

# Candlestick Patterns

Analysis of their predictive power on intraday  
market data  
(preliminary title)

**Wout NOTERMANS**

Supervisor: Prof. Dr. P. Leoni

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# Foreword

In this intermediate report, I would like to thank Prof. Dr. P. Leoni, Prof. Dr. W. Schoutens and KU Leuven for purchasing and providing me with the financial data necessary for this work.

# Popularising Summary

To be added.

Copyright Information: student paper as part of an academic education and examination. No correction was made to the paper after examination.

# Summary

To be added.

# List of Abbreviations

OHLC Open, High, Low and Close



# List of Symbols

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# Chapter 1

## Introduction and literature study

Some ideas:

- taxes?
- trend definition: (exponential) moving average → which period?
- Stop loss?
- Comparison with reference index performance?
- volume?
- real body: divide by open or close? volume or no normalization also a valid option to explore
- ATR as additional filter
- make use of slope (E)MA, count + and - to define trend
- Bollinger band → widening
- make use of machine learning to classify trends? quite advanced. manual training set creation?

Measuring performance:

- set/variable holding period? → transaction costs?
- buy at opening, sell at closing?
- buy and hold not a useful benchmark on intraday trading (Fock, Klein, Zwergel)
- compare against randomized buy signals (Fock, Klein, Zwergel) (hold for 30 minutes)

Introduction:

- explanation of candlesticks
- developed in the late 18th century in Japan by Munehisa Honma, a rice trader. Unknown in the west until Nison published Japanese Candlestick Charting Techniques in 1991. as such, quite a bit of literature is from the east.

- current literature mainly about daily candles, but they can encapsulate any period of time
- believed to possess some predictive power
- known to almost every investor in Taiwan (Goo, Chen, Chang)
- some papers find evidence of predictive power (Goo, Chen, Chang), (Lu, Shiu, Liu), others find none (Fock, Klein, Zwergel)
- results not easily comparable because of different datasets, trading rules, definitions, statistical tests, transaction costs, time periods, . . .
- Historical data may produce upward bias (Ball, Kothari, Wasley 2005)
- technical analysis is futile under weak efficient market hypothesis

Statistical tests:

- Z-test
- t-test
- bootstrap
- GLM
- F
- Duncan's multiple range test

Definitions:

- interesting definition of small, medium, long length in (Goo, Chen, Chang) and (Fock, Klein, Zwergel)

## Chapter 2

### Baseline predictive power of candlestick patterns

## Chapter 3

# Improving predictive power through additional filters

# Chapter 4

## Machine learning

# Chapter 5

# Conclusion



# Chapter 6

## References

# Appendix A

## Candlestick pattern definitions

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**Department of Mathematics**  
Celestijnenlaan 200B  
3001 Leuven (Heverlee), BELGIUM  
Tel. +32 16 32 70 07  
Fax +32 16 32 79 98  
[www.kuleuven.be](http://www.kuleuven.be)

