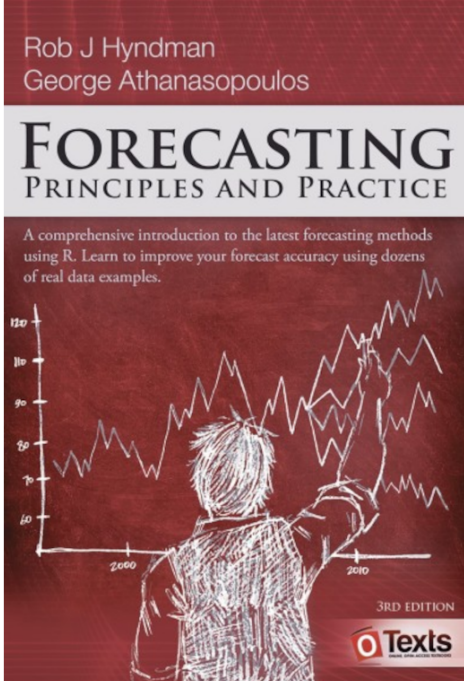
ETC3550/ETC5550
Applied forecasting

Some final thoughts

OTexts.org/fpp3/



Outline

1. Assignment 1
2. Some case studies
3. Exam

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Assignment 1

Stock price forecasting (Q1 and Q5)

- Hard to beat naive forecast
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Maximum temperature at Melbourne airport on 12 April 2021. (Q2)

- Weather is relatively stationary over similar time of year and recent years.
- So take mean and var of max temp in April over last 10 years.

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Difference in points in AFL match (Q3)

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- Could look at distribution of for-against points from 2020 across all games for each team. Assume distributions independent.

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Seasonally adjusted estimate of total employment (Q4)

- Probably locally trended.
- Perhaps use drift method based on average monthly change in last 2 years.

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CASE STUDY 1: Paperware company

Problem: Want forecasts of each of hundreds of items. Series can be stationary, trended or seasonal. They currently have a large forecasting program written in-house but it doesn't seem to produce sensible forecasts. They want me to tell them what is wrong and fix it.

Additional information

- Program written in COBOL making numerical calculations limited. It is not possible to do any optimisation.
- Their programmer has little experience in numerical computing.
- They employ no statisticians and want

CASE STUDY 1: Paperware company

Methods currently used

- **A** 12 month average
- **C** 6 month average
- **E** straight line regression over last 12 months
- **G** straight line regression over last 6 months
- **H** average slope between last year's and this year's values. (Equivalent to differencing at lag 12 and taking mean.)
- **I** Same as H except over 6 months.
- **K** I couldn't understand the explanation.

CASE STUDY 2: PBS

- In 2001: $4.5 billion budget, under-forecasted by $800 million.
- Thousands of products. Seasonal demand.
- Subject to covert marketing, volatile products, uncontrollable expenditure.
- Although monthly data available for 10 years, data are aggregated to annual values, and only the first three years are used in estimating the forecasts.
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Problem: How to do the forecasting better?

CASE STUDY 3: Car fleet company

Client: One of Australia's largest car fleet companies

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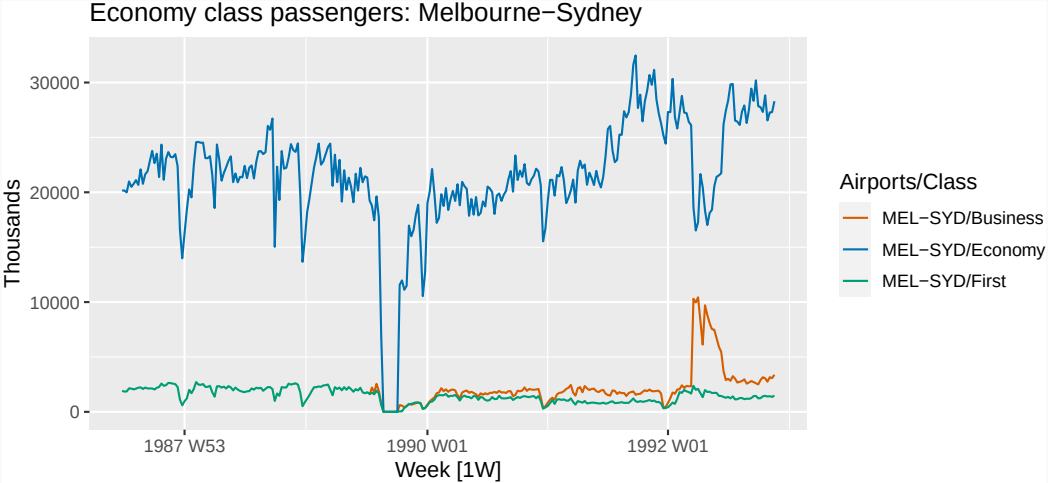
Additional information

- They can provide a large amount of data on previous vehicles and their eventual resale values.
- The resale values are currently estimated by a group of specialists. They see me as a threat and do not cooperate.

CASE STUDY 4: Airline

Problem: how to forecast passenger traffic on major routes?



CASE STUDY 4: Airline

Problem: how to forecast passenger traffic on major routes?

Additional information

- They can provide a large amount of data on previous routes.
- Traffic is affected by school holidays, special events such as the Grand Prix, advertising campaigns, competition behaviour, etc.
- They have a highly capable team of people who are able to do most of the computing.

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Exam: 9.00am (AEST) 7 June

Five questions, all to be attempted.

- **A** Short answers/explanations. Write about 1/4 page on four topics (out of six possible topics). Nuanced answers required.
- **B** Describing a time series, choosing a forecasting method
- **C** ETS models
- **D** ARIMA models
- **E** (Dynamic) regression models

• Moodle Quiz • Open book • 2 hr 40 min

Exam and R

- Parts **B**, **C** and **E** require interpretation of R output, but no coding.
- Part **D** requires some coding (part of the code will be provided) and interpretation of R output.
- All R coding will be very similar to examples you have done before.
- Submitted answers will be automatically checked for close matches.
- Enter answers on Moodle as you go, to avoid internet issues at the end.

Preparing for the exam

- Exams from 2018–2020 on Moodle. Solutions to follow by Monday.
- Exercises. Make sure you have done them all!
- Identify your weak points and practice them.
- Write your own summary of the material.
- Practice explaining the material to a class-mate.

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Help available

- Ask on Moodle forum
- See a tutor during the consultation times.

Useful resources for forecasters

Organization:

- International Institute of Forecasters.

Annual Conference:

- International Symposium on Forecasting

Journals:

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- Foresight

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Please fill in your SETL!