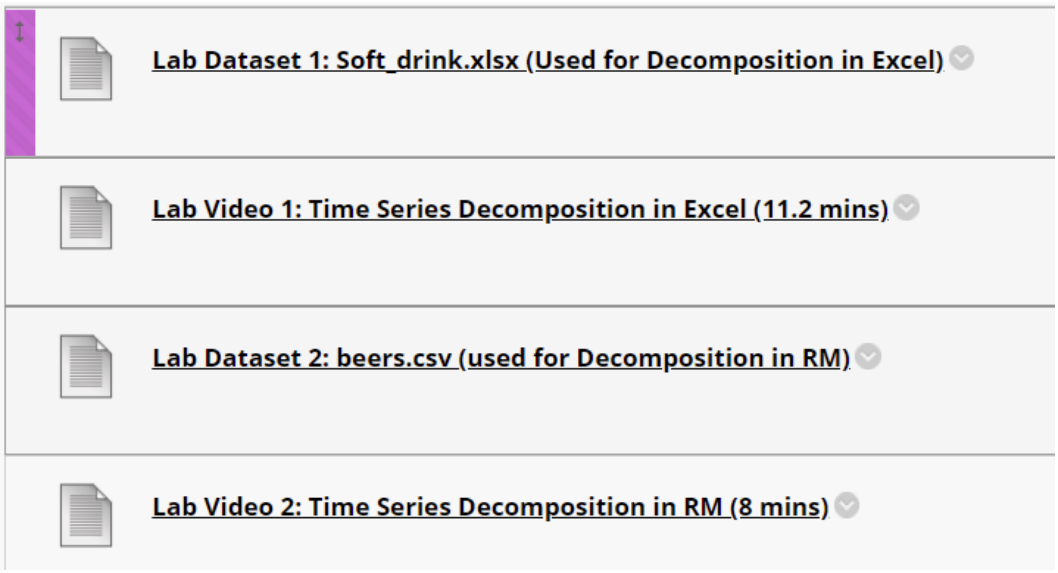
CIDM/ECON 6308 Lab Exercise 3

Time Series Decomposition and Visualization in Excel and RM

Instruction

In the subfolder "Class 11 Lab & Lab Exercise 3" under Class 1 folder, I provide you with two examples for time series decomposition: the first example/video demonstrates how to decompose the soft drink data in Excel and the second one demonstrates how to decompose the beers data in RM (you may ignore the STL decomposition in the lab video from 4:30 – 6:25).



In this lab exercise, please follow the procedures in the video instructions to:

- Decompose the soft drink data in RM and then briefly discuss its patterns (Your discussion must include trend and seasonality; your discussion on cycle is a plus).
- Decompose the beers series in Excel and then briefly discuss its patterns (Your discussion must include trend and seasonality; your discussion on cycle is a plus).

Because the soft drink data is stored as an .xlsx file, you can import it to RM in either of the following methods:

- Copy and paste the first two columns (Quarter and Sales) in a new Excel sheet and then save it as a .csv file. Then, you can import it to RM via the Read CSV operator and then choose to decompose the Sales attribute.
- You can use the Read Excel operator  in RM to import the .xlsx file to RM and then choose to decompose the Sales attribute.

Method Requirements: Use the classical additive decomposition method.

Deliverables:

Soft drink data (10 points)

1) A screenshot of the decomposed time series with date and time in RM: The screenshot must clearly show original value, trend, seasonal, remainder components, and seasonally adjusted series of at least the first 20 records (3 points).
2) A screenshot of an appropriate visual in RM with date and time to display the original value, the trend (or trend-cycle) component, and the seasonal component (3 points)

3) A brief discussion about this series' patterns: Your discussion must include trend and seasonality (cycle is optional); you must use the description that you observe from the visual above to justify your discussion (e.g., this time series has a decreasing trend because ……). (4 points: 2 points for each pattern; 1 point for identifying each correct pattern and 1 point for your justification; for example, if you identify a correct pattern but without an appropriate justification, you will only 1 point)

Beers data (10 points)

1) A screenshot of the decomposed time series with date and time in Excel: The screenshot must clearly show original value, trend-cycle component, seasonal component, remainder component, and seasonally adjusted series of at least the first 20 records (3 points).
2) A screenshot of an appropriate visual in Excel with date and time to display the original value, the trend (or trend-cycle) component and the seasonal component (3 points)
3) A brief discussion about this series' patterns: Your discussion must include trend and seasonality (cycle is optional); you must use the description that you observe from the visual above to justify your discussion (e.g., this time series has a decreasing trend because ……). (4 points: 2 points for each pattern; 1 point for identifying each correct pattern and 1 point for your justification; for example, if you identify a correct pattern but without an appropriate justification, you will only 1 point).

Summary Question (2 bonus points): Briefly discuss how visualization and decomposition help you identify a time series' patterns. You must incorporate your experience from this lab exercise into your discussion.