

Empirical Finance: A Review

For Personal Reference

Sai Zhang

Inspired by the Course *Empirical Finance* at
London Business School by *Dr. Svetlana Bryzgalova*

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HERE WE GO!

Empirical finance is an absolutely fascinating field, with some of the most cutting-edge methodologies and the most exploratory techniques. 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 privilege 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 literature 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

1	Time-Series Predictability	3
1.1	Mean Reversion in Returns: Early Evidence	4
1.2	Mean reversion in returns: early evidence	4
1.3	Excess volatility puzzle	4
1.4	Decomposing prices	4
1.4.1	Campbell-Schiller Decomposition	4
1.4.2	4
1.5	Prediction zoo	4
2	Cross-Section Predictability	5
2.1	Section 1	5
3	GMM and Cross-section test	6
3.1	Section 1	6
4	Advances in cross-section asset pricing	7
4.1	Section 1	7
5	Consumption-based asset pricing	8
5.1	Section 1	8
6	Term structure of returns	9
6.1	Section 1	9
7	Learning	10
7.1	Section 1	10
8	Currencies: time-series and cross-section	11
8.1	Section 1	11
9	Intermediary-based asset pricing	12
9.1	Section 1	12
10	something	13
10.1	Section 1	13
	Bibliography	14

CHAPTER 1

TIME-SERIES PREDICTABILITY

Contents

1.1	Mean Reversion in Returns: Early Evidence	4
1.2	Mean reversion in returns: early evidence	4
1.3	Excess volatility puzzle	4
1.4	Decomposing prices	4
1.4.1	Campbell-Schiller Decomposition	4
1.4.2	4
1.5	Prediction zoo	4

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 prices. One would need "much more careful attention to the process by which both expected payoffs and required rates of return determine asset prices"¹.

In this chapter, I first, following [Campbell \(2017, Chapter 5\)](#), summarize models mapping cash flows and discount rates into prices using present value relations in Section 1.1. Then I discuss the early evidence for mean reversion in returns in Section 1.2. In Section 1.3, I examine the excess volatility puzzle in the predictability debate. To accomodate the stylized facts of time-series predictability, Section 1.4 presents two of the most influential approaches to decompose prices. In Section 1.5, I discuss the so-called "Prediction Zoo"

¹See [Campbell \(2017, p. 121\)](#)

1.1 Mean Reversion in Returns: Early Evidence

Section 1: aaaaaaaaaa

1.2 Mean reversion in returns: early evidence

Section 2: bbbbbbbbbb

1.3 Excess volatility puzzle

Section 3: cccccccc

1.4 Decomposing prices

1.4.1 Campbell-Schiller Decomposition

1.4.2

1.5 Prediction zoo

CHAPTER 2

CROSS-SECTION PREDICTABILITY

Contents

2.1	Section 1	5
-----	---------------------	---

Intro:

2.1 Section 1

Section 1:

CHAPTER 3

GMM AND CROSS-SECTION TEST

Contents

3.1	Section 1	6
-----	---------------------	---

Intro:

3.1 Section 1

Section 1:

CHAPTER 4

ADVANCES IN CROSS-SECTION ASSET PRICING

Contents

4.1	Section 1	7
-----	---------------------	---

Intro:

4.1 Section 1

Section 1:

CHAPTER 5

CONSUMPTION-BASED ASSET PRICING

Contents

5.1	Section 1	8
-----	---------------------	---

Intro:

5.1 Section 1

Section 1:

CHAPTER 6

TERM STRUCTURE OF RETURNS

Contents

6.1 Section 1	9
-------------------------	---

In this chapter, I summarize the stylized facts and models of interest rates, and, combining with the time-series and cross-sectional properties of equities, discuss how the term structure of equity can be incorporated into the asset pricing dynamic. Instead of assuming the risk-free rate to be one period, as classic asset pricing models implying in the Euler equations and SDFs, one would expect that an ideal asset pricing model could not only explain the dynamic of equity, but reconcile the property of the term structure of interest rates as well.

The first part of this chapter summarizes studies of risk free bonds and the term structure of this asset class.

6.1 Section 1

Section 1:

CHAPTER 7

LEARNING

Contents

7.1 Section 1	10
-------------------------	----

In this chapter, I summarize the learning in empirical finance. This is one of the most cutting-edge research area now.

7.1 Section 1

Section 1:

CHAPTER 8

CURRENCIES: TIME-SERIES AND CROSS-SECTION

Contents

8.1	Section 1	11
-----	---------------------	----

Intro:

8.1 Section 1

Section 1:

CHAPTER 9

INTERMEDIARY-BASED ASSET PRICING

Contents

9.1 Section 1	12
-------------------------	----

In this chapter, I summarize the

9.1 Section 1

Section 1:

CHAPTER 10

SOMETHING

Contents

10.1 Section 1	13
--------------------------	----

Intro:

10.1 Section 1

Section 1:

BIBLIOGRAPHY

John Y Campbell. *Financial decisions and markets: a course in asset pricing*. Princeton University Press, 2017.