
Subject: linear regression F-test

Posted by [Wout De Nolf](#) on Tue, 20 Oct 2009 13:44:03 GMT

[View Forum Message](#) <> [Reply to Message](#)

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
```
