University of Zurich^UZH

ETH
Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

The Behavior of High-Frequency Traders Under Adverse Market Conditions.

MASTER THESIS

SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN QUANTITATIVE FINANCE

AUTHOR
ROBIN STEIGER

SUPERVISOR
PROF. DR. MARC CHESNEY
(UNIVERSITY OF ZURICH)

ASSISTANT
VINCENT WOLFF

DATE OF SUBMISSION: 17 MARCH, 2020

Executive Summary

High-frequency trading (HFT) has gained a lot of (largely negative) attention by the public in recent years due to concerns around the fairness of financial markets. A growing body of academic literature thus studied the effects high-frequency traders (HFTs) have on financial markets and found that HFTs are mostly beneficial for other market participants, because of the large amounts of liquidity they provide and the increased price efficiency that they contribute to. Some studies suggested, however, that in times of adverse market conditions HFTs are among the first market participants that withdraw their orders from the markets and exacerbate market volatility. I developed a proxy that estimates HFT activity in data sets which do not differentiate between quotes submitted by HFTs and non-HFTs. I used this proxy to conduct an event study around February 5, 2018, the day on which the Dow Jones Industrial Average incurred its biggest one-day point drop to analyze whether such behavior could be observed around the time when the markets collapsed that day. I found that HFTs were even slightly more active during the collapse, albeit not significantly. This finding suggests that HFTs may have learned from previous events of this magnitude (such as the Flash Crash) and therefore behave differently now than they have in the past.