Faculty of Business Administration and Economics

Introduction to Scientific Working

The formal structure of term and seminar papers as well as Bachelor and Master Theses

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The chair of Institutional Economics and Economic Policy does not guarantee for correctness and completeness of the given information and can hence not assume responsibility for any occurring problems (e.g. deadline defaults etc.)! It is advisable to continuously consult your supervisor during the editing of your academic paper.
1 Content-oriented Guidelines

The following section comprises information on the content-oriented guidelines, which should be considered while writing an academic paper. In particular, the research question and the desired outcome, basics on dealing with literature and research as well as the organization of the writing phase are covered.

1.1 Research Question/ Desired Outcome

- What exactly is supposed to be revealed?
- What is the background and which research area is affiliated with it?
- Which theories exist that could help to analyse the problem/research question?
- Which empirical evidence or theories are connected to the objective of research?

Field of research $\rightarrow$ Problem $\rightarrow$ Research question $\rightarrow$ Develop an answer

- The outline is part of the (research) work and shows the way in which a topic is understood and approached. It reflects the logical construction of the work and allows a first insight.

1.2 Concept and Structure

- Very important: Always ask yourself the questions “What is the overall purpose for all this?”, “What do I want to communicate with this paper?”
  ➢ Answer the question in the text, especially in the introduction.
- Watch out for the central theme / Leitmotiv.
  For example: “In chapter one the work of XY was introduced and as a conclusion to that … Hence, the model by AB will be presented which in contrast to the work of XY states that …”
“Less is more”: If a literature review is not requested it is better to work with few core results that you can comprehend, than with numerous results which are not completely understood.

Be aware that your explanation is complete. Readers should be able to understand the core results without having to look in your sources or other papers.

Research papers (especially their structure) can help you to get started with your concept. You can also have a look at good examples of other papers on the website of the Chair of Institutional Economics and Economic Policy.

1.3 Literature Research

Look for new or additional literature on your own:

- Academic articles in international economics journals
- Academic books

As a starting point for literature research use, e.g., Google Scholar, where you can find solely scientific texts.

Use databank-instruments, which are provided by the library. For example: econlit, econis etc.

Consider possible waiting times in your time management.

When using the source Internet watch out for: Seriousness, respectability and correctness. Due to possible changes on the websites, you must save the source, print it and enclose it to your paper in the Appendix.

Quality, not quantity of sources is decisive for a good paper. If you set a focus on one specific analysis of a single model or study and the empirical methods and evidence used is explained in detail, you tend to need fewer sources.

Check if all quoted texts are included in the bibliography.

Before submission of the paper, check if the latest versions of the working papers are used.
• Evaluation of the literature:
  ➢ Journal rankings facilitate the paper selection (e.g. Handelsblatt-Ranking); at
    Google Scholar one can, e.g., see how often an article is quoted by other
    authors.
  ➢ Describing ideas in your own words signalizes correct understanding of the
    original source.
  ➢ Critical analysis of model assumptions (question the model results!)
  ➢ Try to include own thoughts and ideas.
  ➢ Be critical about the original sources and the papers you quote. Show that
    you yourself have an opinion towards the topic. Do not just reproduce
    material!

1.4 Organization and Writing Phase

• Refocus on the problem that needs to be solved:
  ➢ Which question do I have to answer and what do I want to reveal?
  ➢ Regarding literature: Which are the relevant aspects of the problem? Which
    are the most important theories I can use to analyse the problem? Which
    empirical evidence exists to support or confute theories when comparing
    different theories?

• The paper must show clear structure:
  ➢ Present relevant aspects and sequence them.
  ➢ Try to keep the structure simple and clear.

• Discussion of the central research question and a valid analysis
  ➢ Introduction: Explain the background of the problem and define the research
    question.
  ➢ Organization of the main part: The most important aspects of the problem will
    be discussed in the main part, using the chosen literature. Therefore it is
    important to have decided to which length the problem should be discussed.
    Which theoretical and empirical aspects are part of the problem and which
    are not? What is relevant? Furthermore it is important to decide how in-depth
    the paper should be, how detailed the theories and empirical evidence need
to be discussed. The messages of every section and every chapter need to be emphasized. And never forget to quote correctly and match the text to the requested format!

- Conclusion: A final conclusive statement needs to be made.
2 Structure and Layout

This section is on the formal design and structure of your paper. Therefore, essential components of a scientific work are listed and hints for their editing are given. The final part contains comments on the formal structure of the text part of the paper.

