Helping You Write Academic Papers in R using Texevier

Nico Katzke[a], John Smith[a,b], John Doe[a,b]

[a]*Prescient Securities, Cape Town, South Africa*

[b]*Some other Institution, Cape Town, South Africa*

Abstract

Abstract to be written here. The abstract should not be too long and should provide the reader with a good understanding what you are writing about. Academic papers are not like novels where you keep the reader in suspense. To be effective in getting others to read your paper, be as open and concise about your findings here as possible. Ideally, upon reading your abstract, the reader should feel he / she must read your paper in entirety.

Keywords: Multivariate GARCH, Kalman Filter, Copula

JEL classification L250, L100

1. Introduction

References are to be made as follows: Fama and French (1997, 33) and Grinold and Kahn (2000) Such authors could also be referenced in brackets (Grinold and Kahn 2000) and together (Fama and French 1997 & Grinold and Kahn (2000)). Source the reference code from scholar.google.com by clicking on "cite" below article name. Then select BibTeX at the bottom of the Cite window, and proceed to copy and paste this code into your ref.bib file, located in the directory's Tex folder. Open this file in Rstudio for ease of management, else open it in your preferred Tex environment. Add and manage your article details here for simplicity - once saved, it will self-adjust in your paper.

> I suggest renaming the top line after @article, as done in the template ref.bib file, to something more intuitive for you to remember. Do not change the rest of the code. Also, be mindful of the fact that bib references from google scholar may at times be incorrect. Reference Latex forums for correct bibtex notation.

---

[*]Corresponding author: Nico Katzke

Email addresses: `nfkatzke@gmail.com` (Nico Katzke), `John Smith@gmail.com` (John Smith), `JohnSmith@gmail.com` (John Doe)

To reference a section, you have to set a label using "\label" in R, and then reference it in-text as e.g.: section 2.

Writing in Rmarkdown is surprizingly easy - see this website cheatsheet for a summary on writing Rmd writing tips.

2. Data

Discussion of data should be thorough with a table of statistics and ideally a figure.

In your tempalte folder, you will find a Data and a Code folder. In order to keep your data files neat, store all of them in your Data folder. Also, I strongly suggest keeping this Rmd file for writing and executing commands, not writing out long pieces of data-wrangling. In the example below, I simply create a ggplot template for scatter plot consistency. I suggest keeping all your data in a data folder.
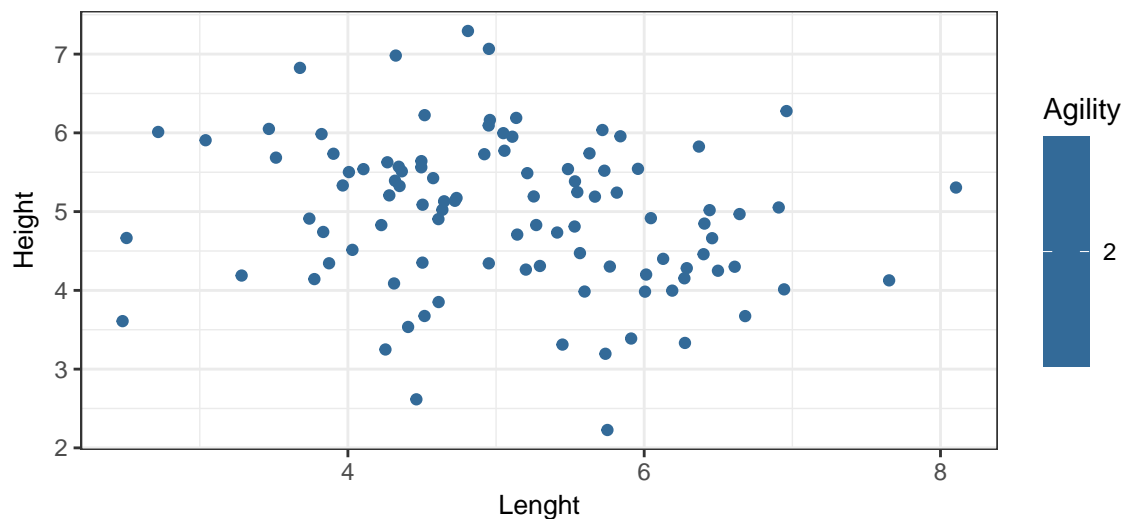

Figure 2.1: Caption Here

To reference the plot above, add a "\label" after the caption in the chunk heading, as done above. Then reference the plot as such: As can be seen, figure 2.1 is excellent. The nice thing now is that it correctly numbers all your figures (and sections or tables) and will update if it moves. The links are also dynamic.

