Paper Title
Paper Subtitle*

First Author Second Author

date

[click for latest version]

Abstract

This template provides a format for academic papers. It includes example sections, subsections, equations, figures, appendices, and citations. Aditionally, the template provides debugging tools used to collaborate with coauthors.

JEL: JEL Code 1; JEL Code 2; JEL Code 3; JEL Code 4.
Keywords: keyword1; keyword2; keyword3.

*Author 1 (corresponding author): Position, Institution; name@mail.com. Author 2: Position, Insitution.

Anne Fournier was instrumental to make this template readable. The views expressed herein are those of the authors and do not necessarily reflect the views of Employer. All errors are our own.

Note: The table of contents automatically disappears if you add `final` to the `documentclass`.

Contents

Note: The list of todos automatically disappears if you add `final` to the `documentclass`.

Todo list

1 Introduction

The 'Paper template' folder contains this document's building blocks for an academic paper. It includes example preambles/formatting/commands and example sections, as well as a sample bibliography and appendix. This document shows how the constituent parts—section .tex files, bib files, and preamble files—can be combined into a paper format.

Specifically, the folder contains the following files:

1. `preamble.tex` loads packages and defines settings.
2. `library.bib`, which contains citations.
3. `commands.tex` defines new commands.
4. `paper.tex`, and associated files that LaTeXcreates when compiling the document: an aux file, a log file, an out file, a toc file, a GZ file, and finally, the pdf output we want. This file puts together the different components of the document—compile it to get a PDF of the full paper. Also, refer to this file for settings choices like citation format (currently: Chicago author-date).
5. Folders for figures and sections.

The first paragraph after invoking a `\section{}` command is not indented, but subsequent paragraphs are.

1.1 Example subsection

This is an example of a subsection. The purpose of this subsection is to use the `commands.tex` file, equations, and citations; to do so, we will use a basic math example. Consider the definition of almost sure convergence (Durrett, 2019): a sequence $\{X_n\}$ converges almost surely to X, written $X_n \xrightarrow{\text{a.s.}} X$, if $\mathbb{P}(\omega : \lim_{n\to\infty} X_n = X) = 1$.

One way to write this is:

```
$X_n \overset{\text{a.s.}}{\longrightarrow} X$
if
$\mathbb{P}(\omega : \lim_{n \to \infty} X_n = X) = 1$
```

In the `commands.tex` file, however, we define new commands:

```
\renewcommand{\P}{\mathbb{P}}
\newcommand{\as}{\overset{\text{a.s.}}{\longrightarrow}}
```

and this simplifies the syntax for the definition of almost sure convergence:

```
$X_n \as X$  if $\P(\omega : (\lim_{n \to \infty} X_n = X) = 1$
```

Use 'paragraph' to highlight the start of a new paragraph without defining a new section.

Example highlighted paragraph. Paragraphs come in handy when defining multiple variables and highlighting data sources.[1] By construction, highlighted paragraphs are not indented.[2]

2 Debugging/Editing Tools

The preamble contains a few editing tools. Here are some of the most important ones. If you want to see the others, check out the preamble. Many of these tools disappear automatically when you add `final` to the `\documentclass` (i.e., `\documentclass[final]{article}`).

2.1 To-do notes

Perhaps the command I use the most comes from the `\todo` command, which I slightly rewrote. I use it to know what else to work on next. For example, I want to remind myself to improve the explanation of the to-do command. What I would do is leave a note like the following:

@All – Explain how to change colors, how to create additional authors, etc. ↑

Notice that a hyperlink is created on the "Todo list", and you can go to this list using the up arrow. It is automatically updated once you compile. To create this note, write:

```
\forAll{caption}{summary}
```

My coauthors also like to use it to leave notes and assign tasks to each other. I defined a couple of new commands (`\forA` and `\forB` in the preamble). Imagine we want to make a note so that A knows what to revise:

@A – Caption ↑

Similarly, if instead it was B the one who needed to check something out:

@B – Check this out. ↑

[1] And footnotes come in handy when providing more detail.

[2] A second footnote!

2.2 The <XX> command

Another command I typically use is a placeholder `\xx` as defined in the preamble. Whenever invoked, it transforms into <XX>. This command is useful when writing paragraphs that require much detail. It makes it easy to come back and remove when editing. By construction, `\xx` leaves no space after itself. You can write `\xx~` if you want space.

