



Department of Economics and Management

Institute for Finance (FBV)

Jun.-Prof. Dr. Julian Thimme

Bachelor's/Master's Thesis

Thesis Title
second title line

by

your name

your matriculation number

your study program (Bachelor/Master)

Date of submission

Month DD, YYYY

Acknowledgement

I would like to thank ...

Abstract

This is the template for a thesis at the Junior Professorship for Finance at Karlsruhe Institute of Technology (KIT). Large parts of this template are copied from Melanie Schienle's template, which can be downloaded here:

https://statistik.econ.kit.edu/download/thesis_template_012016.rar.

A popular approach to write a thesis or a paper is the IMRAD method (Introduction, Methods, Results and Discussion). This approach is not mandatory! The abstract should not be longer than a paragraph of around 10 to 15 lines (or about 150 words). The abstract should contain a concise description of the economic problem you analyze and of your results. This allows the busy reader to quickly obtain a clear idea of the content of the thesis.

Contents

List of Abbreviations	iv
List of Figures	v
List of Tables	vi
1 Introduction	1
2 Method/Model/Theory	1
2.1 Quotation rules	2
2.1.1 General rules	2
2.1.2 Dont's	2
2.1.3 Citation format	2
2.1.4 Direct quotes	3
2.2 Text format requirements	3
2.3 Bibliography	4
3 Data	5
4 Results	6
5 Conclusions	7
A Additional results	8
B Robustness of the results	8
C Additional figures	9
D Additional tables	10
References	11

List of Abbreviations

CPI	Consumer Price Index	ETF	Equity Traded Funds
ETH	Eat the Horse	XLM	Xetra Liquidity

List of Figures

1	Returns on investment strategy	6
2	Quarterly growth rates of consumed quantities	9

List of Tables

1	Descriptive statistics of swap rates	5
2	Detailed descriptive statistics	10

1 Introduction

- What is the subject of the study? Describe the economic problem.
- What is the purpose of the study (working hypothesis)?
- Why is it important?
- What do we already know about the subject (literature review)? Use citations: Bansal and Yaron (2004) show how to solve the equity premium puzzle. Other approaches (such as Campbell and Cochrane, 1999; Barro, 2009) are also cool. More information on quotation rules can be found in Section 2.1.
- What is the innovation of the study?
- Provide an overview of your results.
- Outline of the paper:
The paper is organized as follows. The next section describes the model under investigation. Section 3 describes the data set and Section 4 presents the results. Finally, Section 5 concludes.
- The introduction should not be longer than 4 pages.

2 Method/Model/Theory

- How was the data analyzed?
- Present the underlying economic model/theory and give reasons why it is suitable to answer the given problem.
- Present the chosen research method (e.g., the estimation method) and give reasons why it is suitable to answer the given problem.
- Depending on the topic this section can also be split up into separate sections and subsections.

2.1 Quotation rules

2.1.1 General rules

It is not necessary to cite well-known results (e.g. the Black-Scholes formula). Instead, the citations should focus on the presentation of important points and new findings produced by third parties. When in doubt, use the rule of thumb: more citations are better than no citations.

2.1.2 Dont's

Citation of the following sources is to be avoided, as their accuracy and availability cannot be guaranteed: dissertations, lecture notes, lecture slides, or dubious sources (e.g. Wikipedia). Try to use quotations from original sources only, avoid quoting from secondary sources.

2.1.3 Citation format

For short-form quotation the following rules apply:

List only the surname of the author, the year of publication of the source document and the page being referred to. In case there are two authors of the source, both surnames must be mentioned. Here is an example:

The CAPM has been shown to not work well empirically (see, e.g., Fama and French, 1992, p.441).

Alternatively, use footnotes for citations:

*The CAPM has been shown to not work well empirically.*¹

In case the quotation refers to multiple pages from the original source the following rules have to be used:

1. 2-page continuation in the original source - refer to the page number for the first page and append an 'f' to it: (Example: p.222f)
2. more than 2-page continuation - refer to the page number of the first page and the page number of the last page: (Example: p.222-225)

¹Cf. Fama and French (1992).

The page can be dropped when referring to the general point of a paper. Using quotations in the text is also allowed. Example:

Fama and French (1992) show that the book-to-market ratio is informative about the cross-section of expected stock returns.