I very strongly suggest using ggplot2 (ideally in combination with dplyr) using the ggtheme package to change the themes of your figures.

Also note the information that I have placed above the chunks in the code chunks for the figures. You can edit any of these easily - visit the Rmarkdown webpage for more information.

Here follows another figure from built-in ggplot2 data:

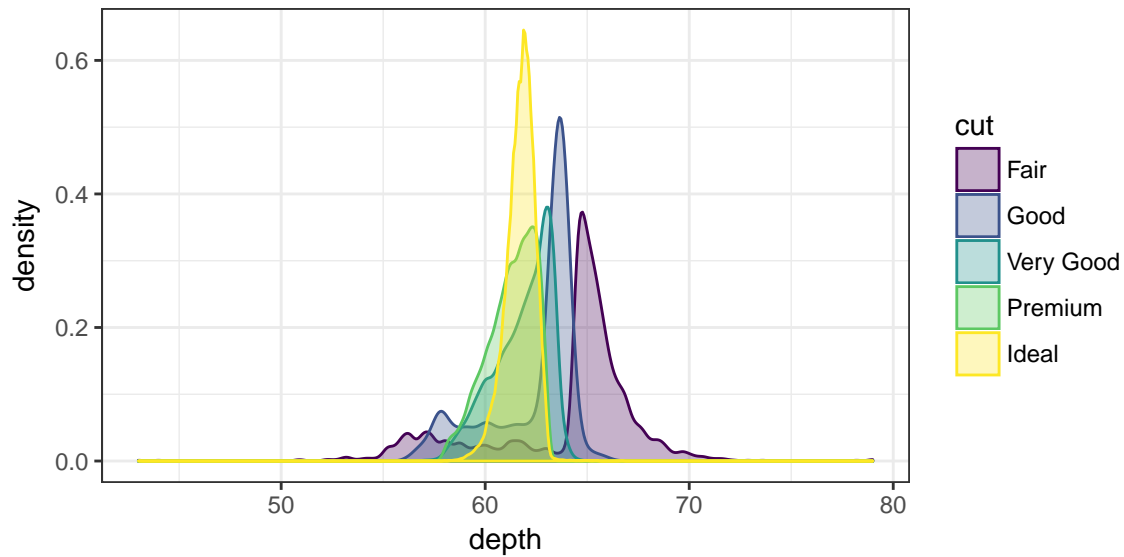Figure 2.2: Diamond Cut Plot

3. Methodology

3.1. Subsection

Ideally do not overuse subsections. It equates to bad writing.[1]

3.2. Math section

Equations should be written as such:

$$\beta = \sum_{i=1}^{\infty} \frac{\alpha^2}{\sigma_{t-1}^2} \tag{3.1}$$
$$\int_{x=1}^{\infty} x_i = 1$$

---

[1]This is an example of a footnote by the way. Something that should also not be overused.

If you would like to see the equations as you type in Rmarkdown, use $ symbols instead (see this for yourself by adjusted the equation):

$$\beta = \sum_{i=1}^{\infty} \frac{\alpha^2}{\sigma_{t-1}^2} \int_{x=1}^{\infty} x_i = 1$$

