Information Manual

Bachelor thesis Econometrics and Data Science

Academic year 2024-2025

Contents

1 General information

The thesis is the final stage in your curriculum, and it is written during the 2nd semester of the third year of your Bachelor. The Bachelor thesis is worth 12 ects.

1.1 Goals of the thesis

The goals are (1) to practice the art of conducting independently academic research; and (2) to record the results of this work in an academic paper.

As part of goal (1) the student needs to formulate the research question, to study the appropriate literature, to develop a mathematical model of the problem, to collect data for validating and or estimating the model, to analyse the model using acquired skills and techniques, to implement and verify scientific computer programs, and finally to come up with solutions that could be based on analytical, numerical, or empirical methods. NB: any of these issues if applicable.

As part of (2) the student needs to be able to write a professional paper that describes clearly the research questions, the research design, the related literature, the used methodology, the results, and the conclusions.

1.2 Requirements

The conditions allowing you to start the thesis process are that you successfully completed:

1. at least 120 ects of courses from the BSc EDS (including minor);

2. among which at least 2 out of 3 of the following courses Econometrics II, Multivariate Statistics, and Data Science Methods.

1.3 Thesis topics and supervisors

The first step is to find a supervisor and a topic for the thesis. A list of articles from each supervisor will be posted on the Canvas page of *Thesis Econometrics and Data Science*. Based on the list of topics and supervisors, you choose either a topic or a supervisor of your preference. You then contact the supervisor to discuss further details and the timeline. The list of possible supervisors is given below.

- Jan Bauer (`j.bauer@vu.nl`)

- Lennart Hoogerheide (`l.f.hoogerheide@vu.nl`)

- Sicco Kooiker (`s.h.kooiker@vu.nl`)

- Siem Jan Koopman (`s.j.koopman@vu.nl`)

- Gabriele Mingoli (`g.mingoli@vu.nl`)

- Kevin Cecere Palazzo (`k.j.cecerepalazzo@vu.nl`)

- Barend Spanjers (`b.a.spanjers@tinbergen.nl`)

- Xia Zou (`x.zou@tinbergen.nl`)

He or she will supervise you in all aspects concerning a thesis. In the end however, conducting the thesis research and writing your thesis report, on time, are activities for which you are ultimately responsible yourself.

2 Timeline

2.1 Starting

Formally, the periods 5 and 6 are reserved for conducting your thesis research and writing. However, practice shows that it is better to start much earlier, specifically for chosing topic and supervisor. We recommend that you start investigating possibilities during period 3 or early in period 4.

- Check the lists with topics published in the Canvas page. When you see an interesting topic, you contact the associated supervisor.

- When you are unsure about a topic or supervisor you might contact the thesis coordinator, dr. E. Wijler (`e.j.j.wijler@vu.nl`).

- Once you have chosen a thesis topic and discussed it with your supervisor, you can start your research. You do not have to wait until period 5.

2.2 Deadlines

In case you wish to continue with a master program, it is important to check the deadlines for completing your bachelor study. For the SBE master programs (for instance the MSc Econometrics and Data Science) you need to apply your bachelor diploma at the latest on 31 July 2025. That gives the administration sufficient time in August to check and approve your program and your course grades so that you can enrol in a master program on 1 September 2025, and start registering for master courses via your Vunet. Hence, you need to have completed and received grades of all bachelor courses including the thesis before 31 July 2025.

Next to these administrative restrictions you have to take notice that your supervisor is most likely not available during a large part of July because of conferences and/or holidays. This may restrict supervision and grading in July; please contact your supervisor about it. Surely you will have supervision during April - June. Summarizing:

1. *Start investigating topic and supervisor in February 2025.*

2. *Start literature collecting and reviewing, do some preliminary research or some data analysis during March-April 2025.*

3. *Give full attention to your thesis research and writing during May-June 2025.*

4. *Until 30 June 2025 you are supervised for all these activities.*

5. *Before 31 July 2025 you make sure that (i) you have completed a final version of your thesis, and (ii) you have uploaded the thesis in Canvas for the plagiarism check (see Section 3.1); (iii) the thesis is graded by the supervisor and co-reader; (iv) you have uploaded the thesis in the thesis database of the university library; and (v) apply for the diploma.*

In case you wish to enrol in a master program outside SBE, you need to inquire as soon as possible what their requirements and deadlines are.

