MAGNUS HANSSON

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EDUCATION

University of Gothenburg **September 2017 - June 2023**
PhD Economics ***Gothenburg, Sweden***

- Primary research areas: Decentralized finance; Applied machine learning.
- Visiting PhD student at Stockholm School of Economics.
- Advisors: Professors Erik Hjalmarsson and Andreas Dzemski.

Lund University **September 2016 - June 2017**
MSc Economics ***Lund, Sweden***

- Thesis: "On stock return prediction with LSTM networks".

Lund University **September 2014 - June 2017**
BSc Mathematics ***Lund, Sweden***

- Thesis: "Feedforward neural networks with ReLU activation functions are linear splines".

Jönköping University **September 2011 - June 2014**
BSc Economics ***Jönköping, Sweden***

- Thesis: "Do thicker labor markets produce more matches?".
- Exchange semester at University of St.Gallen.
- Scholarship for top 5% GPA.

WORK EXPERIENCE

Combine Control Systems **September 2017 - August 2018**
Data science engineer ***Gothenburg, Sweden***

- Artificial neural network modelling for virtual engine testing.
- Building a data analysis pipeline.

Jönköping University **April 2016 - November 2016**
Research Assistant ***Remote***

- Programming a GARCH-Copula framework in R.

Nordea Bank **Summers 2012, 2013, 2014**
Analyst ***Gothenburg, Sweden***

- Summer analyst at corporate retail.

TECHNICAL STRENGTHS

Methods	Econometrics, Machine Learning, NLP, Numerical Analysis
Computer Languages	Python, Julia, R, Matlab, Bash, JavaScript, Stata
Tools	Linux/Unix, Vim/Neovim, LaTeX

PRESENTATIONS

Computational and Financial Econometrics	*King's College London, 2021*
Machine Learning meets Econometrics (MLECON)	*Virtual, 2021*
GU Finance Seminar	*University of Gothenburg, 2021; 2022*
GU PhD Conference	*University of Gothenburg, 2021; 2022*

TEACHING EXPERIENCE

PhD Micro I	*Teacher Assistant 2019-2021, University of Gothenburg*
MSc Financial Econometrics	*Teacher Assistant 2019-2022, University of Gothenburg*
MSc Intro Matlab	*Teacher 2019-2022, University of Gothenburg*
BSc Thesis Advisor	*Teacher 2021, University of Gothenburg*

DISSERTATION CHAPTERS

"Arbitrage in Crypto Markets: An Analysis of Primary Ethereum Blockchain Data":
The Ethereum blockchain is a decentralized computing platform providing peer-to-peer financial services. Decentralized exchanges, which run on the blockchain, enable matching of buyers and sellers without any central third party, and are distinct from the centralized "off-chain" cryptocurrency markets often studied in the literature. The decentralized markets facilitate trade in cryptocurrencies and other digital assets and have daily turnovers of several billion dollars. In this paper, I study how arbitrageurs on the blockchain contribute to price discovery and price efficiency in decentralized "on-chain" markets. I collect a transaction-level dataset of primary data from the Ethereum blockchain and cleanly identify a set of completed cross-exchange and triangular arbitrages. To investigate the speed at which arbitrage opportunities are eliminated, I study how sensitive arbitrage profits are to when the trades execute. I show that most arbitrage profits are made immediately after the occurrence of price anomalies, indicating that decentralized markets adjust fast after a shock to the no-arbitrage price.

"Evolution of Topics in Central Bank Speech Communication":
This paper studies the content of central bank speech communication from 1997 through 2020 and asks the following questions: (i) What global topics do central banks talk about? (ii) How do these topics evolve over time? I turn to natural language processing, and more specifically Dynamic Topic Models, to answer these questions. The analysis consists of an aggregate study of nine major central banks and a case study of the Federal Reserve, which allows for region specific control variables. I show that: (i) Central banks address a broad range of topics. (ii) The topics are well captured by Dynamic Topic Models. (iii) The global topics exhibit strong and significant autoregressive properties not easily explained by financial control variables.