Note again the reference to equation 3.1. Writing nice math requires practice. Note I used a forward slashes to make a space in the equations. I can also align equations using **&**, and set to numbering only the first line. Now I will have to type "begin equation" which is a native LATEXcommand. Here follows a more complicated equation:

$$
\begin{aligned}
y_t &= c + B(L)y_{t-1} + e_t \qquad\qquad\qquad (3.2)\\
e_t &= H_t^{1/2} z_t; \quad z_t \sim N(0, I_N) \quad \& \quad H_t = D_t R_t D_t\\
D_t^2 &= \sigma_{1,t}, \ldots, \sigma_{N,t}\\
\sigma_{i,t}^2 &= \gamma_i + \kappa_{i,t} v_{i,t-1}^2 + \eta_i \sigma_{i,t-1}^2, \quad \forall i\\
R_{t,i,j} &= diag(Q_{t,i,j}^{-1}).Q_{t,i,j}.diag(Q_{t,i,j}^{-1})\\
Q_{t,i,j} &= (1 - \alpha - \beta)\bar{Q} + \alpha z_t z_t' + \beta Q_{t,i,j}
\end{aligned}
$$

Note that in 3.2 I have aligned the equations by the equal signs. I also want only one tag, and I create spaces using "quads".

See if you can figure out how to do complex math using the two examples provided in 3.1 and 3.2.

4. Results

Tables can be included as follows. Use the *xtable* (or kable) package for tables. Table placement = H implies Latex tries to place the table Here, and not on a new page (there are, however, very many ways to skin this cat. Luckily there are many forums online!).

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
Mazda RX4	21.00	6.00	160.00	110.00	3.90	2.62	16.46	0.00	1.00	4.00	4.00
Mazda RX4 Wag	21.00	6.00	160.00	110.00	3.90	2.88	17.02	0.00	1.00	4.00	4.00
Datsun 710	22.80	4.00	108.00	93.00	3.85	2.32	18.61	1.00	1.00	4.00	1.00
Hornet 4 Drive	21.40	6.00	258.00	110.00	3.08	3.21	19.44	1.00	0.00	3.00	1.00
Hornet Sportabout	18.70	8.00	360.00	175.00	3.15	3.44	17.02	0.00	0.00	3.00	2.00

Table 4.1: Short Table Example

To reference calculations **in text**, *do this:* From table 4.1 we see the average value of mpg is 20.98.

Including tables that span across pages, use the following (note that I add below the table: "continue on the next page"). This is a neat way of splitting your table across a page.

Use the following default settings to build your own possibly long tables. Note that the following will fit on one page if it can, but cleanly spreads over multiple pages:

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
	21.00	6.00	160.00	110.00	3.90	2.62	16.46	0.00	1.00	4.00	4.00
	21.00	6.00	160.00	110.00	3.90	2.88	17.02	0.00	1.00	4.00	4.00
	22.80	4.00	108.00	93.00	3.85	2.32	18.61	1.00	1.00	4.00	1.00
	21.40	6.00	258.00	110.00	3.08	3.21	19.44	1.00	0.00	3.00	1.00
	18.70	8.00	360.00	175.00	3.15	3.44	17.02	0.00	0.00	3.00	2.00
	18.10	6.00	225.00	105.00	2.76	3.46	20.22	1.00	0.00	3.00	1.00
	14.30	8.00	360.00	245.00	3.21	3.57	15.84	0.00	0.00	3.00	4.00
	24.40	4.00	146.70	62.00	3.69	3.19	20.00	1.00	0.00	4.00	2.00
	22.80	4.00	140.80	95.00	3.92	3.15	22.90	1.00	0.00	4.00	2.00
	19.20	6.00	167.60	123.00	3.92	3.44	18.30	1.00	0.00	4.00	4.00
	17.80	6.00	167.60	123.00	3.92	3.44	18.90	1.00	0.00	4.00	4.00
	16.40	8.00	275.80	180.00	3.07	4.07	17.40	0.00	0.00	3.00	3.00
	17.30	8.00	275.80	180.00	3.07	3.73	17.60	0.00	0.00	3.00	3.00
	15.20	8.00	275.80	180.00	3.07	3.78	18.00	0.00	0.00	3.00	3.00
	10.40	8.00	472.00	205.00	2.93	5.25	17.98	0.00	0.00	3.00	4.00
	10.40	8.00	460.00	215.00	3.00	5.42	17.82	0.00	0.00	3.00	4.00
	14.70	8.00	440.00	230.00	3.23	5.34	17.42	0.00	0.00	3.00	4.00
	32.40	4.00	78.70	66.00	4.08	2.20	19.47	1.00	1.00	4.00	1.00
	30.40	4.00	75.70	52.00	4.93	1.61	18.52	1.00	1.00	4.00	2.00
	33.90	4.00	71.10	65.00	4.22	1.83	19.90	1.00	1.00	4.00	1.00
	21.50	4.00	120.10	97.00	3.70	2.46	20.01	1.00	0.00	3.00	1.00

