ETF3231/5231 Week 1 - Introduction

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Friday - 3 March 2023 (12:30pm - 2:00pm)

2023

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Introduction

- Actuarial science, econometrics and financial mathematics background (*BCom (Hons)*, graduated in 2021).
- Currently an actuarial analyst at IAG.
- Methods of contact (after hours):
  - Consultation: Wednesdays 5-6pm (Zoom link is on Moodle).
  - Student forums.
  - Email: saoyang.hew@monash.edu
- Extra notes: github.com/saoyanghew/business-forecasting-tutorial-notes

Objectives of this unit

- Run through Chapters 1-3, 5, 7-10 of the fpp3 textbook.
- Introductory course on time series analysis, and how to best present analysis in a business context.
- Basic forecasting skills (ETS, ARIMA and dynamic regression techniques) to give you a flavour of what forecasting is like in a business context.
- The `fable` and `tsibble` packages in R (all included in `fpp3`).
- Basic computing skills - and interfacing with the `tidyverse` group of packages in R for time series analysis.

What this unit will not teach you

- Advanced, theoretical material on time series analysis (ETF3300, ETC3450, ETC5410, ETC5441, ETF5200).
- To be an expert forecaster:
  - A lot of forecasting requires deep business understanding and context (e.g., energy forecasting, trading, etc.).
  - Time series analysis is an ever-growing field with more advanced techniques (e.g., ML) that require years to master.
- Develop deep competency in coding:
  - Packages in `fpp3` are targeted to **users**, not **programmers**.
  - Much more to developing software competency (e.g., managing and using databases require SQL, team works on Python, more complicated implementation of forecasting requires C/C++ to work fast enough).

The ultimate goal of this unit is to be a springboard - show you how you can develop your skills further on your own, and where to find them.

What we assume you know

- That you have gone through the appendix of the textbook
- That you have gone through chapters 1-5, and 8 of learnR.
- Other suggestions:
  - First 4 chapters of ModernDrive
  - Work through RYouWithMe

Tips for success in this unit

- Get up to speed with using R, and RStudio in general (previous slide).
- Learn by doing, and continuous practice:
  - Revise through pre-class preparation
  - Do the tutorial exercises **before** the class
  - If you are confused - compile questions to ask during the class and in the forums
  - You will not learn coding by reading, actively do your assignments/tutorial questions and try to fix/debug your code when they return errors (what do the errors mean? can I Google the error?)
  - For more advanced forecasting methods (e.g. ETS, ARIMA) - learning to actually derive results rather than memorising formulae helps a lot.
  - Explain your results in clear English - knowing how to write ensures success in the exam.
  - Note on generative AI.

Tips for success beyond this unit

- Develop good R skills.
  - Hadley Wickham's R for data science and Advanced R.
  - Roger D. Peng's R programming for data science.
  - If you have time: source code for `fable` to see how forecasting packages are built from the ground up.
- Develop good skills in programming (other languages).
  - Python for Data Analysis.
  - Practical SQL.
- Further your knowledge on time series analysis and statistics.
  - Other chapters of the fpp3 textbook.
  - Rob Hyndman's blog
  - Introduction to Statistical Learning in R by Hastie and Tibshirani.
  - For undergraduate students: Honours at Monash
  - Advanced Algorithmic Trading by Halls-Moore (R and Python).
  - Difficult: Time Series Analysis by James Hamilton.
  - International Journal of Forecasting.

Tutorial 1: LearnR

Please go on to: learnr.numbat.space