Math: From An Economist's Perspective

For Personal Reference, happy to circulate

Sai Zhang

Check the Github Page for this project, or email me!

August 13, 2021

HERE WE GO!

Math is fascinating, certainly. It is clean, organized, beautiful, philosophical, but it is also difficult. I started this project for one simple purpose: As an Economic Ph.D. student, Math was not my strongest suit and I NEED to change that.

Thanks to the math camp of USC Economics

, math Math Although it is not my speciality, I am always interested in this literature. During my pre-doc research fellowship at London Business School, I have had the previlege to study in the course ***Financial Economics II: Empirical Finance***. The course instructor Dr. Svetlana Bryzgalova is absolutely one of the most brilliant scholars I have encountered. Thanks to her, I have got to understand this liturature more systematically. In this (personal) review, I summarize the most influential and inspirational works in this field and organize them by different topics. The structure of this review resembles the structure of Dr. Bryzgalova's course, while adjusted according to my personal research interest. I intend to review classic works and discuss some potential directions of future study regarding my personal interest in Behavioral Economics, Game Theory and Network.

Since this review is tailored according to my own research interest and experience, I will not only summarize the theoretical perspectives of the studies, present their findings and discuss how they fit into the literature, but document my replication attempts and pseudo codes as well. All the codes related to this review can be found on my Github page.

I thank Dr. Svetlana Bryzgalova for her valuable intuitions and impressive knowledge of the empirical finance literature. Building this review is truly a memorable journey for me. I would love to share this review and all the related materials to anyone that finds them useful. And unavoidably, I would make some typos and other minor mistakes (hopefully not big ones). So I'd really appreciate any correction. If you find any mistakes, please either set up a branch on Github or send the mistakes to this email address saizhang.econ@gmail.com, BIG thanks in advance!

Contents

CHAPTER 1

LINEAR ALGEBRA

Contents

Every investor knows that trading in financial markets is to play games with time itself. Daily trades determine asset prices at every date and hence influence the random distribution of future prices as well as the initial level of pri

1.1 Chap1Sec1

In this section, I

1.2 Chap1Sec2

In this section, I

CHAPTER 2

REAL ANALYSIS

CHAPTER 3

OPTIMIZATION

CHAPTER 4

DYNAMIC METHOD