



Georg-August-Universität
Göttingen

Faculty of Agricultural Sciences
Department of Agricultural Economics
and Rural Development

Guidelines for Writing Academic Papers in Agricultural Economics

By Martin Qaim

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1. Introduction

Well-presented written work is crucial in communicating information and ideas effectively. Conciseness, a style consistent with purpose, and a logical, clear-cut structure are fundamental. Meaning is clarified by precision in detail of grammar, word usage and punctuation, while neat arrangement of text, tables, and figures creates a favorable impression. The appropriate presentation of a document depends on its objectives and readership. The types of papers students encounter during their university education are different, such as seminar papers, research proposals, Bachelor, Master, or Doctoral theses, as well as journal articles. Even though all of them have different requirements concerning length, structure, focus, and style, they also have a lot in common. Without referring too much to the specifics of individual types of papers, the guidelines put together here point out the main aspects, which students should internalize and use when writing academic papers of their own. While many of these guidelines are applicable to writing in all scientific disciplines, there are also certain differences, especially between the natural and social sciences. This document is primarily targeted at agricultural economists.

2. General guidelines on structure and style

When submitting a thesis to the examination office, a research proposal to a grant committee, or a manuscript to a journal, there are often very clear guidelines on the structure and format of the document. Such specific guidelines have to be followed very carefully; non-compliance will annoy the reviewers and can result in rejection on formal grounds. Students are responsible for the proper format of their documents themselves. The use of computers has made editing and formatting very simple, so the standards have been raised. Limited computer proficiency is not a good excuse for submitting a paper, which does not meet formal criteria. Apart from the specific guidelines required for some purposes, the following general aspects should be kept in mind.

Know your readership

Before starting to write a paper, it is important to have in mind who the readership will be. This will determine the language and style to be used. If a paper is directed at a readership in the same discipline or sub-discipline, disciplinary jargon can and usually should be used. However, often papers are written for a somewhat broader audience, sometimes including interested laypersons, so that familiarity with technical terms cannot be presupposed. Likewise, knowledge about the average time that a reader will spend on the paper is of importance for conveying the main message effectively. While high-ranking policy-makers and research managers will not absorb more than a few pages, graduate students and scholars working in the same research area will be fascinated by reading more details. Without elaborating further, it should be clear that a write-up about the very same research results can and should look quite differently, when different audiences are targeted.

The following questions might help to adjust the paper to a specific purpose:

- What will the paper be used for?
- By what channels will it circulate?
- Who are all the people, now and in the future, who may read your text?
- What is their educational background?
- What are your readers concerned with? What are their goals, values, needs, and constraints?

- How will you make it easy for busy people to read and use your text?
- Which are the most effective arguments and approaches that you can use to raise interest among your readers and possibly convince them?
- What objections might your readers raise?

Language

Written language is different from oral language, and academic writing is different from journalistic writing. Well-written papers will always have more impact than carelessly-written work. Therefore, special emphasis should be put on formulating ideas, following a clear line of argumentation, and avoiding linguistic mistakes. Academic writing can be trained, and the best training is to read how other, more experienced researchers have put their arguments into words. Consulting articles from the top journals of the discipline is a good exercise in this respect, because these publications have usually gone through a careful review and editing process. Whenever reading a journal article, you should not only focus on the contents alone, but also collect ideas on how to write in an effective way.¹

Academic papers should be written concisely, that is, as short as possible. Although a Master thesis will generally be longer than a journal article, this will be due to more details included, and not due to more space required for the same statement. Likewise, individual sentences should be short, so that readers can easily grasp their message. Sentences should be broken up where possible, to avoid too many subordinate clauses. Only information that is necessary with regard to the objective of the text should be included. Wordiness should be avoided. After finishing a text, the author should always go through the document again, and check whether each sentence and each word is really required. Ask the question: would an important point be missed if I delete a certain sentence/word? If not, delete it.

In agricultural economics, although permissible, it is fairly uncommon to write in the first singular form (i.e., the “I” form). Often, the passive form is used, or the “we” form, even for a single author. For example, instead of writing “I use a partial equilibrium model”, one would write “A partial equilibrium model is used” or “We use a partial equilibrium model”.

