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## Quantitative Predictability Analysis of Precious Metals

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### Abstract

Large amounts of liquidity flow into a number of precious metals every day. Investment decisions are mainly based on predicting the future movements of the instrument(s) in question. However, high frequency financial data are somewhat hard to model or predict as stochastic processes and many other random factors are involved. It would be valuable information for the investor if he or she knew which precious metals were quantitatively more predictable. The objective in this study is to build predictive models on high frequency precious metal data and compare predictabilities of different metals using only past price and volume values. The data used consist of various different frequencies from 1-minute to 4-hour covering a period of almost 20 years for each instrument and frequency. Artificial Neural Network (ANN) and Gradient Boosted Decision Tree methods are applied. Comparable results are achieved.

**Keywords:** Artificial Neural Network; Boosted Trees; Machine Learning; Predictive Models; Time Series