

```
. do "C:\Documents and Settings\Jeffrey Greenbaum\My Documents\Econ
240B\2007\Problem Set 2\Empirical Question.do"
```

```
. /* Jeffrey Greenbaum */
. /* Econ 240B */
. /* Problem Set 2, Empirical question */
```

```
.
. clear
```

```
. set mem 100m
```

```
Current memory allocation
```

usage	current		memory
settable	value	description	(1M =
1024k)			-----
-			
set maxvar	5000	max. variables allowed	1.733M
set memory	100M	max. data space	100.000M
set matsize	400	max. RHS vars in models	1.254M
			-----
			102.987M

```
. insheet using "C:\Documents and Settings\Jeffrey Greenbaum\My
Documents\Econ 240B\2007\Problem Set 2\Engel.txt"
(2 vars, 235 obs)
```

```
.
. rename v1 food
. rename v2 income
.
. gen EXP = log(food)
. gen INC = log(income)
```

```
.
. /* part a */
.
. reg EXP INC
```

Source	SS	df	MS	Number of obs =
235				
-----+-----				F( 1, 233) =
1763.58				Prob > F =
Model   32.8775788	1	32.8775788		R-squared =
0.0000				Adj R-squared =
Residual   4.34371656	233	.01864256		Root MSE =
0.8833				
-----+-----				
0.8828				
Total   37.2212954	234	.159065365		
.13654				

```
-----
```

	EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	INC	.8518787	.0202853	41.99	0.000	.8119127
	_cons	.571425	.137947	4.14	0.000	.2996421

```
-----
```

```
. test INC == 1 /* conducts F-test */
```

```
( 1) INC = 1
```

```
      F( 1, 233) = 53.32
      Prob > F = 0.0000
```

```
. gen t_test_a=r(F)^0.5 /* F-statistic is
square root of F-statistic for such single equation null hypothesis */
```

```
. gen coeff_a = _b[INC] /* stores regression
coefficient */
```

```
. list t_test_a if _n == 1 & coeff_a > 1
```

```
. gen t_test_a_neg = -t_test_a
```

```
. list t_test_a_neg if _n == 1 & coeff_a < 1 /* t-statistic is
negative if the numerator is negative */
```

```

+-----+
| t_test_~g |
|-----|
1. | -7.301918 |
+-----+
```

```
. /* reject if the absolute value of this statistic exceeds 1.9702 */
```

```
.
```

```
. /* part b */
```

```
.
```

```
. reg EXP INC, robust /* robust standard
errors */
```

```
Linear regression
235
```

```
1106.51
```

```
0.0000
```

```
0.8833
```

```
.13654
```

```
Number of obs =
```

```
F( 1, 233) =
```

```
Prob > F =
```

```
R-squared =
```

```
Root MSE =
```

```
-----
```

	EXP	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
	INC	.8518787	.0256094	33.26	0.000	.8014231
	_cons	.571425	.1716594	3.33	0.001	.233222

```
-----
```

```
. test INC == 1
```

```
( 1) INC = 1
```

```
      F( 1, 233) = 33.45
      Prob > F = 0.0000
```

```
. gen t_test_b = r(F)^0.5
```

```
. gen coeff_b = _b[INC]
```

```
. list t_test_b if _n == 1 & coeff_b > 1
```

```
. gen t_test_b_neg = -t_test_b
```

```
. list t_test_b_neg if _n == 1 & coeff_b < 1
```

```

+-----+
| t_t~b_neg |
+-----+
1. | -5.783858 |
+-----+
```

```
. /* reject if the absolute value of this statistic exceeds 1.9702 */
```

```
. /* part c */
```

```
. reg EXP INC
```

Source	SS	df	MS	Number of obs =
Model	32.8775788	1	32.8775788	F( 1, 233) =
Residual	4.34371656	233	.01864256	Prob > F =
Total	37.2212954	234	.159065365	R-squared =