Structure

Most academic papers in agricultural economics contain the following parts:

- Introduction,
- Main body of the paper (usually sub-divided into several sections, including analytical framework and/or methodology and results),
- Conclusions,
- List of references,
- Abstract (which often appears at the beginning of the paper).

Longer papers, like Master or Doctoral theses would additionally include a table of contents, a list of tables and figures, possibly an appendix to include more technical details, and acknowledgements.

¹ Good journals in agricultural economics include the *American Journal of Agricultural Economics*, the *European Review of Agricultural Economics*, *Agricultural Economics*, and *Food Policy*, among others.

Details on individual parts are discussed in later sections. But in general, the structure of a paper should follow a logical order. It is absolutely important to follow a clear thread throughout the whole document, without digressions from the main line of reasoning. If a short point is important, but would distract from the main argument, it can be put into a footnote. On the other hand, main points should not be put into footnotes. Whenever it is possible to include the message into the text instead of a footnote, it should be done. The use of footnotes should be kept to a minimum. Longer digressions, if really necessary, should be placed in special boxes or sub-sections.

Sub-dividing sections into paragraphs helps to give structure to the text and the line of thought. Paragraphs should not be too long, but also not too short. Depending on line spacing, two to five paragraphs per page can be seen as a good rule of thumb. Every paragraph should start with a clear topic sentence, which is then elaborated and supported in the rest of the paragraph. Paragraph and sentence sequence should be logical; the use of meaningless conjunctions should be avoided.

Consistency in style

Almost all academic journals have their own format and style (regarding section headings, citation, table and figure design etc.), which authors have to follow when submitting a paper. Yet there is no “universally correct” style, so when writing a seminar paper, thesis, or similar document you have some degree of freedom in choosing your favorite style. Once chosen, the style has to be pursued consistently throughout the whole document. To give a few examples:

- If you start with American English, then do not switch to British English.
- Sometimes, there are different ways of writing words (e.g. policy-maker). If you choose to write it this way, then do not switch to “policy maker” or “policymaker” later on.
- If you decide to express percentage figures as 5%, then do not use other possible forms in the same paper (e.g., 5 percent or 5 per cent). The same holds for 100 US\$ versus US\$ 100, versus US \$100; or US and EU versus U.S. and E.U.
- If you decide to capitalize only the first word of section headings (e.g., “Analytical framework”), then do not capitalize all main words later on (e.g., write “Conclusions and policy implications” instead of “Conclusions and Policy Implications”). The same holds for table and figure captions and labels.

These few examples might suffice to clarify the importance of consistency in style. Mixing different styles always creates the impression that a paper was prepared carelessly. This will also reduce the readers’ confidence in the scientific results.

3. Planning your paper

The process of writing a paper consists of three main stages: planning, actual writing, and checking. The bigger the paper is in volume, the more attention has to be awarded to the planning stage. This includes the following major activities.

Finding a general topic

At first, one needs to decide about the general research topic. To name a few examples: “International agricultural trade and poverty”, “EU enlargement and agricultural policy”, “Economics of integrated pest management”. If a general topic is not assigned to you by your

supervisor, then you should choose one from your main areas of interest, because this will ensure a high motivation to produce an outstanding paper in the end.

Narrowing down the topic and coming up with a broad research question

In order to narrow down a topic, you will need to learn about the policy issues and arguments in the particular research area, and get familiar with the academic literature, especially the more recent work. It will help to consult media sources and discuss with experienced researchers. However, you will not get around doing a careful literature survey yourself, by performing keyword searches in libraries and literature databases (EconLit is one of the standard data banks for academic publications in economics). By reading and discussing with experts you will find out what has been done already, and what the open questions are, which you might address as a contribution to the research direction. Your contribution can include own theoretical and empirical studies, but, depending on the type of paper, it could also consist of a literature review, putting together facts and arguments from different sources with a fresh perspective. As a result of this activity, you should come up with a broad research question.