2.3 The Backreference Command

The `\backreference{}` command helps identify where a particular figure, table, or appendix is being cited. For example, citing Table 1 and Appendix A here would mark both of these as cited in this page. To use this command:

1. Define a label for the figure/table below your caption, or below the section definition with the `\label{}` command (e.g., `\label{fig:sample_fig}`).
2. Invoke the `\backreference{}` command with the same label (e.g., using the same label as above, `\backreference{fig:sample_fig}`). You can invoke the command anywhere, but I recommend placing it in the notes section of a figure or a table, or below the section defnition.

Note that the command requires you to manually add the correct `\label{}`. This backreference can be invoked anywhere. To use it, write `\backreference{label}`.

3 Mathematical Tools

We also define and demonstrate how we use the theorem, lemma, definition, and proof environments. Each of them has its own numbering, but that can be redefined (if needed) in the preamble definitions.

Theorem 1 (Fermat's Last Theorem)**.** *For integer $n > 2$, no three positive integers a, b, c exist that satisfy $a^n + b^n = c^n$.*

Proof. The proof is left to the reader. □

Lemma 1 (Fatou's Lemma)**.** *Given a measure space (X, Σ, μ), let $\{f_n\}$ be a sequence of functions such that $f_n : X \to [0, \infty]$ is measurable for each n. Then,*

$$\int_X \left(\liminf_{n\to\infty} f_n \right) d\mu \leq \liminf_{n\to\infty} \int_X f_n \, d\mu.$$

Definition 1 (Topology)**.** *A topology on a set X is a collection of subsets τ of X satisfying the following three properties:*

1. $\varnothing \in \tau$ *and* $X \in \tau$.
2. *Closed under finite intersections: If* $U_i \in \tau$, $i = 1, \ldots, n$, *then* $U_1 \cap \cdots \cap U_n \in \tau$.
3. *Closed under unions: If* $\{U_i\}_{i \in I}$ *is a collection of elements of* τ, *then* $\bigcup_{i \in I} U_i \in \tau$.

References

Durrett, R. (2019). *Probability: Theory and Examples*. Cambridge: Cambridge University Press.

Tables

Table 1 is an example of a LaTeXtable using the settings in this template. Note the following:

1. The column width is set using `\begin{tabular}{L{3cm}C{1.1cm} ... }` where one can use `L`, `C`, or `R` followed by the length `{XXcm}` using any length measure (`{cm}`, `{in}`, `{ex}`, etc.).
2. Alternatively, columns can be defined in the standard way (using `l`, `c`, or `r`).
3. Column (3) is not shown, but exists. This is done by using `H` in the column width as shown in the code.
4. The max width of the table is set by using `\begin{adjustbox}{width=\textwidth}`.
5. `\caption{}`, which sets the name of the figure in the paper should always precede `\label{}`.

Table 1: Example Table 1

	2010 (1)	2011 (2)	2013 (4)	2014 (5)	2015 (6)	2016 (7)	2017 (8)	2018 (9)	2019 (10)	2020 (11)
Panel A. Data Subset 1										
Outcome X	000	000	000	000	000	000	000	000	000	000
Outcome Y	000	000	000	000	000	000	000	000	000	000
Outcome Z	000	000	000	000	000	000	000	000	000	000
Panel B. Data Subset 2										
Outcome X	000	000	000	000	000	000	000	000	000	000
Outcome Y	000	000	000	000	000	000	000	000	000	000
Outcome Z	000	000	000	000	000	000	000	000	000	000

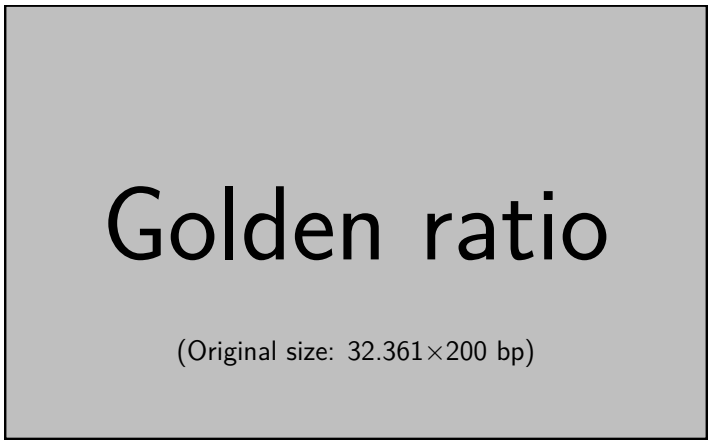
Notes: This is an example of a LaTeX table.
Backreferenced: `tab:sample_table1` [3,6]

Figures

We will look at two types of figure examples: first, where the figure consists of a single image/graph/chart (as in Figure 1), and second where the figure consists of multiple subfigures (Figure 2). Some notes:

1. `\caption{}`, which sets the name of the figure in the paper should always precede `\label{}`.
2. `\includegraphics{}` will look for the figures in the `\graphicspath{}` in the preamble.

