## Exercise 6 – Seasonal Adjustment

Run *.\data\cr\CR Regional IPC.spc*. Examine the seasonality of the series. Should it be seasonally adjusted?

Create a spec file for .\data\retail\fuel dealers.dat. On the ARIMA Model tab, select the airline model. Run the spec file.

1. Describe the spectrum of the original series.
2. Look at the spectrum of the seasonally adjusted series, the irregular, and the residuals. Is there evidence of residual seasonality or residual calendar effects?
3. When you created this spec file, the seasonal filter was chosen based on the global moving seasonality ratio. What was the GMSR (I/S ratio) for this series? What seasonal filter was chosen?
4. Look at the sliding spans diagnostics. Is this adjustment acceptably stable? Why or why not?
5. Look in the output file for the history tables. Which months have the largest revisions?
6. a) Look at the graph of the Seasonal Factors and SI Ratios by Month, or at Table D9. Which months have the most replaced SI ratios?

b) Raise the sigma limits to (1.8 2.8) and run the spec with the output name *Fuel dealers SL*. Are there fewer replaced SI ratios in the months identified in 6a)?

Replace the x11{} spec with seats{} and run the spec file as *Fuel dealers seats.*

Set the model span to start in 2004.1 and run the spec file as *Fuel dealers seats 2*.

1. Compare the regARIMA models from the *Fuel dealers seats* and *Fuel dealers seats 2*. Which model has better model diagnostics?
2. Compare the sliding spans diagnostics and the revisions from the four adjustments. Which adjustment has the greatest stability?
3. Use X-13-Graph to create a graph comparing the four seasonal adjustments.
   1. Press the ‘Add series’ button. Select the four *Fuel dealer* series and press ‘Open’ to add them to the list of series.
   2. On the main X-13-Graph page, find the series in the top left list box. Select two of them using the Control button.
   3. ‘Overlay Graphs to Compare Two Models’ should already be selected from the Graph Types drop down box. Select ‘Seasonally Adjusted Series’ from both the top and bottom Graph list boxes. Press ‘Graph’ to create the graph.
   4. Select ‘Seasonal Factor Overlay Graphs’. Select Seasonal Factors from the top and bottom list boxes. Press ‘Graph’.

How similar are the adjustments? Where do you see the biggest differences?