University of Bayreuth

Faculty of Law, Business & Economics

Chair of Institutional Economics

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Bachelor Thesis

to obtain the academic degree

„Bachelor of Science"

in the summer semester 2021

LaTeX-Template for academic papers

—

a very long

sample subtitle

Submitted by: Issue date: XX.XX.20XX

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Economics, 6th Semester

Matriculation number: 1234567

Abstract

Ein deutsches Abstract wird benötigt, wenn die Arbeit in einer Fremdsprache verfasst wurde: „Zudem ist eine deutschsprachige Zusammenfassung anzufügen, wenn die Bachelorarbeit in einer Fremdsprache abgefasst wurde." (PO Economics BSc.) Dies kann jedoch von Studiengang zu Studiengang sowie Art der Arbeit unterschiedlich sein, deshalb am besten nochmal in der entsprechenden PO nachschauen!

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ECB   European Central Bank

EFSF   Europäische Finanzstabilisierungsfazilität

1 Introduction

At first glance, LaTeX can be a challenge: lots of commands, unfamiliar ways of working and a lot of Googling.

But the effort is worth it: once everything is set up, you can concentrate fully on your seminar paper, term paper, bachelor's, master's or doctoral thesis and most problems are usually solved with a quick search. Inserting images, formulas or creating tables is also usually done quickly!

It is precisely for these reasons that LaTeX has become the dominant method for writing scientific papers and why it is important to learn how to use it as early as possible in a scientific career.

This document tries to make it easier to get started with LaTeX: In addition to the already set recommendations for page formatting, there are several code examples for all kinds of questions that might come up during the writing of a paper:

- How do I format text? (2.1)

- How do I create lists? (2.2)

- How do I quote correctly? (2.3)

- How do I insert mathematical formulas? (2.4)

- How do I insert images? (2.5)

- How do I create tables? (2.6)

Before you delve deeper into LaTeX, however, you should first get the basics right. Fortunately, there are lots of great tutorials on the internet to help you get started:

- Learn LaTeX in 30 minutes

- LaTeX-Basics in German (YouTube)

- LaTeX for scientific papers (German)

Before that, you should start by choosing an editor that fits you. Overleaf and TexMaker are recommended but there are many great alternatives out there.

Further information (e.g. detailed formal recommendations) on scientific papers at the Chair of Economics 5 can be found here.

Let's go!

2 Examples of LaTeX formatting

2.1 Simple text examples

The following examples are good for reviewing the basics of LaTeX. To understand the functionality well, it is worth looking at the examples in the code.

Line breaks & text alignment
A simple line break is created with \\:
There is a line break
here. A new paragraph is created with an empty line

between two parts of text.

To align text to the left, the `flushleft`-environment can be used.

<div align="right">To align text to the right, the <code>flushright</code>-environment can be used.</div>

<div align="center">To centre text, the <code>center</code>-environment can be used.</div>

By default, text in LaTeX is justified.

Text formatting
With the command `\textbf{Text}` **Text** can be displayed in bold.
With the command `\textit{Text}` *Text* can be displayed in italic.
With the command `\underline{Text}` you can underline <u>Text</u>.
With the command `\sout{Text}` you can strike through ~~Text~~.

Special characters
In LaTeX some punctuation marks such as & have a code function, so they need special commands to be displayed correctly.
A good overview of the use of special characters and Greek letters can be found here.

Colors
With the command `\textcolor{Green}{Text}` you can display green Text.

2.2 Lists

Listings are created in LaTeX with the `itemize` environment, enumerations with the `enumerate` environment. In addition, any number of nestings are possible by starting further `itemize/enumerate` environments as `item` in an existing list.

- First Point

- Lorem ipsum dolor sit amet consectetur adipiscing, elit erat convallis proin feugiat primis, etiam curae suscipit aliquet vulputate.
  - Third Point
  - Fourth Point
    * Fifth Point

1. First Point

2. Lorem ipsum dolor sit amet consectetur adipiscing, elit erat convallis proin feugiat primis, etiam curae suscipit aliquet vulputate.
   a) Third Point
   b) Fourth Point
      i. Fifth Point

2.3 Citations

For citing, BibLaTeX is recommended, which is also set by default in this template. In order for LaTeX to know the literature cited, one must first create a `.bib` file containing the information on the literature used. The best way to create this file is to use the automatic export function of literature management programmes like Zotero (best with installed Better BibTeX for Zotero), Citavi (a good guide from the TU-Berlin can be found here) or JabRef.