3   Assessment

Your thesis will be graded by your supervisor and by a co-reader. The co-reader is assigned by your supervisor. The following aspects are part of the assessment criteria and shall receive due consideration.

- Research question: formulate clearly the research problem (maybe with subproblems).

- Positioning in literature: review relevant studies.

- Research design: address the methodological issues, the data collection (if applicable) and the application of theory.

- Description and analysis of results: show understanding of the research question and present a readable derivation of the complex analysis.

- Conclusion and discussion: succeed putting the findings in a wide context.

- Poster and presentation: develop a clear and concise poster that highlights the key aspects and results of your thesis, and present this work in a professional and convincing manner (see details below).

- Editorial quality: compile a sound academic paper, preferably typeset in LATEX.

- Degree of independence: show your own initiative and do not always wait for input of your supervisor.

3.1   Poster presentation

In June (most likely in the third week) a session will be organized by the EOR and EDS thesis coordinators in which students who started a bachelor thesis in the current academic year must show and explain a poster about their thesis. The poster, including the verbal explanation by the student, will be assessed via one of the assessment criteria counting for the final grade of the thesis. The explanation/presentation of the poster should last between 3 and 5 minutes and is followed by questions. During the remainder of the poster session, interested participants may visit your poster, ask additional questions, and provide valuable feedback. Poster presentations are an essential tool for knowledge dissemination in academics and business, making your active participation a particularly relevant experience for your future career. Before the session, the poster shown during the session must be uploaded in the appropriate Canvas assignment. Making and uploading the poster about the thesis is compulsory to finish the thesis course. Not uploading the poster in the appropriate Canvas assignment before the organized session in June will result in a lower grade on the assessment criterion related to the poster. If a student is unable to present the poster during the organized session, it is the full responsibility of the student to organize a meeting where both the supervisor and second assessor are present to show and explain the poster. The thesis coordinators and members of the program management team of the BSc EOR/EDS can choose to be also present during this meeting. The thesis will not get a sufficient grade if the poster has not been shown and explained.

3.2 Plagiarism and generative AI

Once your thesis is complete, you must ask permission from your supervisor to upload your thesis to the "Assignments" section of the "Thesis Econometrics and Data Science" Canvas page. Uploading your thesis on Canvas is required for the mandatory plagiarism check. Be sure to avoid plagiarism. The Netherlands Code of Conduct for Research Integrity 2018 defines plagiarism as follows:

Plagiarism means the use of another person's ideas, work methods, results or texts without appropriate acknowledgement See `https://vu.nl/en/about-vu/more-about/academic-integrity`, for more information.

In general, to avoid plagiarism, it is a good practice to read any literature that is relevant for you, then put it away, and only then start writing your own text.

Generative AI is **not allowed** for generating text and literature reviews, data analysis and data reporting. However, you may use it for correcting English and debugging your code. However, keep in mind that you might be asked about your code during the poster presentation. So, even if you use generative AI for debugging code make sure that you fully understand it so that you can explain it during the presentation if you get questions about it.

4 Thesis guidelines, instructions, and format

The thesis is prepared preferably using LATEX. On the Canvas site under "Important information" you find a zip-file `thesis-kit.zip`, which contains a template file which you might edit `template-and-guide.tex`. This file contains also instructions and guidelines. In case you choose an alternative document preparation system (for instance Microsoft Word), be sure to obtain the same formats and styles. Under Files in Canvas there is also a document `assessment-criteria.pdf` with grading criteria and assessments.