In case multiple sources from the same author and the same year are used, they have to be distinguished by appending a small Latin letter to the year. Note that Latex does that automatically.

In case multiple citations have to be included at the same time, they have to be separated by a semicolon. Example:

Asset pricing is an interesting topic (see Campbell and Cochrane, 1999; Barro, 2009).

In case there are three or more authors of the source, it is enough to mention the surname of the first author and add “et al.”. Example:

Huang et al. (2019) show that the volatility of volatility is a priced risk factor.

Alternatively, you may acknowledge all authors. Example:

Huang, Schlag, Shaliastovich, and Thimme (2019) show that the volatility of volatility is a priced risk factor.

2.1.4 Direct quotes

Direct quotes are to be kept as short as possible. The identification of such a quote has to be provided by double quotation marks (“”). Omissions within the literal quotation have to be marked by three dots enclosed in square brackets [...]. Such omissions must not act in a way of changing the original meaning of the quotation.

2.2 Text format requirements

The following requirements concerning the text format must be met:

- Length: seminar - about 12 pages, bachelor thesis - about 25 pages, master thesis - about 50 pages
- Line spacing: 1.5 lines (in footnotes 1 line)
- Font size: 12

- Font type: Times New Roman
- Full justification
- Page margins: Left 3cm, Right 3cm, Above 3cm, Below 2cm
- Consecutive page numbering of the body (arabic numerals)
- Consecutive numbering of the tables and figures (arabic numerals)
- The footnote has to be separated from the text body by a line. The line has to span over 1/3 of the page (at most)
- Footnotes are to be numbered consecutively throughout the whole document (arabic numerals)
- Footnote font size: 10

2.3 Bibliography

The bibliography (the list of references) has to be included at the end of the compiled scientific document. It has to provide the reader with a list of all literature cited in the text. Literature which is not cited in the text has to be omitted. The list has to be in alphabetical order (sorted by authors' surnames), and has to include author's name, date and year of publication, title of the article, edition (if applicable) and name of the publication source (e.g. journal). Here are some examples of references. Check the reference section to see how they should be cited.

- Paper: Bansal and Yaron (2004)
- Forthcoming paper: Schlag et al. (2020)
- Working paper: Dittmar et al. (2020)
- Books: Cochrane (2009)
- Article in handbooks or collected editions: Hansen et al. (2007)

In case you are citing from a handbook, each article used in the text requires an entry in the bibliography. However, the handbook itself doesn't have to be listed as a source on its own.

3 Data

- Describe the data and its quality.
- How was the data sample selected?
- Provide descriptive statistics such as:
 - time period,
 - number of observations, data frequency,
 - mean, median,
 - min, max, standard deviation,
 - time series plots, histogram.
- For example:

Table 1: Descriptive statistics of swap rates

	3m	6m	1yr	2yr	3yr	5yr	7yr	10yr	12yr	15yr
Mean	3.138	3.191	3.307	3.544	3.756	4.093	4.354	4.621	4.741	4.878
StD	0.915	0.919	0.935	0.910	0.876	0.825	0.803	0.776	0.768	0.762

This table shows descriptive statistics of location and dispersion for 2100 observed swap rates for the period from February 15, 1999 to March 2, 2007. Swap rates measured as 3.12 (instead of 0.0312). See Table 2 in the appendix for more details.

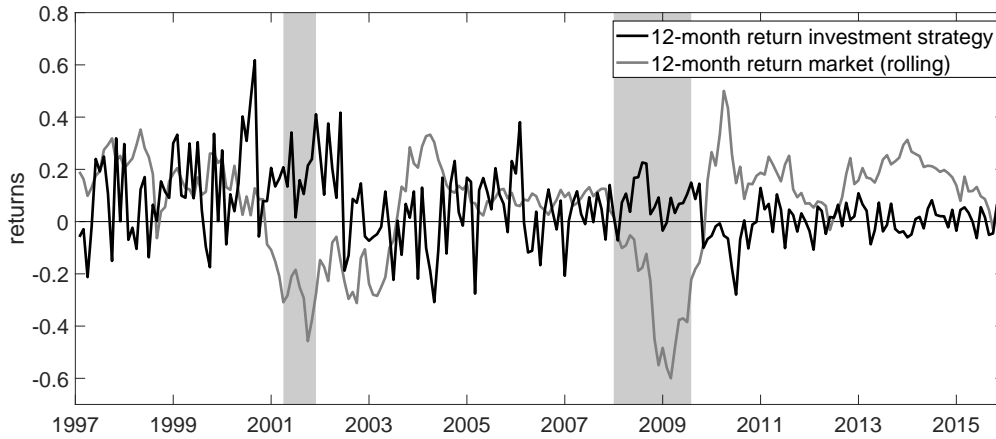
- Allows the reader to judge whether the sample is biased or to evaluate possible impacts of outliers, for example.

