Imperial College London

MENG INDIVIDUAL PROJECT

IMPERIAL COLLEGE LONDON

DEPARTMENT OF COMPUTING

Optimising Statistical Arbitrage Methods on Cryptocurrencies using Pure Arbitrage as a baseline

Author:
Devam Savjani

 $Supervisor: \\ Prof. Thomas Lancaster$

Second Marker: Unknown

December 18, 2022



Your abstract goes here



Contents

1	Introduction	5
	1.1 Objectives	
	1.2 Challenges	
	1.3 Contributions	Ę
2	Background	6
3	Project Plan	7
4	Evaluation Plan	8
5	Ethical Issues	g
A	First Appendix	10

List of Figures

List of Tables

Introduction

Hello [?]

- 1.1 Objectives
- 1.2 Challenges
- 1.3 Contributions

Background

- [PAU18] -
- [MS20] -
- [Hua22] -
- [alm20] -
- [Byr] -
- [NO14] -
- [Kra17] -
- [KDH17] -
- [FKD19] -
- [Dem17] -
- [Mo] -
- [CPZ22] -
- [WCW⁺22] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -
- [] -

Project Plan

Evaluation Plan

Ethical Issues

Appendix A

First Appendix

Bibliography

- [alm20] Advanced Studies of Financial Technologies and Cryptocurrency Markets. Springer Singapore, Singapore, 1st ed. 2020. edition, 2020.
- [Byr] Stephen Byrne. An exploration of novel trading and arbitrage methods within decentralised finance.
- [CPZ22] Tommy Crépellière, Matthias Pelster, and Stefan Zeisberger. Arbitrage in the Market for Cryptocurrencies, December 2022.
- [Dem17] Heather E. Dempsey. Market Inefficiency: Pairs Trading with the Kalman Filter. December 2017.
- [FKD19] Thomas Fischer, Christopher Krauss, and Alexander Deinert. Statistical arbitrage in cryptocurrency markets. *Journal of Risk and Financial Management*, 12(1):31, Feb 2019.
- [Hua22] Jianfeng Huang. Triangular arbitrage across forex and cryptocurrency markets during the covid-19 crisis: a mrs-ar approach. *Applied economics letters*, 29(15):1352–1357, 2022.
- [KDH17] Christopher Krauss, Xuan Anh Do, and Nicolas Huck. Deep neural networks, gradient-boosted trees, random forests: Statistical arbitrage on the sp 500. European Journal of Operational Research, 259(2):689–702, 2017.
- [Kra17] Christopher Krauss. Statistical arbitrage pairs trading strategies: Review and outlook. Journal of Economic Surveys, 31(2):513–545, 2017.
- [Mo] Jingyua Mo. A Theoretical Model of Cross-market Arbitrage.
- [MS20] Igor Makarov and Antoinette Schoar. Trading and arbitrage in cryptocurrency markets. *Journal of financial economics*, 135(2):293–319, 2020.
- [NO14] Jarley P. Nóbrega and Adriano L. I. Oliveira. A combination forecasting model using machine learning and kalman filter for statistical arbitrage. In 2014 IEEE International Conference on Systems, Man, and Cybernetics (SMC), pages 1294–1299, 2014.
- [PAU18] Cristian PAUNA. Arbitrage trading systems for cryptocurrencies. design principles and server architecture. *Informatica economica*, 22(2/2018):35–42, 2018.
- [WCW⁺22] Ye Wang, Yan Chen, Haotian Wu, Liyi Zhou, Shuiguang Deng, and Roger Wattenhofer. Cyclic Arbitrage in Decentralized Exchanges, January 2022. arXiv:2105.02784 [cs, q-fin].