	mpg	cyl	disp	hp	drat	wt	qsec	vs	am	gear	carb
	15.50	8.00	318.00	150.00	2.76	3.52	16.87	0.00	0.00	3.00	2.00
	15.20	8.00	304.00	150.00	3.15	3.44	17.30	0.00	0.00	3.00	2.00
	13.30	8.00	350.00	245.00	3.73	3.84	15.41	0.00	0.00	3.00	4.00
	19.20	8.00	400.00	175.00	3.08	3.85	17.05	0.00	0.00	3.00	2.00
	27.30	4.00	79.00	66.00	4.08	1.94	18.90	1.00	1.00	4.00	1.00
	26.00	4.00	120.30	91.00	4.43	2.14	16.70	0.00	1.00	5.00	2.00
	30.40	4.00	95.10	113.00	3.77	1.51	16.90	1.00	1.00	5.00	2.00
	15.80	8.00	351.00	264.00	4.22	3.17	14.50	0.00	1.00	5.00	4.00
	19.70	6.00	145.00	175.00	3.62	2.77	15.50	0.00	1.00	5.00	6.00
	15.00	8.00	301.00	335.00	3.54	3.57	14.60	0.00	1.00	5.00	8.00
	21.40	4.00	121.00	109.00	4.11	2.78	18.60	1.00	1.00	4.00	2.00

Table 4.2: Long Table Example

4.1. Huxtable

Huxtable is a very nice package for making working with tables between Rmarkdown and Tex easier.

This cost some adjustment to the Tex templates to make it work, but it now works nicely.

See documentation for this package here. A particularly nice addition of this package is for making the printing of regression results a joy (see here). Here follows an example:

Table 4.3: Regression Output

	Reg1	Reg2	Reg3	Reg4
(Intercept)	-2256.361 ***	5763.668 ***	4045.333 ***	-7823.738 ***
	(13.055)	(740.556)	(286.205)	(592.049)
carat	7756.426 ***		7765.141 ***	20742.600 ***
	(14.067)		(14.009)	(567.672)
depth		-29.650 *	-102.165 ***	90.043 ***
		(11.990)	(4.635)	(9.588)
carat:depth				-210.075 ***
				(9.187)
N	53940	53940	53940	53940
R2	0.849	0.000	0.851	0.852

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

From Table [4.3](#) above, we see how to make reporting regressions easy. Making nice tables, though, takes some practice and there are various other packages you can explore as well.

5. Lists

To add lists, simply using the following notation

- This is really simple

    - Just note the spaces here - writing in R you have to sometimes be pedantic about spaces. . .

- Note that Rmarkdown notation removes the pain of defining LaTeX environments!

6. Conclusion

I hope you find this template useful. Remember, stackoverflow is your friend - use it to find answers to questions. Feel free to write me a mail if you have any questions regarding the use of this package. To cite this package, simply type citation("Texevier") in Rstudio to get the citation for Katzke ([2017](#)) (Note that uncited references in your bibtex file will not be included in References).

References

Fama, Eugene F, and Kenneth R French. 1997. "Industry Costs of Equity." *Journal of Financial Economics* 43 (2). Elsevier: 153–93.

Grinold, Richard C, and Ronald N Kahn. 2000. "Active Portfolio Management." McGraw Hill New York, NY.

Katzke, N.F. 2017. *Texevier: Package to Create Elsevier Templates for Rmarkdown.* Stellenbosch, South Africa: Bureau for Economic Research.