Defining concrete research questions

Once you have defined a broad research question, you need to convert this into a set of more practicable sub-questions; that is, phrase concrete research questions that you plan to address in the course of your work. In many cases, this will also involve formulating testable research hypotheses. Since concrete research questions are closely related to the methodology and data to be used, this is also the time to make preliminary decisions about these important aspects of research.² The research questions and hypotheses will help later on to structure your work and write a goal-oriented paper. Always be prepared to get rid of ideas, which prove not to be relevant to your main arguments. Not all ideas have to be included in one paper.

The outline stage

Now is the time to set down a working title for the paper and devise a draft structure. Think about the sections you want to include and potential section headings. Do not forget that only sections that contribute directly to the message of your paper should be included. Additionally, it is useful to list the main points to be covered in each section, following a logical order of arguments. Of course, details can be changed later on, but a well prepared outline is an invaluable tool, helping you not to lose track. Once this is done, the only work remaining is actually writing the individual sections, a task which is now reduced to fleshing out the points listed.

General aspects of the different sections are elaborated in the following. Although each section is certainly important, be aware that people who do not find the time to read the full paper, might still read your introduction, conclusions, and abstract. Therefore, these parts should receive particular attention. Read and refine them repeatedly, so that they become really compelling, and free of mistakes.

4. Writing the introduction

The introduction should prepare the readers for what will follow. It mainly serves the following purposes:

² While the use of appropriate methodologies and data is key to good research, no further details on these aspects are discussed in this document, because here the focus is on writing skills.

- *Explain the topic of the paper and put it into a broader context.* This will require a couple of sentences discussing background information, including research that has been done previously on the topic. Here you need to cite published work that is of direct relevance, and put your own contribution into the overall context. Keep this background part as short as possible. Your audience will stop reading when they have to work through long paragraphs, without having a clear idea of the paper's actual objective.
- *Clearly state the paper's objective.* While briefly discussing what is already known about your topic, you should try to identify knowledge gaps. Then, the objective of your work will be to fill in one or several of these gaps. This should be in line with the broad research question identified at the planning stage.
- *Raise interest in emphasizing the importance of your contribution.* People will only be interested in reading your paper if you can convince them of the importance of your contribution for the research direction and/or the policy debate. This has to be worked out very clearly.
- *Name the concrete research questions.* After readers have been made familiar with the general direction of the paper, now you should narrow the topic down to the concrete research questions addressed in the paper. Sometimes, it might also be useful to clearly state issues that you do not explicitly address.
- *Mention the methodological approach and data sources.* While there is no need to discuss methodological details in the introduction, readers want to know at this stage whether the paper is theoretical or empirical, what general type of models is used (if any), whether it builds on primary or secondary data etc.
- *Give a short overview.* At the end of the introduction it helps readers if you briefly explain the structure of the paper. That is, explain what is being analyzed in the following sections, and how this contributes to the overall message.

In agricultural economics, introductions of papers are relatively short (1-2 pages for an article, up to 5 pages for a thesis). An introduction should only cover the most important information, which is required to attract the readers' interest. If more space is required for a broader literature review or similar information, a separate background section can be prepared, which follows the introduction.

When writing a paper, the introduction should be the first section to start with. Once the paper evolves, and other sections have been written, you will return to the introduction and adjust, amend or rewrite it, so that it fits your paper neatly. But without having a draft introduction at the beginning, there is the risk that your paper will not follow a logical thread.

5. Writing the main body of the paper

Structure of the text

The main body of an academic paper depends on its character. Unlike in the natural sciences, where papers often follow a predetermined structure, economists have more degrees of freedom concerning section sequence and headings. Empirical research papers in economics normally have an analytical framework and/or methodology section, which should also discuss the nature and source of the data used. Results can be discussed in one or more sections. Theoretical pieces and literature overviews can follow a different structure. The total number of sections is somewhat flexible, but you should always keep in mind that a clear and logical arrangement of your text is key to effective writing. Sections can be subdivided into

sub-sections as appropriate, albeit more than one or two levels of sub-sections should be avoided.