2.1 Font/ Page Formatting

- Upper margin: 2,5 cm
- Bottom margin: 2 cm
- Left margin: 2,5 cm
- Right margin: 2,5 cm

- A common font type has to be used (e.g. Times New Roman or Arial).
- Character formatting in 12pt and line spacing 1,5 for the normal text.
- Character formatting in 10pt and single line spacing for footnotes.
- Heading with title in short form and name of the student.
- Pages should be consecutively numbered.
- Justified text is desired.
- Word division should be performed.
2.2 Outline

- A scientific work contains the following components:

  Cover Page
  Table of Contents
  List of Figures (if any)
  List of Tables (if any)
  List of Abbreviations (if any)
  Introduction
  Main Part
  Text Part/ Main Component of the Paper
  Conclusion
  Literature References
  Appendix
  Statutory Declaration

2.3 Information on Structuring and Single Outline Elements

- Page counting starts with the Table of contents.
- Table of contents, list of figures and tables (if any), list of abbreviations (if any), literature references, appendix and statutory declaration are numbered in Roman numerals under usage of small letters (i, ii, iii, …).
- Counting and numbering of the text part starts with the introduction under usage of Arabic numerals (1, 2, 3, …).
- Page numbering takes place uniformly in the footer right-justified.

2.3.1 Table of Contents (Structure of the Text Part)

- The table of contents gives a complete outline of the single chapter headings and the corresponding page numbers.
- The decimal classification is particularly favorable, e.g.:
2 Structure and Layout

1 Introduction
2 Integration Theory: An Overview
   2.1 Theoretical Concepts
      2.1.1 The Classical Concept of Uniform Integration
      2.1.2 The Modern Concept of Differentiated Integration
      2.1.3 The Future Concept of Transverse Integration
   2.2 Graphical Illustration
3 Integration and the European Union: An Empirical Analysis
   3.1 Hypothesis
   3.2 Empirical Results
   3.3 …
4 …
5 Conclusion

- A consequent and conclusive line of thoughts is reflected in a formally logical structure with according chapters and subsections.
- Subsections belonging to the same outline level should all refer to one superordinated problem (i.e. the subsections 2.1.1-2.1.4 all describe the superordinated issue 2.1).
- Single subsections should be balanced.
- For the subdivision it is important that each outline level exhibits at least two bullet points. I.e. if there is a subsection 2.1.1, there has to be at least another section 2.1.2. Avoid using too many subsections (as far as possible no subdivision “2.1.1.1”).
- A clearly arranged outline and explanation for the chosen structure in the introduction facilitates the access to the paper for the reader. This constitutes a necessary condition for a qualitative work.
2.3.2 List of Tables and Figures

- Tables and figures have to be numbered consecutively, in addition to that, a precise designation of content should be given, e.g.:

  \textit{Table 2-3: Money market in dependency on earnings Y}

- If there is a reference to a table or figure in the text, the table or figure must be easy to find by indications of numbers and page numbers. Tables and figures have to be given a source if they are based on primary data, e.g.:

  \textit{Source: German Federal Statistical Office (1984a), p. 22f.}

- If one uses a table of another author and changes its content, the note: Source ("own depiction following \textit{Origin of the Table}") has to be added.

- Irrelevant and redundant information should be excluded.

- Tables and figures are used to present contents in a clearly organized manner with respect to different aspects. They may include quantitative or qualitative information that are discussed in the text.

- Multiple pages of tables should be avoided (scaling down!).

- Tables and figures in landscape format have to be arranged so that the reader can turn the copy clockwise.

- Extensive use of tables and figures (as well as longer extracts from original sources, legal texts) should only be made in an appendix or multiple appendices, in order to improve the flow of reading.

2.3.3 List of Abbreviations

- Abbreviations should only be used if absolutely necessary as it complicates the flow of reading. Common abbreviations can be used for the bibliography and literature references:

  \begin{itemize}
  \item Fig. = figure
  \item ed. = edition
  \end{itemize}
Specific abbreviations from the text, tables, or the bibliography must be clarified in a listing, e.g. AER = The American Economic Review, JPE = Journal of Political Economy, or ZfN = Zeitschrift für Nationalökonomie.

2.3.4 Introduction

- Describes the motivation behind the paper.
- Clarifies the problem and differentiates it from other problems.
- Shows the overall approach and describes the chosen structure of the paper.

2.3.5 Conclusion

- Final section of the paper where important results are summarized.
- Prospects future research topics with respect to the present problem setting.

