**LUT University**

**School of Business and Management**

Master's Degree in Strategic Finance and Business Analytics

Master's Thesis

**Title of the thesis**

**Sami Kohvakka**, **2019**

Supervisor: Eero Pätäri D.Sc. (Econ.)

2nd examiner: Some Examiner D.Sc. (Econ.)

# ABSTRACT

| | |
|---|---|
| **Author:** | Sami Kohvakka |
| **Title:** | Title of the thesis |
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| **Major:** | Strategic Finance and Business Analytics |
| **Master's Thesis:** | Lappeenranta University of Technology |
| | 16 pages, 3 figures, 1 table, and 2 appendices. |
| **Examiners:** | Professor Eero Pätäri |
| | Research Fellow N.N. |
| **Keywords:** | pairs trading, stock markets |

This is my abstract.

# TIIVISTELMÄ

**Tekijä:** Sami Kohvakka

**Otsikko:** Tutkielman otsikko suomeksi

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**Tiedekunta:** School of Business and Management

**Pääaine:** Strateginen rahoitus ja liiketoiminta-analytiikka

**Pro gradu -tutkielma:** Lappeenrannan teknillinen yliopisto

16 sivua, 3 kuvaa, 1 taulukko ja 2 liitettä.

**Tarkastajat:** Professori Eero Pätäri

Tutkijaopettaja N.N.

**Hakusanat:** parikaupankäynti

Tämä on tiivistelmä.

# PREFACE

I wish to thank my supervisor

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Finally, thank you to

Lappeenranta, October 3, 2019

*Sami Kohvakka*

# CONTENTS

# List of Figures

# List of Tables

# ABBREVIATIONS AND SYMBOLS

**CAPM**    Capital Asset Pricing Model

**B&S**    Black & Scholes

# 1 Introduction

## 1.1 Background

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## 1.2 Objectives and Restrictions

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## 1.3 Theoretical background

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## 1.4 Structure of the Thesis

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# 2 Literature review

Focardi, Fabozzi, and Mitov 2016 inserts citation and adds it to bibliography.

According to Huck and Afawubo 2015 pairs trading strategies can be grouped to three categories:

- The minimum distance approaches
- Multi-Criteria Decision Methods
- The modelling of mean reversion

Another way to cite using biblatex is (Huck 2010).

# 3 Methodology and Data

## 3.1 Data

Historical Finnish stock prices were fetched from Nasdaq Nordic database. Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non

## 3.2 Methodology

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# 4  Discussion

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## 4.1  Future Work

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# 5   Conclusions

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Focardi, Sergio M., Frank J. Fabozzi, and Ivan K. Mitov (2016). "A New Approach to Statistical Arbitrage: Strategies Based on Dynamic Factor Models of Prices and Their Performance". In: *Journal of Banking & Finance* 65, pp. 134–155. ISSN: 0378-4266. DOI: `10.1016/j.jbankfin.2015.10.005`. URL: `http://www.sciencedirect.com/science/article/pii/S0378426615002824` (visited on 02/10/2019).

Huck, Nicolas (2010). "Pairs Trading and Outranking: The Multi-Step-Ahead Forecasting Case". In: *European Journal of Operational Research* 207.3, pp. 1702–1716. ISSN: 0377-2217. DOI: `10.1016/j.ejor.2010.06.043`. URL: `http://www.sciencedirect.com/science/article/pii/S0377221710004820` (visited on 02/10/2019).

Huck, Nicolas and Komivi Afawubo (2015). "Pairs Trading and Selection Methods: Is Cointegration Superior?" In: *Applied Economics* 47.6, pp. 599–613.

# Appendix 1. How to add appendices

Write your text or add your images between `\section` and `\sectionend`.

## Appendix 2. Python sample

```python
1  import numpy as np
2  def fun(param):
3      return param
4
5  fun("hello")
```