If you want to get to know either Zotero or Citavi, the Bayreuth University Library regularly offers training courses.

In the created `.bib` file, each entry has a so-called **Key**, which is used in the code to reference the literature. To cite with footnotes, **as is common at the chair**, the command `\footcite[cf.][p. X]{Key}` is used; for a text-integrated citation `\cite[p. X]{Key}` is used:

This is an example sentence.[1]

This is an example sentence.[2]

„[. . .] This is a direct quote.“[3]

This is an example sentence. (Cf. Löschel, Sturm, and Vogt 2013, p. 1).

„[. . .] This is a direct quote.“ (Margolis 1981, p. 1).

For longer quotes where the text needs to be indented and the line spacing adjusted, the `quotation` environment can be used:

> „This is a very very very very very very very very very very very very very very very very very very very very very very very very very very very very very very very long example sentence.“

2.3.1 Footnotes

The command `\footnote{This is a footnote.}` creates a footnote.[4]

2.4 Mathematical expressions

Formulas can either be integrated with the dollar sign in the running text ($E_0 = mc^2$) or indented in the `align` (or another mathematical) environment:

$$u(x_k) = e^\epsilon \prod_{k=1}^{m} x_k^{\alpha_k} \tag{1}$$

Some more examples, borrowed from the Chair of Economics 6:

$$DEM_{it} = \alpha DEM_{i,t-1} + \gamma \log(GDP_{i,t-1}) + \mathbf{x}'_{i,t-1}\boldsymbol{\beta} + \mu_t + \delta_i + u_{i,t}. \tag{2}$$

$$
\begin{aligned}
Y &= F(K, L) \tag{3} \\
\Rightarrow dY &= F_K dK + F_L dL. \tag{4}
\end{aligned}
$$

More information on mathematical expressions in LATEX can be found here.

---

[1] Cf. Löschel, Sturm, and Vogt 2013, p. 1.

[2] Cf. p. 21.

[3] Margolis 1981, p. 1.

[4] This is a footnote.

2.5 Pictures

Images can be included in the `figure` environment, with the command
`\includegraphics[width=Xcm]{imagepath.png}` including the image,
`\caption{Caption}` creating a caption and `\nocite{Key}` inserting the Imagesource in
the References. With the commands `\label{Reference}` and
`\ref{Reference}` Pictures can be referenced in the text (Cf. Fig. 1).
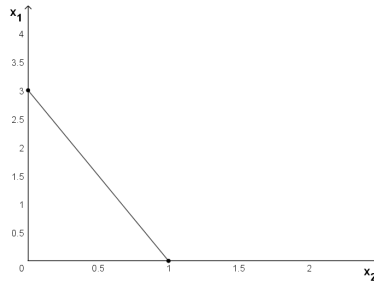
Figure 1: Substitutable goods
Source: Own Illustration

2.5.1 Inserting full-page images

To display rotated images, the image must be included in a `sidewaysfigure` environment.
(Cf. Fig. 2 in the Appendix).

2.6 Tables

As with images, the commands `\label{table reference}` and `\ref{table reference}`
can be used for referencing in the text and `\caption{Table caption}` for creating a table
caption.
The table itself, created with the `tabular` environment, together with the other commands
like `\caption{}`, is in a `table` environment that positions all the parts correctly (Cf. Table
1).

A	B	C
D	E	F

Table 1: Table caption

Tables can be a challenge, especially at the beginning. Fortunately, there are many great
tutorials on the internet that make it easier to get started (the tutorials from heise and
Overleaf are particularly recommended).

A great tool to create LaTeX-tables hassle-free is Tables Generator.

3 Conclusion and Outlook

3.1 Document structure and information

In order to set the correct information in the document from the title page to the affidavit, the information in the main file `main.tex` must be adjusted. The corresponding section is marked with

```
%%%%%%% Start/End document information %%%%%%%
```

. To do this, simply replace the examples with the appropriate information, and the template will do the rest!

In the case of **error messages**, the first thing to do is not to panic! Most of the time, you just forgot a curly bracket somewhere or wrote a command wrong. If you still get errors everywhere, it is helpful to enter the error into any search engine, and the problem will be usually solved quickly.

For a better overview, this template works with several files, which are all merged in `Outline.tex`. A new `.tex` file can be inserted using the command `\input{NewFile.tex}`.

3.2 Character count

To **count characters** in LaTeX there are different possibilities depending on the editor. There is a built-in function in Overleaf for this; other editors may also have a similar solution already included in the program. If this is not possible in your editor, you may have to simply copy the text from the pdf into a Word-Document and do a word-count there.