2.3.6 Literature References

- The references contain all literature sources, which are referred to in the academic paper.
- The references must be structured in a list of all titles, alphabetically organized by authors. If multiple works of the same author exist, they have to be ranked chronologically. Please avoid classifications concerning the type of the literature (books, journal articles, internet sources, etc.).
- With regard to the layout of the bibliography there are some norms:
  - The first line of each source starts at the left margin, the following lines are indented by 0.5 cm.
  - Between sources there should be one empty line.
- The following table summarizes which information has to be mentioned with regard to the different types of literature in the references:

<table>
<thead>
<tr>
<th>Type of literature</th>
<th>Standard format in the list of references</th>
<th>Examples</th>
<th>Remarks</th>
</tr>
</thead>
</table>
  • The edition is provided only if it is not the first.  
  • If there are several books of the same author with the same year of publication, they are numbered with small letters after the year of publication. |
  • If journal titles are mentioned in abbreviated form, these abbreviations have to be explained in the List of Abbreviations (see Section 2.3.3). |
| Articles from scientific anthologies   | Last name of the author(s), Initial of the (respective) first forename (Year of publication): Full title. In: Last name of the editor(s), Initial of the (respective) first forename of the editor(s) (Ed(s)), *Full title of the scientific anthology*, Volume (if necessary), Place: Publisher, page. | Smith, J. (2006): *Immigrants and their Schooling*. In: Hanushek, E.; Welch, F. (Eds.), *Handbook of the Economics of Education*, Amsterdam: Elsevier, 155-187. | • Scientific anthology title in italics. |
  • The place is mentioned only if not named in connection with the institution. |
| Discussion papers, working papers, research reports, etc. | Last name of the author(s), Initial of the (respective) first forename (Year of publication): Full title, name of the collection/discussion series, number of the paper. | Baldwin, R.; Martin, P. (2003): *Agglomeration and Regional Growth*, C.E.P.R. Discussion Papers, 3960. | • Paper title in italics. |

**Internet sources**

| Last name of the author, Initial of the first forename (Year of publication): Full title, [online] direct link [Date of retrieval]. |

- **Online sources can be changed often or can even be deleted; it is advisable to safe or print such sources and at best to only use online sources in exceptional cases.**

- **The printed internet sources have to be added to the paper's Appendix!**

- Depending on the extend of the internet sources it is not necessary to print the websites in the Appendix. However, in the PDF version the complete Appendix must be available.
2.3.7 Appendix

- Main statements and facts including figures and tables are listed in the main part of the paper.
- The appendix of the paper includes less relevant, detailed information that are not important enough to be included in the main part of the work. However, this information is too important to be completely omitted.
- You need to make a reference to the Appendix in the text.
- Collected data sets, auxiliary calculations, huge graphics and tables for illustration and other relevant (but non-necessary) models/calculations/examples are typical examples for information that belong to the Appendix.
- **Particularly important:** Used internet sources belong to the Appendix because they often change or are completely deleted. It is advisable to immediately save the utilized internet material, e.g. as a screenshot or PDF. Please note that the saving of a link does not exclude changes in the website content and is therefore insufficient.

2.3.8 Statutory Declaration

- A template for a statutory declaration can be accessed on our chair homepage.
- **Please cross out not applicable statements regarding the storage of your work.**

2.4 Information on the Edition of the Text Part

The following section contains remarks on the formal composition of the text part of the paper.

2.4.1 Language Requirements

- Professional terminology has to be applied, but only where it makes sense.
- Make use of a precise language (simple and clear sentence structure).
- In German papers do not utilize first person singular or plural, respectively.
• Scientific language means writing in an objective and defined manner (no story telling).

2.4.2 Citation

• Each citation has to be verifiable. Therefore, text passages, tables, graphics, etc., taken from other sources have to be indicated accordingly. A breach of this rule can lead to the non-recognition of the work (due to plagiarism)!
• The source must also be stated for information not taken from literature but based in personal inquiries and questionings.
• Citation is performed following the Harvard method.

Direct Quotes

• Please use double quotation marks (quotation in quotation: single) and keep orthography and syntax.
• Direct quotes that are longer than 3 lines have to be in size 10 and indented with single line spacing.
• Reference will be made directly after the quotation like the following: (Milgrom and Roberts, 1992, p.75).
• Specific page references: Note a “f” for two pages and a “ff” for more than two pages.
• If up to two authors are mentioned: (Milgrom and Roberts, 1992, p.75), if there are more authors, use: (Schmidt et al., 1982, p.339).
• If the same source is quoted twice or multiple times in succession, the names of the authors are replaced by „ibid.“.
• Should you quote an English text, it will remain in English.
• Only when the original source is non-accessible, a secondary source can be quoted.
• Each quotation has to be inspected for whether it is taken out of its original context and therefore if its initial message is changed.
## 2 Structure and Layout