Tables and figures

The main body of the paper is also the place where tables and figures are presented. Tables and figures shall provide the reader with a quick overview on a certain aspect, facts, and empirical results. Data should be presented in a clear way. Although each table and figure should be mentioned in the text, they should be self-explanatory. That is, a short and meaningful title is required, and legends should be unambiguous, including the units of measurement. Underneath the table or figure, the source of data should be mentioned, and, if necessary, a note explaining details for which there is no space otherwise. Tables and figures are located as close as possible to the text paragraph in which they are referred to. They are numbered consecutively throughout the paper (table 1, 2... and figure 1, 2...); section numbers are sometimes included.

Something which has been presented in a table already should not again be presented in a figure and vice versa. Therefore, you should critically think about whether to present certain aspects in a table or figure, and not decide arbitrarily. Also the arrangement of rows and columns and the amount of information to be included are worth considering. Tables that become too big and complex might be subdivided into several tables or shifted into the appendix, with a summary of the main aspects included in a smaller table in the main body. Consulting published articles will help you get ideas about the appropriate format and arrangement of tables and figures.

6. Writing the conclusions

The conclusions section should summarize the main results and interpret them in terms of consequences and policy implications. The conclusions are deducted from the results and do not include new facts. The research questions posed in the introduction should be answered here. When appropriate, one can and should try to generalize some of the findings cautiously, but over-interpretation, or far-reaching statements which are not backed by the analysis, should be avoided. Raising outstanding questions can also be a good idea. No single paper can address all the possible facets of a topic. Discussing research implications and pointing out further study requirements does not only help other scholars, but is also proof of your research-oriented mind.

7. Working with literature references

Citing references

Consulted sources must always be cited in the text, regardless of what the source is. In most cases, you will cite published work. Citations in the text usually include the authors' names and year of publication. Always double-check that authors' names are spelled correctly. If authors' names are used as part of the sentence, the year of publication is written in parentheses after the names. For instance: "Miller (2001) showed that the farm size is positively correlated with the quantity of fertilizer used per hectare." Or: Miller and Smith (2003) showed...". Alternatively, authors' names and year of publication can be written in parentheses at the end of the sentence: "The farm size is positively correlated with the quantity of fertilizer used per hectare (Miller 2001)." A comma between name and year can be used, but the style should be consistent. If the cited paper has more than two authors (in

some journals, if there are more than three authors), the name of the first author is followed by “et al.”): “The adoption of precision agriculture increased substantially during the last five years (Roberts et al. 2004).” For literal quotations, the page number of the quoted sentence(s) should also be given: (Roberts et al. 2004, p. 287). If the same author published more than one paper in the same year, and several of them are cited, then lowercase letters are used to distinguish them unequivocally: (Sen 2000a; Sen 2000b...). The letters are assigned alphabetically. The full information about all cited sources is provided in the list of references (see below). Personal communications can be quoted, when an unpublished statement is made by an expert, provided that this expert agrees to be quoted in that way: (G. Akerlof 2004, personal communication).

You should always try to verify the credibility of the source, because the fact that a paper has been published does not automatically mean that it is true or based on solid work. Articles from peer-reviewed journals, books from academic publishers, reports from recognized research or statistical organizations, and papers presented at academic conferences can be cited without hesitation. However, press releases, publications from unknown organizations, tabloid newspapers, or dubious internet sites should always be double-checked. When using numbers or statements, you should always try to get hold of the original source: for instance, if a certain author quotes a number from a statistical yearbook, and you want to use the same number, then get the statistical yearbook yourself, and cite the original source properly. Always use the most recent statistics available. For instance, if you use the World Development Indicators (WDI) of the World Bank, which are updated annually, then get the latest update instead of using a 1995 version.

List of references

All sources cited in the text have to be included in the list of references with the full information required to trace the publication. Entries in the list of references appear in alphabetical order by the last name of the first author. All authors’ names are given in the list of references, also for publications which were cited with first author’s name followed by “et al.” in the text; that is, do not use “et al.” in the list of references. To make sure that you do not forget individual sources, which are used in the text, you should try to include the entry into the list of references as soon as you cite it in the text. Always double-check that name spelling and year of publication exactly match the citation in the text. Publications which are not cited in the text should not appear in the list of references.

