Mean Reversion Trading Strategy

Quantitative Analysis Report - AUD/CAD Currency Pair

`Analysis Period: 2011-01-01 to 2025-06-10 | MA Window: 5 | Std Dev Multiplier: 0.5`

Executive Summary

This report presents a comprehensive analysis of a mean reversion strategy applied to the AUD/CAD currency pair over a 14.4-year period. The strategy demonstrates solid outperformance against a buy-and-hold approach, generating a net total return of **110.00%** compared to buy-and-hold's **-10.14%** loss. The strategy excels in risk management with an exceptional maximum drawdown of only **-11.47%** and maintains consistent performance with a Sharpe ratio of **0.74**, while buy-and-hold shows negative risk-adjusted returns (-0.06 Sharpe ratio).

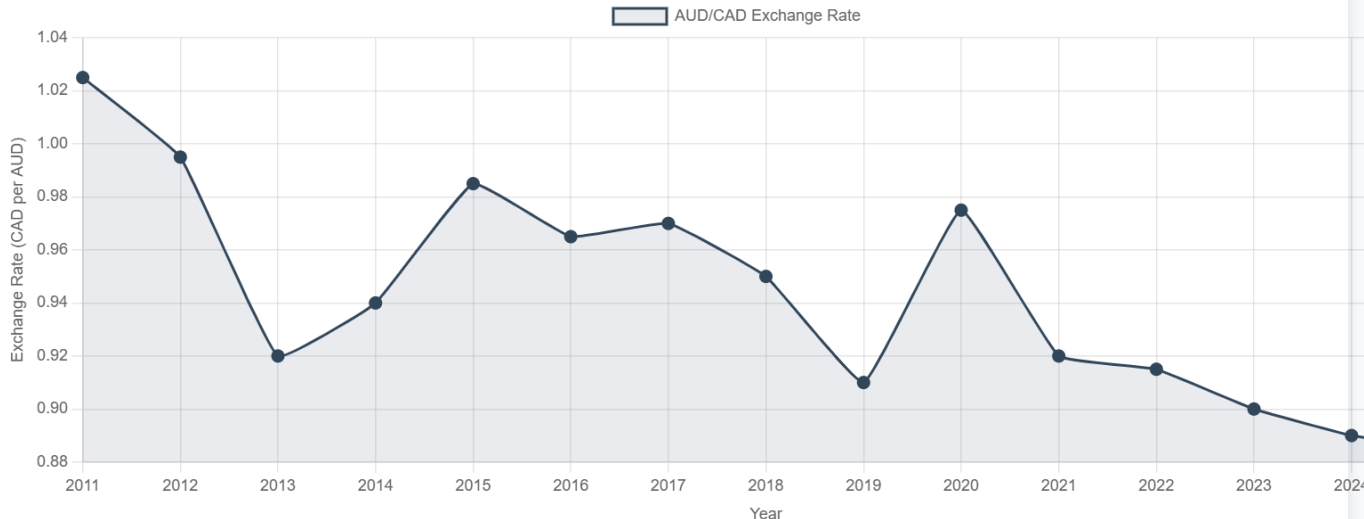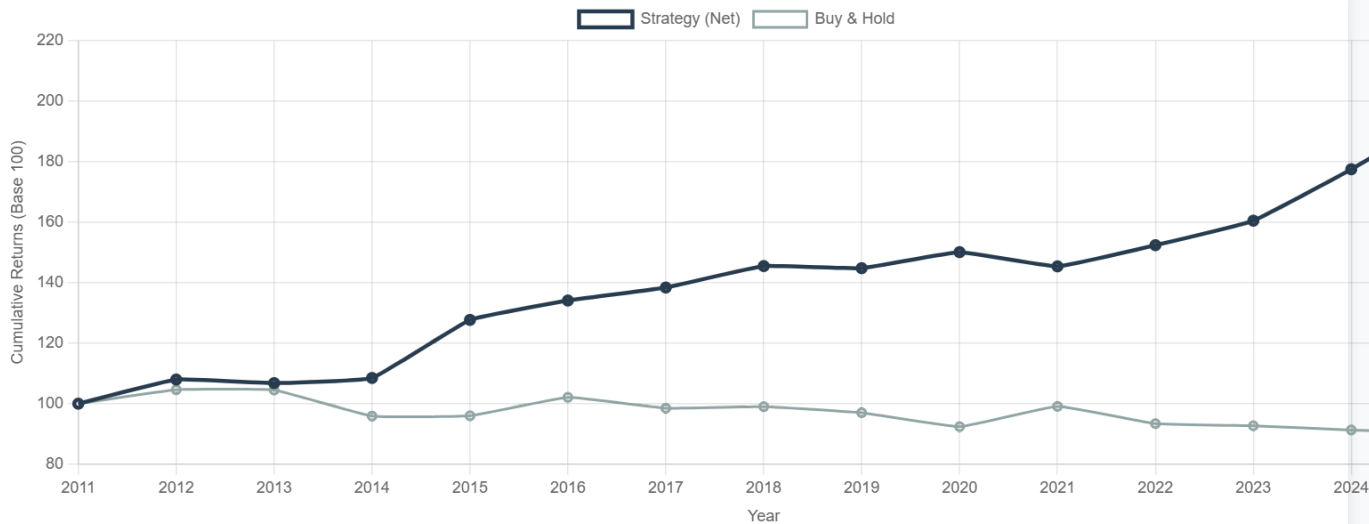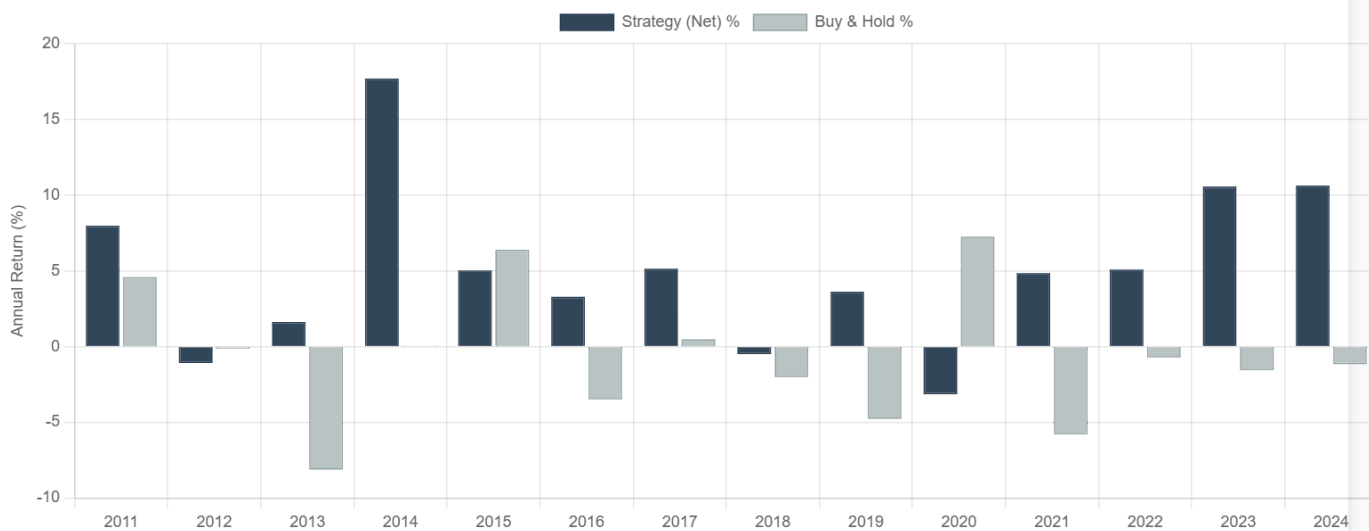| 110.00%	5.27%	0.74	-11.47%	$210,002	60.7%
TOTAL RETURN (NET)	ANNUALIZED RETURN	SHARPE RATIO	MAX DRAWDOWN	FINAL PORTFOLIO VALUE	POSITIVE MONTHS