### Omission and changes

<table>
<thead>
<tr>
<th>...</th>
<th>If you omit one or more words.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(...)</td>
<td>If you omit a whole sentence.</td>
</tr>
<tr>
<td>[ ]</td>
<td>For changes as for example additions and insertions.</td>
</tr>
<tr>
<td>[sic!]</td>
<td>You quote directly but you assume that there is a typographical error.</td>
</tr>
</tbody>
</table>

### Indirect quotes

- Indirect quotes mean that the content is based on an external source or that this part is an analogous reproduction of someone else’s work.
- The Harvard citation method is used: Source references are made directly in the text, after the quotation, in a shortened way.
- **Examples:**
  - As was stated by Dreher et al. (2004, p. 10) and has been empirically verified by Treisman (2000) and Knack et al. (2003)...
  - The link within this concept is drawn by Eaton and Kortum (2001, 2002), Baldwin et al. (2001), and Baldwin and Martin (2003).
  - Following ideas of trade based growth models tracing back to Grossman and Helpman (1990, 1991), we develop a model in which endogenous growth and agglomeration...
  - A major stream of regional economics explains the emergence of a core periphery pattern through transportation costs and economies of scale (Krugman, 1991a, 1991b; Krugman and Venables, 1995).

### 2.4.3 Footnotes

- The most common type of annotations in written academic work.
- Footnotes provide information which would be disturbing if stated directly in the text as for example additional sources, indications for other parts of the work, or deviations from the central theme of the work.
• The reference point in the text of a footnote is to be indicated by a superscript Arabic number.
• All footnotes have to be numbered consecutively.
• The text of the footnote itself is to be arranged at the end of the same page.
• Overall, footnotes should seldomly be used, only if really necessary.
• **Be careful**: The citation method will not take place in the footnotes but in the main text.

### 2.4.4 Formulas

• Symbols used in mathematical formulas have to be clearly defined when first used.
• To improve the flow of read a uniform formula notation is recommended. If applicable, a list of all symbols used must be created and put at the end of the work.
• In order to enable references amongst formulas a numeration is required. The numeration can be structured in accordance to the chapters and should consistently be at the right margin. The formulas should be centered and set apart from the text through blank lines.
• Formulas should be placed centered and separated by blank lines from the text
• Example:

\[
C = c_0 + c_1 YV
\]  \hfill (1.5)
3 Top-Ten of Writing an Academic Paper

4 Checklist


**Completeness and Form/ Layout**

- Does the paper include all the required elements? ☐
- Is the layout and typography correct? ☐
- Is the outline etc. flawless and up to date? ☐
- Is it clear what is part of the introduction, main part, and conclusion? ☐

**Content: Introduction**

- Did you present the topic and mentioned the desired outcome at the beginning? ☐
- Is the overall direction of the research question and your personal interest in it clearly recognizable? ☐
- Did you point out the significance of the topic for the subject field? ☐
- Is the differentiation of the topic appropriate and well explained? ☐
4 Checklist

**Content: Main Part**
- Can you identify a logical reasoning based on the chapter headings?  
- Did you address existing theories and models of the field?  
- Did you describe the methodology of the research?  
- Is the content verifiable?  
- Are the criteria for the evaluation clear and acceptable?  
- Are the results objective and factual?  
- Do all chapters have an introduction, conclusion and connecting passages?  

**Content: Closing**
- Is there a summary of the most important findings at the end?  
- Has the research question been answered?  
- Is the personal contribution recognizable?  
- Is there a prospect on topics that are still outstanding?  

**Comprehensibility**
- Is there a correct and adequate definition for all important terms?  
- Are all unknown abbreviations listed in the List of Abbreviations?  
- Are all sources listed correctly and quoted properly?  
- Is the content reduced to the essential?  
- Will someone who had not known the paper before, will come to the same main statements?  
- Have unnecessary repetitions and diffusiveness been avoided?  
- Is the content supported by visualizations?


**Style of Language/ Expression**

Is the style objective, factual, and impartial throughout the paper? ☐

Is a subjective evaluation foregone? ☐

Is a technological or scientific terminology properly used? ☐

Is the content presented precisely and clearly? ☐

Are long convoluted, complex sentences separated into several clear sentences? ☐

Have unnecessary fillers, expletive words and adjectives been avoided? ☐

Have unnecessary buzz words and colloquial language been avoided? ☐
5 Bibliographic Example

Making use of the stated literature in this document, the structure of an exemplary bibliography is shown in the following.


5 Bibliographic Example


