Subject: linear regression F-test
Posted by Wout De Nolf on Tue, 20 Oct 2009 13:44:03 GMT
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Hi,

I'm struggling with the F-test after using REGRESS. The F-test goes as follows:

H0: Y is linear independent from X's

Fcrit=F_CVF(alpha,nterm,npts-nterm-1) ; e.g. alpha=0.01
if (F >= Fcrit) then "H0 rejected"
else "Can't reject H0"

Or alternatively
alpha=1-F_PDF(F,nterm,npts-nterm-1)
if (alpha <= alphacrit) then "H0 rejected"
else "Can't reject H0"

I find that the F-test is passed often (i.e. H0 rejected) when Y clearly doesn't depend on X in a linear way. In the code below I illustrated my problem.

My question: is this normal and why?

Thanks,

Wout

```
pro test
npts=100
nterm=1

arg=findgen(npts)
X=fltarr(nterm,npts)
Y=exp(arg*0.1)+10*arg^3.

X[0,*]=arg

A = REGRESS( X, Y, yfit=yfit, ftest=F)
window
plot,arg,Y,psym=1
oplot,arg,yfit
```

```
;H0: Y is linear independent from X's
brejectH0=1b
alpha=1-F_PDF(F,nterm,npts-nterm-1) ;one-sided
print,(alpha le 0.01)?'At least one spectrum is linear associated with
the fitted spectrum':$
'No evidence of linear association with the spectrum'
print,'p-value',alpha
end;pro test
```