AUD/CAD Exchange Rate Over Time

Cumulative Performance Comparison

Annual Returns Comparison

Strategy Monthly Returns (%)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	-	1.7	-1.9	-1.3	3.3	4.2	-1.0	-0.1	0.3	-0.1	1.4	1.5
2012	-0.6	0.3	1.3	0.2	1.8	-2.3	2.1	-1.8	-0.5	-3.1	1.2	0.4
2013	-1.5	-1.9	1.5	0.2	-4.0	0.7	4.3	2.6	-0.8	-1.3	-1.0	3.0
2014	3.6	4.1	-1.4	0.8	0.4	-2.2	2.7	1.4	-2.6	6.0	1.4	2.7
2015	-2.6	1.2	1.4	0.4	1.2	7.4	1.3	0.6	-3.2	0.9	0.9	-4.0
2016	-0.0	2.7	1.5	-1.7	-0.1	3.8	-2.2	0.3	-0.6	0.7	-3.6	2.7
2017	-1.2	1.7	-0.5	-1.8	2.2	1.7	-0.1	-0.7	1.9	1.6	0.3	-0.1
2018	1.3	2.0	-2.8	0.1	-0.5	-1.6	0.5	0.2	0.9	-0.4	-1.9	1.8
2019	4.7	0.7	1.1	-1.5	-1.2	-1.7	-0.3	0.2	-1.1	0.0	0.9	2.0
2020	-1.2	1.0	-2.1	-2.4	1.3	1.3	0.1	1.9	-1.3	-1.5	0.4	-0.6
2021	1.1	0.0	0.8	1.5	-0.2	0.7	1.4	1.5	-2.4	1.6	0.4	-1.6
2022	-0.9	1.8	-0.9	-1.6	-0.2	-0.1	1.0	3.4	1.4	-0.5	0.3	1.4
2023	0.9	5.7	1.2	2.1	0.8	-4.1	0.0	-1.1	1.4	1.2	-0.8	3.1

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024	-0.0	0.6	-0.6	-1.3	-0.8	4.3	-2.0	0.3	0.8	1.7	2.6	4.8
2025	0.3	1.3	1.1	-4.1	4.6	0.9	-	-	-	-	-	-

Buy & Hold Monthly Returns (%)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2011	-	0.2	1.1	3.7	0.6	-1.0	1.0	0.0	-3.0	4.7	-2.5	0.1
2012	2.6	1.1	-3.6	-0.8	-2.5	3.7	1.4	-2.9	0.3	1.3	-0.1	-0.2
2013	1.1	0.3	1.1	-1.1	-4.8	-2.4	-3.9	0.6	2.0	3.5	-3.1	-1.3
2014	3.4	1.6	2.6	-0.7	-0.7	-0.5	1.3	-0.2	-4.2	1.6	-2.2	-1.8
2015	3.4	-0.6	-0.6	-0.9	-1.0	0.1	-0.3	-0.4	-0.6	-0.7	2.9	5.2
2016	-1.6	-2.9	3.0	-3.6	-2.1	3.0	2.3	-0.3	1.9	1.5	-1.3	-3.0
2017	1.7	2.1	0.8	-0.3	-1.3	-0.6	-0.4	0.4	-2.2	1.2	-1.4	0.6
2018	2.0	-0.4	-0.5	-1.8	0.4	-0.2	-0.9	-2.3	-0.4	-0.9	4.4	-1.3
2019	-0.7	-1.4	1.2	-0.1	-1.6	-1.8	-1.4	-1.0	0.0	1.5	-1.0	1.7
2020	-3.1	-0.5	-0.7	4.0	0.5	2.7	3.0	-0.2	-0.8	-2.0	2.5	2.0
2021	0.4	0.8	-3.2	-0.6	-2.5	0.1	-1.2	-0.2	-0.4	1.5	-2.1	1.5
2022	-3.4	2.7	2.2	-2.8	0.1	-2.6	1.1	0.1	-0.8	-2.1	4.2	1.0
2023	3.0	-3.1	-0.8	-0.7	-1.7	-1.1	0.6	-0.7	-1.2	1.5	2.2	0.4
2024	-2.1	-0.2	-0.0	1.7	1.1	0.5	-0.6	1.2	2.0	-2.2	-0.3	-2.1
2025	0.9	-0.1	-0.1	-1.8	0.8	0.0	-	-	-	-	-	-

