

10.8 Exercises

1. Write out the S matrices for the Australian tourism hierarchy and the Australian prison grouped structure. Use the `smatrix` command to verify your answers.
2. Generate 8-step-ahead bottom-up forecasts using ARIMA models for the `visnights` Australian domestic tourism data. Plot the coherent forecasts by level and comment on their nature. Are you satisfied with these forecasts?
3. Model the aggregate series for Australian domestic tourism data `visnights` using an ARIMA model. Comment on the model. Generate and plot 8-step-ahead forecasts from the ARIMA model and compare these with the bottom-up forecasts generated in question 2 for the aggregate level.
4. Generate 8-step-ahead optimally reconciled coherent forecasts using ARIMA base forecasts for the `visnights` Australian domestic tourism data. Plot the coherent forecasts by level and comment on their nature. How and why are these different to the bottom-up forecasts generated in question 2 above.
5. Using the last two years of the `visnights` Australian domestic tourism data as a test set, generate bottom-up, top-down and optimally reconciled forecasts for this period and compare their accuracy.