For some details – such as where to place a comma, whether or not to use parentheses, whether or not to write “and” before the last author’s name of a publication, whether to capitalize only the first name of the publication title or all words in the title etc. – different styles are possible. Unless you have to follow strict guidelines, which style to choose is your decision. The most important thing, however, is, once you decided on a style, be consistent throughout the entire document. In the following, a possible style is elaborated with examples for different types of publications:

For **books**, authors’ last names, initials, year, book title, city and name of the publisher have to be given (for cities in the USA, the state acronym is often given as well):

Kherallah, M., C. Delgado, E. Gabre-Madhin, N. Minot, and M. Johnson (2002). *Reforming Agricultural Markets in Africa*. Baltimore, MD: The Johns Hopkins University Press.

Wold, H., and L. Jureen (1989). *Demand Analysis*, 3rd. Edition. New York: Macmillan Co.

For **journal articles**, authors' last names, initials, year, article title, journal title, volume number, issue number, and page numbers have to be given:

Mohtadi, H., and J.D. Kinsey (2005). "Information Exchange and Strategic Behavior in Supply Chains: Application to the Food Sector." *American Journal of Agricultural Economics* 87(3): 582-599.

Thirtle, C., L. Lin, and J. Piesse (2003). "The Impact of Research-Led Agricultural Productivity Growth on Poverty Reduction in Africa, Asia and Latin America." *World Development* 31(12): 1959-1975.

For **book chapters**, authors' last names, initials, year, chapter title, editor's name, book title, city and name of the publisher, and page numbers of the chapter have to be given:

Sjaastad, L (1971). "Occupational Structure and Migration Patterns." In: E.O. Heady (Ed.). *Labor Mobility and Population in Agriculture*. Ames IA: Iowa State University Press, pp. 8-27.

For **conference papers**, which were not published otherwise, authors' last names, initials, year, paper title, conference name, city, and dates when the conference took place have to be given:

Wang, L., and R. Ready (2005). "Spatial Econometric Approaches to Estimating Hedonic Property Value Models." Paper Presented at the Annual Meeting of the American Agricultural Economics Association, Providence, RI, 24-27 July.

For **working or discussion papers**, authors' last names, initials, year, paper title, type of publication, paper number, name of organization, and city have to be given:

Neef, A., and D. Neubert (2004). "Assessing Participation in Agricultural Research Projects: An Analytical Framework." Discussion Paper No. 6/2004, Department of Agricultural Economics and Social Sciences in the Tropics and Subtropics, University of Hohenheim, Stuttgart.

For **mimeographed papers** which were not published in a series, the following format can be used (but it should be checked that the paper was not published later on, because then the published version should be cited):

Hoffmann, V., M. Gerster-Bentaya, and R. van der Hoek (2005). "How to Draw Up a Research Paper: Information for Students." Mimeo., Department of Rural Communication and Extension, University of Hohenheim, Stuttgart.

For **unpublished theses**, author's last name, initials, year, thesis title, type of thesis, the name of the university, and the city have to be given:

Zimmermann, R. (2003). "Biotechnology and Value-Added Traits in Food Crops: Relevance for Developing Countries and Economic Analysis." PhD Dissertation, University of Bonn, Bonn.

Houssou, N.S.I. (2004). "Debt Position of Developing Countries and New Initiatives for Debt Reduction: A Panel Data Fixed Effects Estimation of the Impacts of the HIPC Initiatives." MSc Thesis, University of Hohenheim, Stuttgart.

For **publications by an organization**, without specifically mentioned authors, the name of the organization, year, publication title, and city have to be given:

ACC/SCN (2004). *Fifth Report on the World Nutrition Situation*. United Nations, Administrative Committee on Coordination/Sub-Committee on Nutrition, Geneva.

Online publications can be quoted, whereby the format depends on the type of publication. Whenever possible, the authors' names, and/or organizations should be mentioned.

FAO (2005). *FAOSTAT Online Database*. Food and Agriculture Organization of the United Nations, Available online: <http://faostat.fao.org/>.

Shiva, V. and A.H. Jafri (2003). *Failure of the GMOs in India*. Available online: <http://www.mindfully.org/GE/2003/India-GMO-Failure-Shiva31may03.htm>.

