RESEARCH ON METHANOL FUTURES PRICE FORECAST AND TRADING STRATEGY BASED ON RANDOM FOREST METHOD

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Abstract: Methanol is an important new type of clean energy. Its futures products have been on the market for nearly 10 years. This article uses machine learning technology to study the prediction models and trading rules of methanol futures prices. The paper uses the random forest algorithm to construct a methanol futures price prediction model, uses the fundamental characteristics of the upstream and downstream products of the methanol industry chain as input variables, and normalizes the input variables to construct a control model, combined with the use of Aberration strategy ideas to build a set of trading strategies. Use Sharpe ratio to screen trading strategies and construct an effective quantitative trading model for methanol futures. The research results show that the model in this paper can achieve an annualized rate of return that is 5.8 times higher than the rate of 10-year Treasury bonds in the same period while ensuring a good generalization ability of the trading strategy. It also shows that the use of the fundamental characteristics data of the upstream and downstream products of the methanol industry chain can well explain the methanol futures price, and combined with the use of Sharpe ratio screening, the trading rules based on the Aberration trading strategy idea can construct an effective methanol futures quantitative investment model.

Keywords: methanol futures, price prediction, random forest, strategy generalization

基于随机森林方法的甲醇期货价格预测与交易策略研究

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摘要:甲醇是重要的新型清洁能源，其期货产品上市已近 10 年，本文采用机器学习技术研究甲醇期货价格的预测模型和交易规则。论文采用随机森林算法构造甲醇期货价格预测模型，使用甲醇产业链上下游产品的基本面特征作为输入变量，并对输入变量进行归一化处理构造对照模型，结合使用基于 Aberration 策略思想构建交易策略集合，使用夏普比率对交易策略进行筛选，构造有效的甲醇期货量化交易模型。研究结果显示，本文模型在保证交易策略良好泛化能力的情况下可以实现高出同期 10 年期国债收益率 5.8 倍以上的年化收益率。也表明利用甲醇产业链上下游产品的基本面特征能够很好地解释甲醇期货价格，并结合使用夏普比率筛选的，基于 Aberration 交易策略思想的交易规则能够构建有效的甲醇期货量化投资模型。

关键词:甲醇期货;价格预测;随机森林;交易策略泛化 JEL 分类号:G11、G13、G19