Last updated: 02.07.2021

References

Löschel, Andreas, Bodo Sturm, and Carla Vogt. 2013. "The demand for climate protection—Empirical evidence from Germany." *Economics Letters* 118 (3): 415–418.

Margolis, Howard. 1981. "A New Model of Rational Choice." *Ethics* 91 (2): 265–279.

Appendix

Tables/graphics that are too large or more detailed explanations can be inserted here. On the next pages is the full-page image from 2.5, one version with a caption on the side and another with a caption on the bottom.
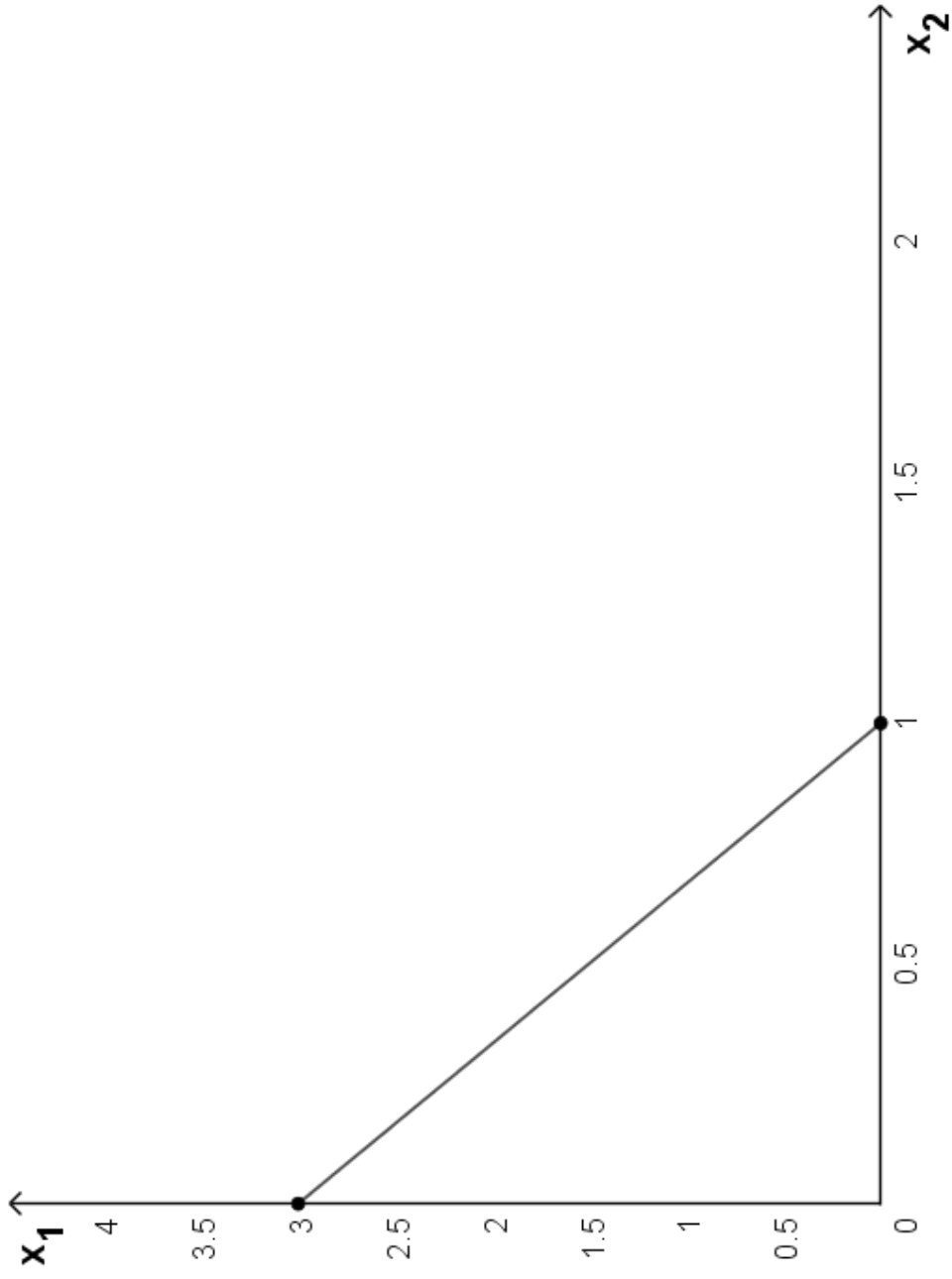
x_1

