



Guide for Final Thesis

1 Organization

Application

Please contact Prof. Farbmacher by e-mail (office.econometrics@mgt.tum.de) at least four weeks before you intend to begin your thesis. The application should include your current transcript and your time frame.

Requirements

In general, successful participation in Microeconometrics (or Microeconometrics for Big Data) **and** an advanced seminar, project study or IDP offered by my team or me.

Preliminary Meeting and Supervision

We discuss your area of interest and further details in the first meeting. The topic itself will be issued by email. Approximately four weeks after the issue of the topic we can meet to further specify the research question and/or to agree upon the preliminary outline of the thesis. Please let your supervisor know in case you want to arrange a meeting.

2 Content and structure

Areas of research

Usually, I refer you to some scientific literature before you begin your own literature research. In a *master thesis* own empirical research is possible and encouraged after consultation. Often, conducting empirical work is not part of a *bachelor thesis* since it cannot be reasonably carried out within the short period for completion.

Your topic will be related to (empirical) work in one of the following areas:

- Machine Learning and Artificial Intelligence
- Statistical Learning and Data Science
- Health, Labor and Experimental Economics

Thesis structure

The introduction aims to

- motivate the topic (why is it interesting, current reference, classification in a larger context)
- specify the research question (what exactly will be subject of the analysis, what will be left out)
- briefly summarize the literature on the topic (please be advised that there exist journals of very poor quality. It is also part of a good literature review to assess the quality of the journals and to make sure that they fulfill minimum requirements – e.g., a reliable peer review. There are many lists that could be helpful, e.g., for econ and management journals : [Tinbergen list](#) or [ABDC list](#))
- give an outlook on the most important results, as well as explain the further structure of the main part.



In the body of the thesis, one or more relevant empirical studies should be presented concisely and precisely in own words and discussed critically:

- What is the key question?
- What data is used?
- What statistical or econometric methods are used?
- What are the results?
- What assumptions are made, how plausible are these assumptions in this particular application?

Beware of the temptation to copy the original text only slightly modified! The thesis is an independent scientific achievement which includes your own thoughts on the topic. The thesis must be written essentially in your own words.

The concluding section should briefly summarize the main findings. Also, point out any further open questions and address the economic policy relevance of the work, if this has not already been done in the main section.

3 Formal Requirements

Timeframe and Scope

You have 3 months (Bachelor) or 6 months (Master) to submit your thesis. Please familiarize yourself with the guidelines by the examination office at the TUM School of Management which list requirements regarding the registration, period for completing and submission ([download center](#)). Further, consider the additional [formalities for the thesis](#) at TUM.

Data Protection

You may receive confidential data from us in the course of your thesis. Therefore, you have to fill out a data protection form before we can register your thesis. According to legal regulations, personal data must be treated confidentially and may not be passed on to third parties without authorization. Documents containing personal data must be stored in such a way that they are protected from being accessed by third parties.

Language and Formatting

The TUM uses American English as a rule. Additional rules for thesis titles can be found [here](#). The thesis must meet the requirements of a scientific thesis in terms of content, form and language. Formal and linguistic deficiencies as well as frequent spelling mistakes will inevitably lead to a worse grade.

A bachelor's thesis is generally 15-20 pages, not including the bibliography. A master's thesis is generally 30-40 pages, also not including the bibliography. Please make sure that the formatting of the thesis is consistent and neat. This includes a reasonable choice of the font size. Footnotes should be placed at the bottom of each page, if possible.



Citation

All thoughts expressed in the text or in footnotes that you adopted from others have to be acknowledged (exact page references are required in bachelor and master theses). Generally, do not include citations regarding basic economic or econometric knowledge (i.e. do not cite textbooks). If you include verbatim quotations, they are to be identified as such – however, use as little direct quotations as possible. Please use only the abbreviated citation in the text and footnotes. For example, Smith (2020) or Smith (2020, p. 99).

