

# Thesis title

A thesis submitted for the degree of  
Bachelor of Commerce (Honours)

by

Joe Bloggs

12345678



Department of Econometrics and Business Statistics  
Monash University  
Australia

July 2019

# Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Rmarkdown . . . . .	1
1.2	Data . . . . .	1
1.3	Figures . . . . .	1
1.4	Results from analyses . . . . .	1
1.5	Tables . . . . .	1
<b>2</b>	<b>Exponential Smoothing</b>	<b>3</b>
2.1	Organizing your ideas . . . . .	3
2.2	Citations . . . . .	3
<b>A</b>	<b>Additional stuff</b>	<b>5</b>
	<b>Bibliography</b>	<b>7</b>



# **Chapter 1**

## **Introduction**

Placeholder

### **1.1 Rmarkdown**

### **1.2 Data**

### **1.3 Figures**

### **1.4 Results from analyses**

### **1.5 Tables**



## **Chapter 2**

# **Exponential Smoothing**

### **2.1 Organizing your ideas**

Imagine you are writing for your fellow Honours students. Topics that are well-known to them do not have to be included here. But things that they may not know about should be included. Resist the temptation to discuss everything you've read in the last year.

Do not organize your chapter around the papers you have read with one section per paper. Instead, you should organize your chapters around themes, and within each theme provide a story explaining the development of ideas. It is usually helpful to plan out a table of contents first with major section headings.

When you are discussing results from several papers or books, you will need to adopt a common notation to ensure your chapter makes sense. Do not use different notation for the same thing.

### **2.2 Citations**

All citations should be done using markdown notation as shown below. This way, your bibliography will be compiled automatically and correctly.

Exponential smoothing was originally developed in the late 1950s (Brown, 1959, 1963; Holt, 1957; Winters, 1960). Because of their computational simplicity and interpretability, they became widely used in practice.

Empirical studies by Makridakis and Hibon (1979) and Makridakis et al. (1982) found little difference in forecast accuracy between exponential smoothing and ARIMA models. This made the family of exponential smoothing procedures an attractive proposition (see Chatfield et al., 2001).

The methods were less popular in academic circles until Ord, Koehler, and Snyder (1997) introduced a state space formulation of some of the methods, which was extended in Hyndman et al. (2002) to cover the full range of exponential smoothing methods.

## **Appendix A**

### **Additional stuff**

You might put some computer output here, or maybe additional tables.

Note that line 5 must appear before your first appendix. But other appendices can just start like any other chapter.





# Bibliography

Brown, RG (1959). *Statistical forecasting for inventory control*. McGraw-Hill, New York.

Brown, RG (1963). *Smoothing, forecasting and prediction of discrete time series*. Englewood Cliffs, New Jersey: Prentice Hall.

Chatfield, C, AB Koehler, JK Ord, and RD Snyder (2001). A new look at models for exponential smoothing. *The Statistician* **50**, 147–159.

Holt, CE (1957). *Forecasting trends and seasonals by exponentially weighted averages*. O.N.R. Memorandum 52/1957. Carnegie Institute of Technology.

Hyndman, RJ, AB Koehler, RD Snyder, and S Grose (2002). A state space framework for automatic forecasting using exponential smoothing methods. *International Journal of Forecasting* **18**(3), 439–454.

Makridakis, S, A Anderson, R Carbone, R Fildes, M Hibon, RLJ Newton, E Parzen, and R Winkler (1982). The accuracy of extrapolation (time series) methods: results of a forecasting competition. *Journal of Forecasting* **1**, 111–153.

Makridakis, S and M Hibon (1979). Accuracy of forecasting: an empirical investigation (with discussion). *Journal of Royal Statistical Society (A)* **142**, 97–145.

Ord, JK, AB Koehler, and RD Snyder (1997). Estimation and prediction for a class of dynamic nonlinear statistical models. *Journal of American Statistical Association* **92**, 1621–1629.

Winters, PR (1960). Forecasting sales by exponentially weighted moving averages. *Management Science* **6**, 324–342.