

Joint test of parameters or linear restrictions on parameters of the population regression

Data source: BWGHT.RAW in Wooldridge – 1191 observations from 1988 National Health Interview survey (using observations that have no missing)

```
faminc      1988 family income, $1000s
bwght       birth weight, ounces
fatheduc    father's yrs of education
motheduc    mother's yrs of education
parity      birth order of child
cigs        cigarettes smoked per day while pregnant
```

Variable	Obs	Mean	Std. Dev.	Min	Max
bwght	1191	119.5298	20.14124	23	271
parity	1191	1.61377	.8746352	1	6
cigs	1191	1.769102	5.343771	0	40
faminc	1191	32.21914	17.9562	.5	65
fatheduc	1191	13.19144	2.741274	1	18
motheduc	1191	13.1251	2.417437	2	18

```
. reg bwght cigs parity faminc motheduc fatheduc
```

Source	SS	df	MS	Number of obs =	1191
Model	18705.5567	5	3741.11135	F(5, 1185) =	9.55
Residual	464041.135	1185	391.595895	Prob > F =	0.0000
				R-squared =	0.0387
				Adj R-squared =	0.0347
Total	482746.692	1190	405.669489	Root MSE =	19.789

bwght	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
cigs	-.5959362	.1103479	-5.40	0.000	-.8124352 - .3794373
parity	1.787603	.6594055	2.71	0.007	.4938709 3.081336
faminc	.0560414	.0365616	1.53	0.126	-.0156913 .1277742
motheduc	-.3704503	.3198551	-1.16	0.247	-.9979957 .2570951
fatheduc	.4723944	.2826433	1.67	0.095	-.0821426 1.026931
_cons	114.5243	3.728453	30.72	0.000	107.2092 121.8394

```
. reg bwght cigs parity faminc
```

Source	SS	df	MS	Number of obs =	1191
Model	17579.8997	3	5859.96658	F(3, 1187) =	14.95
Residual	465166.792	1187	391.884408	Prob > F =	0.0000
				R-squared =	0.0364
				Adj R-squared =	0.0340
Total	482746.692	1190	405.669489	Root MSE =	19.796

bwght	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
cigs	-.5978519	.1087701	-5.50	0.000	-.8112549 - .3844489
parity	1.832274	.6575402	2.79	0.005	.5422035 3.122345
faminc	.0670618	.0323938	2.07	0.039	.0035063 .1306173
_cons	115.4699	1.655898	69.73	0.000	112.2211 118.7187

```
. qui reg bwght cigs parity faminc motheduc fatheduc
. test (motheduc=0) (fatheduc=0)
```

```
( 1) motheduc = 0
( 2) fatheduc = 0
```

```
F( 2, 1185) = 1.44
Prob > F = 0.2380
```

Testing about a single linear combination of parameters

Source: TWOYEAR.RAW from Wooldridge. Labor-Market Returns to Two- and Four-year Colleges

```

exper      int      %8.0g      total (actual) work experience (in weeks)
jc         float    %9.0g      total credits/30 in 2-year colleges
univ      float    %9.0g      total credits (in years) in 4-year colleges
lwage     float    %9.0g      log hourly wage

```

```
. sum exper jc univ lwage
```

Variable	Obs	Mean	Std. Dev.	Min	Max
exper	6763	122.3816	33.42799	3	166
jc	6763	.3388946	.7721268	0	3.833333
univ	6763	1.926274	2.297001	0	7.5
lwage	6763	2.248096	.4876918	.5555456	3.911953

```
. reg lwage jc univ exper
```

Source	SS	df	MS	Number of obs =	6763
Model	357.752575	3	119.250858	F(3, 6759) =	644.53
Residual	1250.54352	6759	.185019014	Prob > F =	0.0000
				R-squared =	0.2224
				Adj R-squared =	0.2221
Total	1608.29609	6762	.237843255	Root MSE =	.43014

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
jc	.0666967	.0068288	9.77	0.000	.0533101 .0800833
univ	.0768762	.0023087	33.30	0.000	.0723504 .0814021
exper	.0049442	.0001575	31.40	0.000	.0046355 .0052529
_cons	1.472326	.0210602	69.91	0.000	1.431041 1.51361

```
. g totcoll = jc + univ
```

```
. reg lwage totcoll univ exper
```

Source	SS	df	MS	Number of obs =	6763
Model	357.752575	3	119.250858	F(3, 6759) =	644.53
Residual	1250.54352	6759	.185019014	Prob > F =	0.0000
				R-squared =	0.2224
				Adj R-squared =	0.2221
Total	1608.29609	6762	.237843255	Root MSE =	.43014

lwage	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
totcoll	.0666967	.0068288	9.77	0.000	.0533101 .0800833
univ	.0101795	.0069359	1.47	0.142	-.003417 .0237761
exper	.0049442	.0001575	31.40	0.000	.0046355 .0052529
_cons	1.472326	.0210602	69.91	0.000	1.431041 1.51361

```
. qui reg lwage jc univ exper
```

```
. test univ=jc
```

```

( 1) - jc + univ = 0
      F( 1, 6759) =    2.15
      Prob > F =    0.1422

```