4

3.5

3

2.5

2

1.5

1

0.5

0

0.5   1   1.5   2 x_2

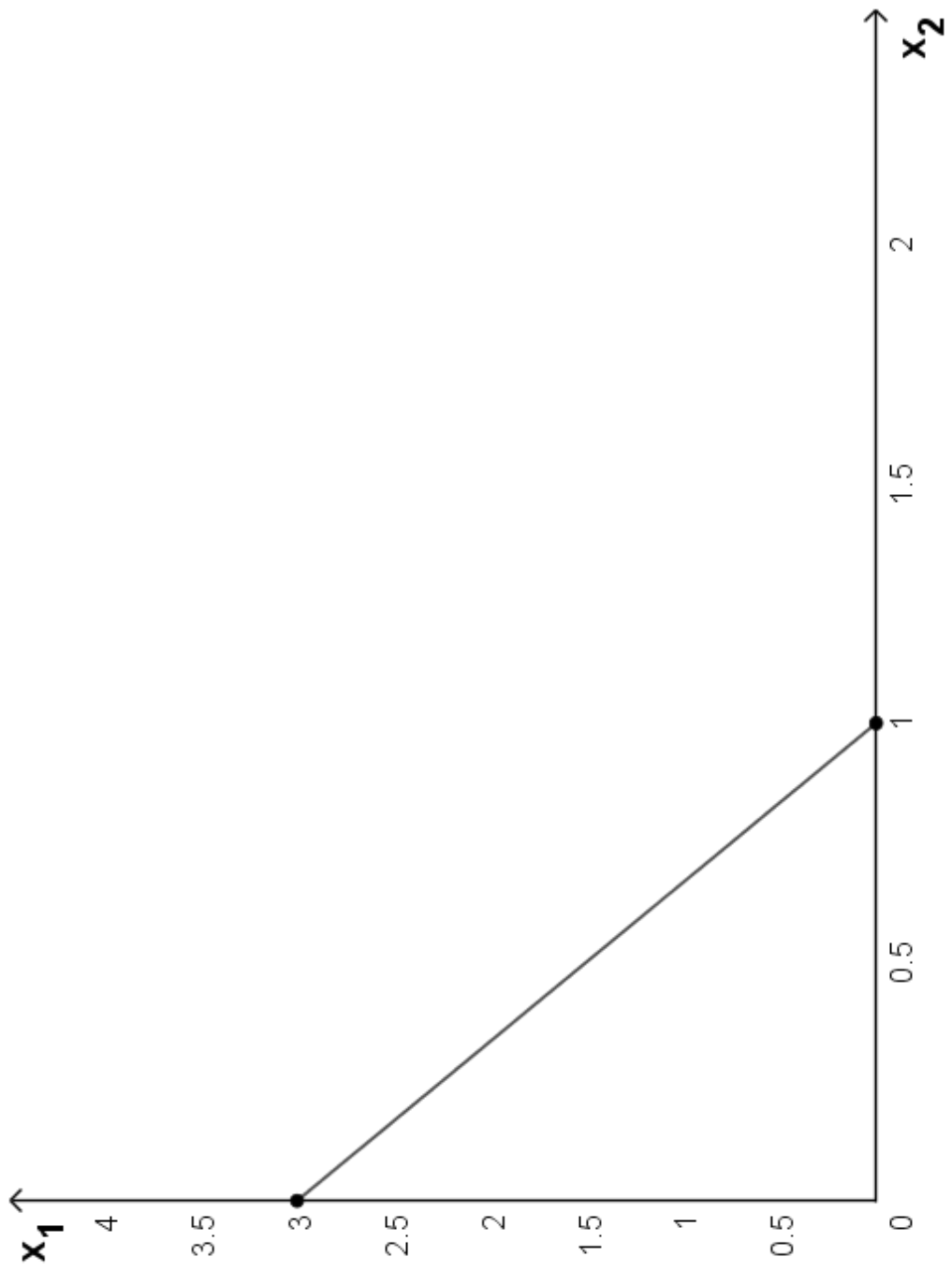**Figure 2: Substitutable goods**
Source: Own Illustration

Figure 3: Substitutable goods
Source: Own Illustration

Affidavit

I hereby attest that I have written my thesis

„LATEX-Template for academic papers"

independently and without the use of other than the stated aids. All passages that have been taken verbatim or in spirit from published or unpublished writings are marked as such.

The thesis has not been submitted in the same or a similar form to any other examining body.

Bayreuth, 2. July 2021

Max Mustermann