

L^AT_EX for Economics and Business Administration (Part II)

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Previously

- Pros and cons of L^AT_EX
- Why bother with learning L^AT_EX
 - for consistent/structured lay-out
 - better automation of workflow
- Compiling, referencing, formula's, text control

This session we look at

- Packages (controlling the preamble)
- Figures (how to insert them?)
- Tables (inserting plain tables)
- Automatizing tables (complex tables)
- Better looking references
- Making slides

Note: we will only touch upon these subjects

The use of packages

- Typically, packages are used to change appearance
- To ensure no errors, usually opt for the full installation or have access to internet
- There are lots of them, see [CTAN](#)
- Often used packages
 - amsmath, graphicx, subfig, marvosym, microtype, booktabs, lipsum, pdfscape, fullpage, natbib
- format:

```
1 \usepackage[colorlinks=true,citecolor=magenta,  
2 urlcolor=magenta]{hyperref}
```

The use of classes

- Typically one uses the `article` class
- However, there is as well a `book`, `minimal`, `report`, `beamer` class etcetera
- Specific user written classes are `memoir` and `elsarticle` classes
- Classes come with options such as

```
1 \documentclass[12pt, a4paper]{article}
```

General structure

```
1 \documentclass[twocolumn, a4paper]{article}
2 % Preamble: how should it look like
3 \usepackage{multicol, lipsum}
4 \usepackage[english, german]{babel}
5 \begin{document}
6     % Body: the real contents
7     \lipsum
8 \end{document}
9
```

natbib & biblatex

Default format is BibTeX—customizable (however limited).

Default is good (except: use natbib!)

If you want to customize quite a lot: biblatex package!

```
1 \usepackage[style= authoryear-icomp,  
2 backend=bibtex,  
3 natbib=true,  
4 firstinits=true,  
5 backref=true,  
6 maxnames=2,  
7 maxbibnames=10]  
8 {biblatex}  
9 \bibliography{mybib.bib}  
10  
11 \printbibliography
```

Figures

Figures/graphs and tables in a floating environment

```
1 \begin{figure}[htbp!]{  
2     \center  
3     \includegraphics{ligatures_latex}  
4     \caption{A figures about ligatures}  
5     \label{fig:ligatures}  
6 \end{figure}
```

Figures can be .pdf, .jpg, .png and a whole lot of other types (but not bitmaps!)

Tables

```
1 \begin{table}[t!]  
2     \caption{This is the caption}  
3     \begin{tabular}{lcr}  
4         \hline  
5         first & row & data \\  
6         second & row & data \\  
7         \hline  
8     \end{tabular}  
9     \label{tab:example}  
10 \end{table}
```

Referencing

Internal references are a breeze

```
1 \label{}           % Label something
2 \ref{}             % Refer to that
3 \footnote{}        % Add footnote
4 \thanks{}           % For in title
5
```

dcolumn and booktabs package

```
1 \usepackage{booktabs, dcolumn} % in preamble
2 \newcolumntype{d}{D{.}{.}{2}} % in preamble
3 \begin{table}[t!]
4     \caption{This is the caption}
5     \begin{tabular}{l d d}
6         \toprule
7         Student & Grade 1 & Grade 2 \\
8         \midrule
9         Mike & 7.8 & 9 \\
10        Andrea & 6 & 8.2 \\
11        \bottomrule
12    \end{tabular}
13    \label{tab:example2}
14 \end{table}
```

Introduction

Recap
Agenda

Packages,
packages,
and
packages
references

Figures

Tables

Referencing
Automizing tables

Slides

Beamer class

Conclusion

Some R code

```
library(texreg)
```

```
control <- c(4.17, 5.58, 5.18, 6.11, 4.50, 4.61, 5.17, 4.53, 5.33, 5.14)  
treated <- c(4.81, 4.17, 4.41, 3.59, 5.87, 3.83, 6.03, 4.89, 4.32, 4.69)  
group <- gl(2, 10, 20, labels = c("Control", "Treated"))  
weight <- c(control, treated)  
m1 <- lm(weight ~ group - 1)  
m2 <- lm(weight ~ group)
```

```
texreg(list(m1, m2), dcolumn = TRUE, booktabs = TRUE, file = "Table.tex",  
use.packages = FALSE, label = "tab:3", caption = "Two linear models.",  
float.pos = "hb!")
```

Statistical output

Now

```
1 \input{Table.tex}
```

produces:

	Model 1	Model 2
groupControl	5.03*** (0.22)	
groupTreated	4.66*** (0.22)	-0.37 (0.31)
(Intercept)		5.03*** (0.22)
R ²	0.98	0.07
Adj. R ²	0.98	0.02
Num. obs.	20	20
RMSE	0.70	0.70
*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$		

Table: Two linear models.

Slides

Slides are typically made with the beamer class

```
1 \documentclass{beamer}
2 \title{Another lecture}
3 \author{By a wisecrack lecturer}
4
5 \begin{document}
6   \frame{\titlepage}
7
8   \begin{frame}{Introduction}
9     %           Typically a quote from a long
10    %           dead philosopher that should
11    %           make the lecturer look smart
12    %           but usually does not.
13   \end{frame}
14 \end{document}
```

Beamer style

You can change the beamer style by:

```
1 \usetheme{Hannover}
2 \usecolortheme{dove}
3
4 % to remove those navigation symbols
5 \beamertemplatenavigationsymbolempty
6
```

(<https://www.hartwork.org/beamer-theme-matrix/> gives all possible combinations

In conclusion

- L^AT_EX is a very powerful structured language especially suitable for
 - large complex documents;
 - documents with many formula's.
- Big advantage: you really need to think
- Not for every one; steep learning curve, but
- large community (google it)
- Markup language (especially, Markdown) becomes more and more wide-spread: L^AT_EX is a good start