Mgmt 469

Hypothesis Testing in General Regression Models

You can test individual predictors in GRM models just as you do in OLS. Simply examine the p-values. But what about testing for significance of groups of variables? You already know that when you add two or more variables to an OLS model, you can test for joint significance by using a Chow test. There is an equivalent test in maximum likelihood models, called the Wald test. The command for both tests is identical. After your regression, just type

test var1 var2 etc.

There is another test you can use with GRM models to determine whether you are improving the overall fit of the model by adding additional variables. This is called the *likelihood ratio test*, or LR test.

Here is how you do it.

1) Run the "full" model (including the set of variables you are testing)
2) Type **lrtest, saving(0)** where "0" assigns a number to the previous model. (You could assign it any number.)
3) Run the "smaller" model, excluding the variables you are testing.
4) Compare the two, by typing lrtest, using(0), where "0" refers to the full model you are comparing to.

For example:

xi: logit anyisp population92 pcincome92 i.state
lrtest, saving(5)
logit anyisp population92 pcincome92
lrtest,using(5)[1]

Note that you can compare to model "5" at a later time.

Most analysts use the LR test for overall model building (i.e., testing whether the model is getting better) and the Wald test when they are more interested in specific coefficients.

[1] If you actually run this model, you will get a warning that the number of observations differs. That is because Stata omitted several states from the state fixed effects model due to the fact that all the counties in these states had an ISP; the absence of intrastate action in the value of the dependent variable caused Stata to throw them out of the model. You can do an apples-to-apples comparison by excluding these states from the smaller model as well.