SPSS Syntax for Time Series

Step 1: Is the trend stationary? Plot it & find out!

tsplot variables= **Dependent Variable**

/id= **Time (IV)**

/nolog

/format nofill NOREFERENCE.

Step 2: If not, difference the DV & plot again!

1) Transform – Create TS – **DV that needs differencing.**
2) Plot it & see if stationary!

    tsplot variables= **differenced DV**

    /id= **time (IV)**

    /nolog

    /FORMAT NOFILL NOREFERENCE.

(Repeat this step if still not stationary)

Step 3: Is there a lot of variance?? If so, log transform the variable!

compute lgqual_1=lg10(quality_1 + 12).

*i.e. compute **"new variable name"** = lg10(**dependent variable (most differenced) + lowest value of differenced variable & add 1**)*

execute.

Step 4: Plot the transformed variable!

TSPLOT VARIABLES =**"new variable name from step 3"**

/id= **Time (IV)**

/NOLOG

/format NOFILL NOREFERENCE.

Step 5: Plot the ACF/PACFs for the best DV (i.e. differenced/transformed/etc)

ACF

variables=**DV (differenced or transformed)**

/nolog

/mxauto 10

/serror = MA

/PACF.

What do the spikes tell you? Look at the patterns to determine an ARIMA!!! ((HINT: HANDOUT!!!))

Step 6: Plug in the original DV (not differenced or transformed) into the ARIMA pattern you think is right!!

ARIMA quality

/model = (**0 0 0**)NOCONSTANT

/mxiter 10

/pareps .001

/ssqpct .001

/FORECAST EXACT.

Step 7: Plot their residuals & make sure they ARE NOT significant!!

acf

variables = err#1

/nolog

/MXAUTO 10

/SERROR = ma

/pacf.

If steps 6&7 fail, try again with a different model. Then look at the output → "parameter estimates" & report estimates, t, and significance. This is the end unless intervention, in which case steps 1-7 are for the baseline.

If the data is for an intervention…

Step 8: Plot the forecast with only baseline data.

Analyze – forecasting – create model

   Non-differenced DV → DV

   Time (IV) → IV

Method – ARIMA – Criteria

   Enter your model, ok!

Output: "model statistics" – Ljung-Box Q. If NON-significant, it's a good model!!!

Step 9: Plug in the entire TS data (including intervention) to the baseline diagnosed ARIMA

*ARIMA.

TSET PRINT=DEFAULT cin=95 newvar=all.

predict thru end.

Arima **DV (non differenced or transformed)** With **intervention**

/model= (**0 0 0**) NOCONSTANT

/MXITER 10

/PAREPS .001

/SSQPCT .001

/forecast EXACT.

Does the intervention have an effect? Look at "parameter estimates" & report estimates, t, & sig. for the intervention!

Step 10: Make sure the error residuals fall within the confidence intervals!

acf

variables = err_1

/nolog

/MXAUTO 10

/SERROR = ma

/pacf.

If they do, we have a good model. The model accounted for everything!!! YAY!