References

In the bibliography, all cited sources (and only these!) are to be listed alphabetically. Please do not include the full source information in the footnotes – this information belongs only in the bibliography!

Above all, the completeness of the bibliography is important. When formatting, consistency and a neat overall impression are crucial. For example, it does not matter whether first names are spelled out or abbreviated – but please either always spell out or always abbreviate. The following formatting suggestions are provided for guidance.

- **Books:** Surname, First name(s), Year of Publication, Title, Subtitle, Edition, Place of Publication, Publisher.
- **Journal Article:** Surname, First name(s), Year of Publication, Title of Article, Name of the Journal, Volume(Issue), Page Range.
- **Chapter in Edited Books:** Surname, First name(s), Year, Title of Article, in: Surname, First name(s), (Editors), Year, Title of Book, Subtitle, Edition, Place of Publication, Publisher, Page Range.
- **Web Page:** URL and the date when you last accessed the site. (Please only cite web pages such as Wikipedia if there are not any scientific publications.)

Artificial Intelligence Disclaimer

You may have heard about interactive programs that building up on machine learning techniques are able to write entire essays about a topic (e.g. ChatGPT). On the one hand, such programs can be very valuable and helpful when you write your thesis. For instance, it can very quickly give you an overview over your thesis topic and/or the literature in this area. This could be an efficient way to start a literature review. On the other hand, you should keep in mind that such tools are good but not perfect. For instance, sometimes answers are simply made up and confidently reported (so called AI hallucinations).

In general, you have to comply with the following rules when writing a thesis

1. Read every paper that you cite in your thesis and form your own opinion about this paper
2. Never ever copy and paste text or output from any other source without citing the source (this is serious plagiarism)

If you decide to use AI tools (e.g., in your literature review), you also have to follow these rules with one addition: Citing AI tools is forbidden. In a nutshell, you can use AI as a search tool but for nothing else. This means, you are not allowed to use AI to write text, code or any other output. Simply rephrasing output from such tools is also insufficient. At the end your thesis should demonstrate independent thinking grounded in the teaching you received (copying/pasting or rephrasing does not demonstrate independent thinking).



Web Scraping Disclaimer

Empirical research is more and more often based on web scraping. This is a valuable source to understand our society. If your thesis comprise the collection of data using web scraping, please be informed that there are legal boundaries in Germany for such procedures. A first legal introduction to this topic can be found [here](#) (in German only). Please also search for more up-to-date information regarding this topic before you start to collect data. We will never expect that you violate any laws when collecting data for your thesis. Therefore, let us know as early as possible if you feel that the data collection is not possible.

Resources

In principle you can use any text program (like Microsoft Word or OpenOffice Writer) to write your thesis. There are several reasons, however, to use \LaTeX to typeset your thesis. \LaTeX is a very important tool in academia and it is particularly helpful if you expect that your thesis contains many formulas. It will, however, take some time to get used to \LaTeX . Therefore, you should get familiar with \LaTeX before starting your thesis since otherwise there may not be sufficient time to learn it.

Please find more information about \LaTeX here: <https://www.latex-project.org>. After installing \LaTeX , you can use several writing environments for creating \LaTeX documents like TeXstudio (<http://texstudio.sourceforge.net>). Alternatively, you could use LyX (<https://www.lyx.org>) which makes typesetting in \LaTeX a bit easier.

The TUM offers courses to improve your academic writing skills, to learn how to use reference management systems and how to structure your work ([TUM academic writing courses](#) or [TUM Institute for LifeLong Learning](#)). Helpful advice is also given by the [TUM tips and tricks for the final research papers and thesis](#). <https://www.lll.tum.de/de/certificate/academic-writing-made-easy/>

Submission of Thesis

You can find more information about how to hand in your thesis [here](#).

Please also send a PDF file of your thesis to your supervisor via email but be advised that this does not replace the official submission described above.