USGC (2002). *The Value-Enhanced Grains Quality Report*. United States Grains Council, Available online: <http://www.vegrains.org>.

Articles from **online journals** are quoted in a similar way as other journal articles:

Zilberman, D., H. Ameden, G. Graff, and M. Qaim (2004). "Agricultural Biotechnology: Productivity, Biodiversity, and Intellectual Property Rights." *Journal of Agricultural & Food Industrial Organization* 2(2), available online: <http://www.bepress.com/jafio/vol2/iss2/art3>.

8. Writing the abstract

An abstract is a self-contained piece of writing which says, in a very brief way, the same thing as the paper itself. The length of the abstract depends on the type of paper. For a thesis, it can be one page, but for journal articles or research proposals often much shorter abstracts are required (often only 100 words). If no specific guidelines are given, for a research paper of 20-30 pages, an abstract of 200 words is a good rule of thumb. The abstract should mention the focus of the paper, the methodology used, the type of data, the main results, and the implications. No citations are used in the abstract, and abbreviations and acronyms, unless clear to everybody, should be avoided. The abstract will almost certainly be read by more people than the full text, and those who read the full text may do so because the abstract catches their attention, so it is worth taking great care with it. Looking at the abstracts of articles published in good journals will help you in writing your own abstract effectively.

In addition to an abstract (or sometimes instead) a summary may have to be prepared. A summary is somewhat longer than an abstract (2-5 pages, depending on the length of the paper), so that some more details can be included. Apart from this difference, the guidelines are the same as for abstracts.

9. Preparing an appendix

Not every paper needs an appendix, so only prepare one if appropriate. The appendix contains information which is not necessarily relevant to understand the text for the normal reader, but which might be instructive for more interested or more critical readers. Appendix information may include algebraic details of theoretical models, tables which are too big and too detailed to fit into the main text, certain statistical tests, questionnaires used for surveys etc. The appendix information should be numbered unambiguously, so that easy reference can be made in the text (e.g., appendix 1, appendix 2,... or table A1, table A2...). All information included in the appendix should be referenced somewhere in the main text; otherwise, readers will ignore these details. For the appendix, the same format and style as for the rest of the paper should be used.

10. Checking your paper

Check your whole paper again and again while writing individual sections and after finishing the draft version. Every time you read your work, you will probably find additional small mistakes and/or inconsistencies in contents and style. Therefore, repeat the process until the number of mistakes found is approaching zero. You are also responsible for the correctness of the language and grammar. If you cannot write free of mistakes in the English language, then get your paper edited by somebody who is more competent before submitting it. In such cases, ask the person to highlight the mistakes, so that you can learn from this.

The following is a small checklist, which might help you in finalizing your paper:

- Checking should not only be done on-screen, but also in printed form. This gives you a better picture of how the paper will later be presented to the reader.
- Start with examining the overall text and checking its consistency: look at the structure, the section headings, and ensure that the order is logical and that no essential parts are missing. Do the section headings make sense in the overall context?
- Delete everything that is not necessary for the text (e.g., superfluous words and sentences, irrelevant ideas and details).
- Read the text aloud and make sure that the argumentation is strong, phrased neatly and concisely in well-connected sentences and paragraphs.
- Watch spelling, grammar, and syntax. Own typing errors are often not discovered. It is therefore useful to use the automatic spelling check inbuilt in word processing software.
- Remove undefined, vague statements.
- Check punctuation marks carefully (hyphens, full stops, parentheses, symbols etc.).
- The main message of your paper should be an integral part of the read-through. Does the point become clear?
- It is always a good idea to show your paper to one or two other persons from the same discipline, and ask them to read it with a very critical eye. Since you have been working on your paper for quite a while, you might have lost the distance to judge whether outside readers can follow your argumentation.

Once you believe that you have finished the paper, it is useful to wait a couple of days and then read it again. Therefore, you should always calculate sufficient time between finishing the first draft and the actual date of submission. On the other hand, if you really believe that you are done, then do not waste additional time: go ahead and submit your paper!