An association rule-based trading framework with Kelly criterion

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Abstract

Technical analysis aims to utilize price and volume information to generate trading signals, which is suitable for association rule mining. However, the signals from association rules may contain uncertainty, and lack the portfolio management. We propose an association rule-based trading framework with Kelly criterion for portfolio management. Experimental results show that the framework provides valuable pattern with confidence of 63.5% and support of 15.9%. For trading performance, the framework obtain a shape ratio of 1.946, and the Kelly criterion increase the Sharpe ratio and win ratio by 0.3 and 3.5%, and reduces the drawdown risk by 80% during the training period. In the testing period, the framework obtain Sharpe ratio and win rate of 5.659 and 81.250%, and the Kelly criterion decrease the drawdown risk to 26%. In summary, the proposed framework extract valuable patterns through association rule mining, and the Kelly criterion for portfolio management can stabilize performance.

Keyword: association rule, trading framework, Kelly criterion, stop-loss, take-profit