4 Results

- Organize material and present results.
- Use tables, figures (but prefer visual presentation):
 - Tables and figures should supplement (and not duplicate) the text.
 - Tables and figures should be provided with legends.

Figure 1 shows how to include and reference graphics. The graphic must be labeled before.

Figure 1: Returns on investment strategy



The figure shows... The sample is...

- Tables and graphics may appear in the text or in the appendix, especially if there are many results tabulated. The key graphs and tables must appear in the text!
- Latex is really good at rendering formulas:

Equation (1) represents the ACs of a stationary stochastic process:

$$f_y(\lambda) = (2\pi)^{-1} \sum_{j=-\infty}^{\infty} \gamma_j e^{-i\lambda j} = (2\pi)^{-1} \left(\gamma_0 + 2 \sum_{j=1}^{\infty} \gamma_j \cos(\lambda j) \right) \quad (1)$$

where $i = \sqrt{-1}$ is the imaginary unit, $\lambda \in [-\pi, \pi]$ is the frequency and the γ_j are the autocovariances of y_t .

- Discuss results:
 - Do the results support or do they contradict economic theory ?
 - What does the reader learn from the results?
 - Try to give an intuition for your results.
 - Provide robustness checks.
 - Compare to previous research.

5 Conclusions

- Give a short summary of what has been done and what has been found.
- Expose results concisely.
- Draw conclusions about the problem studied. What are the implications of your findings?
- Point out some limitations of study (assist reader in judging validity of findings).
- Suggest issues for future research.

A Additional results

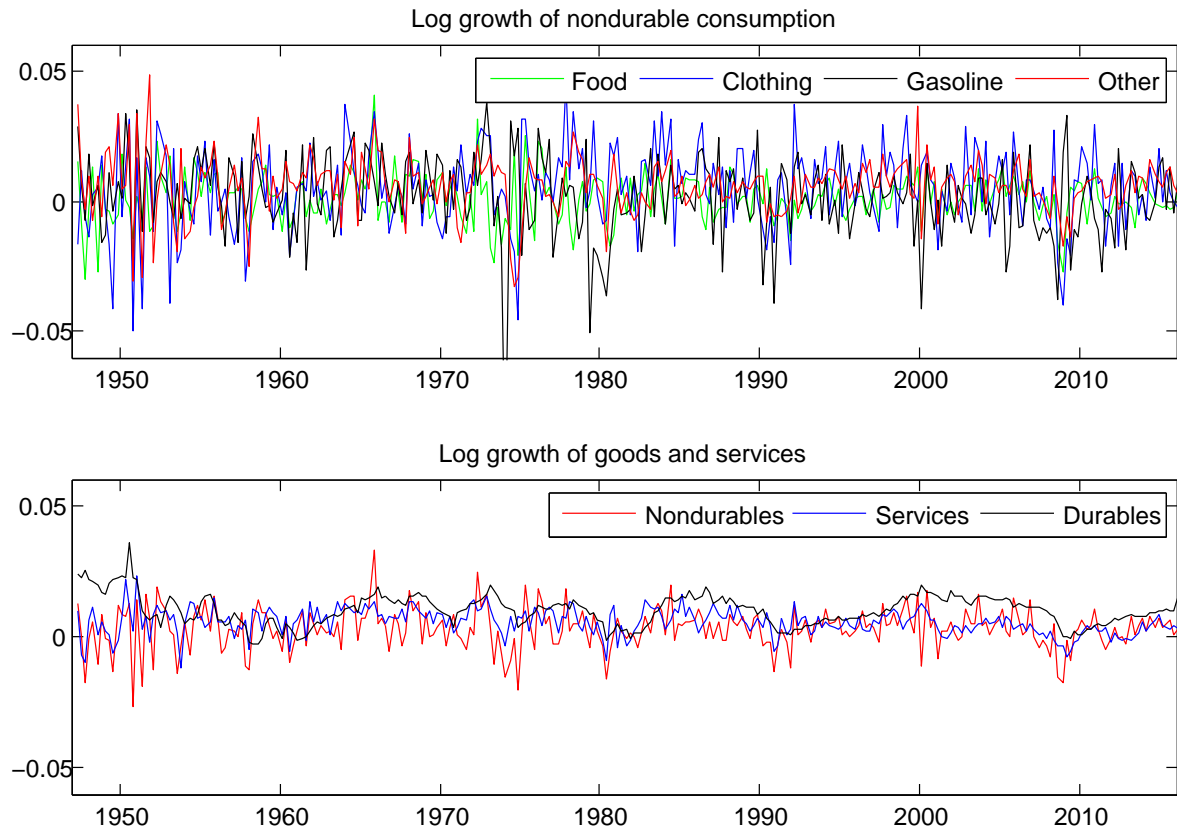
The appendix may contain additional results...