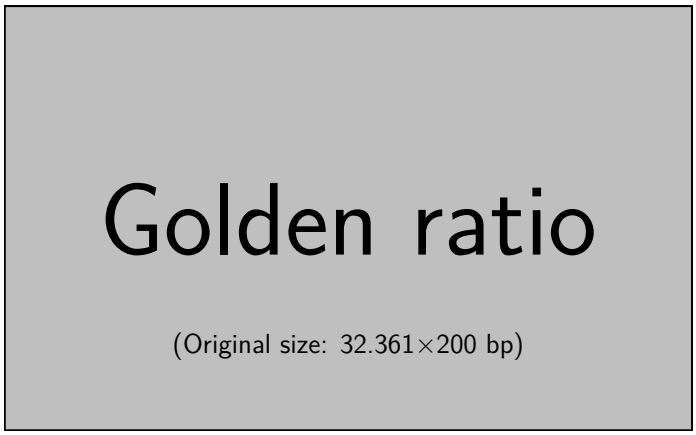
Figure 1: An Example Figure



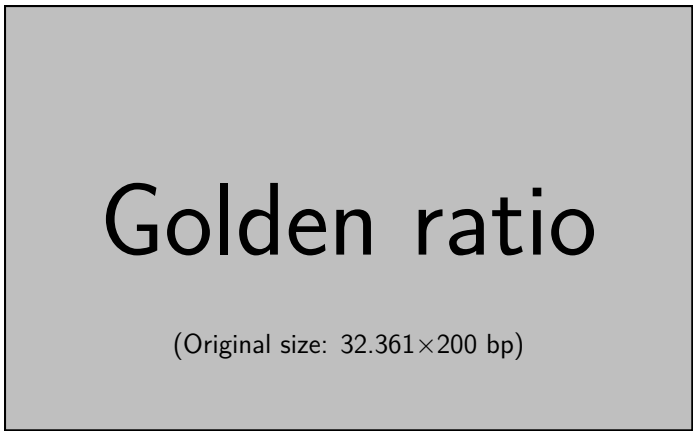
Notes: This is an example of a figure added to a LaTeX document.
Backreferenced: `fig:sample_fig` [7]

Figure 2: An Example Figure with Subfigures

(a) Subfigure A



(b) Subfigure B



Notes: This is an example of a LaTeX figure. Panel (a) displays a large letter A. Panel (b) displays a large letter B.
Backreferenced: `fig:sample_subfig` [7]

Paper Title
Paper Subtitle

Author 1 and Author 2

Appendix - For Online Publication

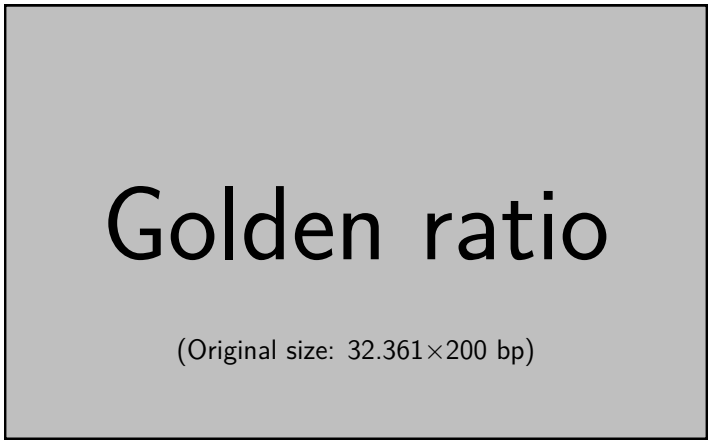
Contents

Appendix A Exhibits

Backreferenced: `sec_app:ex` [3]

Pages in the Appendix are also labeled with an OA- prefix. Similarly, exhibits in the Appendix are labeled with an OA- prefix. When cited, this prefix is automatically added to the name (e.g., Figure OA-1).

Figure OA-1: An Example Figure in the Appendix



Notes: This is an example of a figure added to a LaTeX document.
Backreferenced: `fig:sample_fig_app` [OA-2]