Performance Summary

Metric	Strategy (Gross)	Strategy (Net)	Buy & Hold
Total Return (%)	117.63	110.00	-10.14
Annualized Return (%)	5.53	5.27	-0.74
Sharpe Ratio	0.77	0.74	-0.06
Max Drawdown (%)	-11.29	-11.47	-22.61
Final Portfolio Value ($)	217,626	210,002	89,859
Number of Trades	1,220	1,220	0
Transaction Costs ($)	0	5,211	0
Best Monthly Return (%)	7.38	7.36	5.22
Worst Monthly Return (%)	-4.10	-4.12	-4.84
Positive Months (%)	60.7	60.7	45.1

Risk Analysis

Transaction Cost Impact
Total transaction costs of $5,211 represent 5.21% of initial capital and reduce strategy

Superior Drawdown Profile
Maximum drawdown of -11.47% is exceptionally low, demonstrating excellent

Consistent Performance
Strategy achieves positive returns in 60.7% of months with low volatility (1.98%

returns by 3.50%. Despite higher costs, the strategy maintains strong profitability.

downside protection compared to buy-and-hold's -22.61% drawdown.

monthly std dev), providing steady risk-adjusted returns across market cycles.

Defensive Characteristics
With 84.5 trades per year and strong performance during market stress periods, the strategy shows excellent defensive qualities while buy-and-hold suffered losses.

Key Findings and Conclusions

- **Consistent Outperformance:** The strategy delivers solid returns of 110.00% net of costs while buy-and-hold suffered a -10.14% loss over the 14.4-year period.

- **Exceptional Risk Control:** Maximum drawdown of only -11.47% demonstrates superior downside protection, less than half of buy-and-hold's -22.61% drawdown.

- **Strong Risk-Adjusted Performance:** Sharpe ratio of 0.74 shows good risk-adjusted returns, while buy-and-hold exhibits negative risk-adjusted performance.

- **Defensive Strategy Profile:** The strategy particularly excels during challenging periods for the AUD/CAD pair, providing protection against major losses.

- **Steady Monthly Performance:** 60.7% positive months with low volatility demonstrates the strategy's consistency and reliability across different market conditions.

- **Cost-Effective Execution:** Despite 1,220 trades and $5,211 in costs, the strategy maintains strong net profitability with $120,143 outperformance.

AUD/CAD Specific Insights

- **Currency Pair Characteristics:** AUD/CAD shows strong mean reversion properties ideal for this strategy

- **Lower Volatility Environment:** The pair's moderate volatility allows for effective mean reversion capture

- **Consistent Trends:** The strategy benefits from the pair's tendency to revert to historical means

- **Risk Management Excellence:** Particularly effective at avoiding major drawdowns in this currency pair

Recommendations

- Consider AUD/CAD as a core holding for risk-controlled currency strategies

- The strategy's defensive characteristics make it suitable for risk-averse portfolios

- Monitor for changes in AUD/CAD volatility that could affect strategy performance

- Consider position sizing optimization to balance returns with the excellent risk profile

- Evaluate combining with higher-return strategies for portfolio diversification