B Robustness of the results

...and robustness checks.

C Additional figures

Figure 2: Quarterly growth rates of consumed quantities



The figure shows... The data are...

D Additional tables

Table 2: Detailed descriptive statistics

	3m	6m	1yr	2yr	3yr	5yr	7yr	10yr	12yr	15yr
Mean	3.138	3.191	3.307	3.544	3.756	4.093	4.354	4.621	4.741	4.878
Median	3.013	3.109	3.228	3.490	3.680	3.906	4.117	4.420	4.575	4.759
Min	1.984	1.950	1.956	2.010	2.240	2.615	2.850	3.120	3.250	3.395
Max	5.211	5.274	5.415	5.583	5.698	5.805	5.900	6.031	6.150	6.295
StD	0.915	0.919	0.935	0.910	0.876	0.825	0.803	0.776	0.768	0.762

This table shows detailed descriptive statistics of location and dispersion for 2100 observed swap rates for the period from February 15, 1999 to March 2, 2007. Swap rates measured as 3.12 (instead of 0.0312).

References

- BANSAL, R. AND A. YARON (2004): “Risks for the long run: A potential resolution of asset pricing puzzles,” *Journal of Finance*, 59, 1481–1509.
- BARRO, R. J. (2009): “Rare disasters, asset prices, and welfare costs,” *American Economic Review*, 99, 243–64.
- CAMPBELL, J. Y. AND J. H. COCHRANE (1999): “By force of habit: A consumption-based explanation of aggregate stock market behavior,” *Journal of Political Economy*, 107, 205–251.
- COCHRANE, J. H. (2009): *Asset pricing: Revised edition*, Princeton university press.
- DITTMAR, R. F., C. SCHLAG, AND J. THIMME (2020): “Non-substitutable consumption growth risk,” Working Paper, University of Michigan.
- FAMA, E. F. AND K. R. FRENCH (1992): “The cross-section of expected stock returns,” *Journal of Finance*, 47, 427–465.
- HANSEN, L. P., J. HEATON, J. LEE, AND N. ROUSSANOV (2007): “Intertemporal substitution and risk aversion,” in *Handbook of econometrics*, ed. by J. J. Heckman and E. E. Leamer, Amsterdam: North-Holland: Elsevier, vol. 6A, 3967–4056.
- HUANG, D., C. SCHLAG, I. SHALIASTOVICH, AND J. THIMME (2019): “Volatility-of-volatility risk,” *Journal of Financial and Quantitative Analysis*, 54, 2423–2452.
- SCHLAG, C., J. THIMME, AND R. WEBER (2020): “Implied volatility duration and the early resolution premium,” *Journal of Financial Economics*, forthcoming.

Declaration of Authorship

I hereby confirm that I have authored this Bachelor's/Master's thesis independently and without use of others than the indicated sources. All passages which are literally or in general matter taken out of publications or other sources are marked as such.

Karlsruhe, July 30, 2020

your name (and signature, of course)