



University of
Zurich ^{UZH}

ETH

Eidgenössische Technische Hochschule Zürich
Swiss Federal Institute of Technology Zurich

Master Thesis

Incorporating Firm Characteristics and Trading Strategies into the Black-Litterman Model

Author: Yang Shuo

Supervisor: Prof. Dr. Felix Kübler

UNIVERSITY OF ZURICH AND ETH ZURICH

Zurich, Switzerland

*A thesis submitted in fulfillment of the requirements for the degree of
Master of Science in Quantitative Finance.*

April 20, 2018

Abstract

The Black-Litterman model brings more information about the estimates of expected asset returns than sample means. In this thesis, I incorporate historical sample information from various sources—firm characteristics and trading strategies—into the Black-Litterman model. Firm characteristics can be incorporated either via the reference model or via the view portfolio. Trading strategies are incorporated via the view portfolio and they exploit either the statistical information of asset returns or asset-pricing anomalies. Besides, they should be stable in return estimates and weights allocations. The structure of the Black-Litterman model integrates well with firm characteristics and trading strategies. I carry out an out-of-sample empirical evaluation to study the performance of these information. The various Black-Litterman models developed in mean-variance framework are valid strategies compared with other benchmark strategies in terms of various return-risk measures, risk measures and turnover.

Keywords: Black-Litterman Model, Empirical Evaluation, Factor-mimicking Portfolio, Firms Characteristics, Portfolio Sorts, Shrinkage Method