

BRK03: Digital Brokerage Disruption

Technical Analysis Report | February 01, 2026

1. Data Overview

Subject: Robinhood (HOOD)
Analysis Period: 2021-07-29 to 2026-01-30 (~4.5 years)
Total Observations: 7,241 rows
Stock Data: 1,132 daily OHLCV observations
Data Sources: Yahoo Finance API (yfinance), synthetic operational metrics

2. Methodology

2.1 Risk Analytics (CFA Standards)

- **Sharpe Ratio:** $(\text{Return} - \text{Rf}) / \text{Volatility}$ ($\text{Rf} = 0$)
- **Sortino Ratio:** $\text{Return} / \text{Downside Deviation}$
- **Value at Risk (VaR):** Historical 95% and 99% confidence
- **Maximum Drawdown:** Peak-to-trough decline

2.2 Technical Indicators

- **Moving Averages:** SMA/EMA (20, 50, 200 day)
- **Volatility:** Rolling standard deviation (20, 60, 252 day)
- **Momentum:** RSI-14, Price momentum (20-252 day)

3. Risk Metrics Summary

Ticker	Total Return	Ann. Return	Volatility	Sharpe	Max DD
HOOD	185.7%	26.4%	73.6%	0.36	-90.2%

4. Detailed Risk Profile

Return Distribution

Metric	Value
Positive Days	50.3%
Best Day	50.41%
Worst Day	-27.59%
Sortino Ratio	0.57

Value at Risk

Confidence	Daily VaR
95%	-6.49%
99%	-10.41%

5. Data Quality Assessment

Completeness: All trading days covered
Adjustments: Prices adjusted for splits/dividends
Validation: Stock data from Yahoo Finance
Processing: Pandas/NumPy calculations
Disclaimer: Operational metrics are synthetic/illustrative

6. Key Observations

- Sector volatility characteristics relative to market indices
- Risk-adjusted return profile (Sharpe, Sortino)
- Drawdown behavior during market stress periods
- Volume and liquidity patterns

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Data Source: Yahoo Finance (stock), Synthetic (operational) | Report Code: BRK03

Portfolio Sample - Demonstrates data engineering methodology | Generated: 2026-02-01 00:57:53