibonacci Urvin framework demonstrates that adaptive horizontal price zones derived from dominant price movements can serve as effective decision areas for trade execution. This finding is consistent with research suggesting that adaptive and structurally informed methods outperform static technical rules in volatile markets [5].

Furthermore, the role of RSI and MACD in this study supports existing evidence that traditional indicators exhibit limited robustness when used independently. Their effectiveness increases when applied as confirmation tools within broader analytical frameworks [4]. The consistency of profit across multiple scaled entries aligns with empirical evaluations emphasizing structured execution and reduced timing risk [3].

4. Conclusion

This study examined technical analysis methods and trading strategies in cryptocurrency and gold markets, with an empirical focus on an XAU/USD H1 case. The findings show that technical indicators are most effective when used as confirmation tools within a structure-first framework, rather than as standalone predictors.

The empirical results based on real entry and exit prices indicate that the Fibonacci Urvin method, combined with clearly defined trade zones, offers a transparent and reproducible approach to technical trading analysis. Overall, the study supports viewing technical analysis as a decision-support system rather than a predictive model. Future research should focus on out-of-sample validation and cost-adjusted performance evaluation to further assess robustness.

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