1763.58  
0.0000  
0.8833  
0.8828  
.13654

Adj R-squared =  
Root MSE =

```
-----
```

	EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	INC	.8518787	.0202853	41.99	0.000	.8119127
	_cons	.571425	.137947	4.14	0.000	.2996421

```
-----
```

```
-----
```

```
. predict residual, resid
```

```
. label variable residual "Residual"
```

```
.
```

```
. gen INC_squared = INC * INC
```

```
. gen residual_square = residual*residual
```

```
.
```

```
. reg residual_square INC INC_squared
```

Source	SS	df	MS	Number of obs =
Model	.015936754	2	.007968377	235
Residual	.141213125	232	.000608677	F( 2, 232) =
Total	.157149879	234	.000671581	Prob > F =

13.09  
0.0000  
0.1014  
0.0937  
.02467

R-squared =  
Adj R-squared =  
Root MSE =

```
-----
```

	residual_s~e	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
	INC	-.2542925	.0788518	-3.22	0.001	-.4096496 -
	INC_squared	.0194633	.0057142	3.41	0.001	.0082049
	_cons	.8440788	.2714178	3.11	0.002	.3093201

```
-----
```

```
.
```

```
. gen R_squared = e(r2)
```

```
.
```

```
. gen sample = e(N)
```



```

.
. reg EXP INC [aweight = heteroskedasticity_function^(-1)] /* WLS
uses aweight */
(sum of wgt is 1.4023e+04)

      Source |           SS          df           MS              Number of obs =
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
1428.72
      Model |    24.5096319          1    24.5096319              F( 1, 233) =
0.0000
      Residual |    3.99710308        233    .017154949              Prob > F      =
0.8598
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
0.8592
      Total |    28.506735         234    .121823654              R-squared     =
.13098
                                           Adj R-squared =
                                           Root MSE     =

-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      EXP |           Coef.    Std. Err.      t    P>|t|    [95% Conf.
Interval]
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
      INC |    .8684451    .0229757    37.80    0.000    .8231784
.9137118
      _cons |    .4626897    .1543157     3.00    0.003    .1586573
.7667221
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+

. test INC == 1

( 1)  INC = 1

            F( 1, 233) =    32.79
            Prob > F =    0.0000

. gen t_test_d = r(F)^0.5

. gen coeff_d = _b[INC]

. list t_test_d if _n == 1 & coeff_d > 1

. gen t_test_d_neg = -t_test_d

. list t_test_d_neg if _n == 1 & coeff_d < 1

      +-----+
      | t_t~d_neg |
      |-----|
1. | -5.725828 |
      +-----+

. /* reject if the absolute value of this statistic exceeds 1.9702 */
.
. /* part e */

```

```
.
. reg EXP INC [aweight = heteroskedasticity_function^(-1)], robust
(sum of wgt is 1.4023e+04)
```

```
Linear regression                               Number of obs =
235                                              F( 1, 233) =
1580.73                                         Prob > F    =
0.0000                                         R-squared   =
0.8598                                         Root MSE   =
.13098
```

```
-----
```

	EXP	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]
INC		.8684451	.0218431	39.76	0.000	.8254099
_cons		.4626897	.1466965	3.15	0.002	.1736685

```
-----
```

```
. test INC == 1
```

```
( 1) INC = 1
```

```
F( 1, 233) = 36.27
Prob > F = 0.0000
```

```
. gen t_test_e = r(F)^0.5
```

```
. gen coeff_e = _b[INC]
```

```
. list t_test_e if _n == 1 & coeff_e > 1
```

```
. gen t_test_e_neg = -t_test_e
```

```
. list t_test_e_neg if _n == 1 & coeff_e < 1
```

```
+-----+
| t_t~e_neg |
|-----|
1. | -6.022727 |
+-----+
```

```
. /* reject if the absolute value of this statistic exceeds 1.9702 */
```

```
.
end of do-file
```