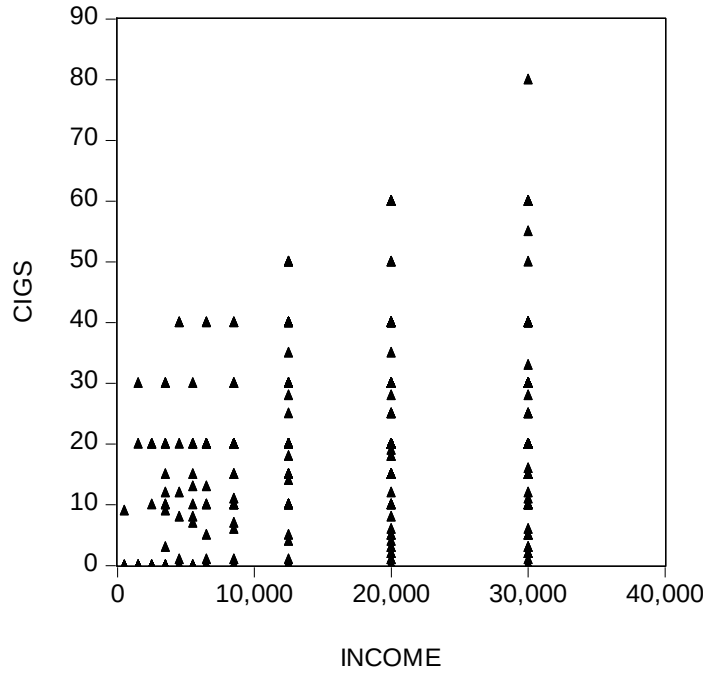
EXEMPLO SOBRE HETEROCEDASTICIDADE

Ficheiro: smoke.wf1

- cigpric state cigarette price, cents per pack
- income annual income, $
- cigs cigs. smoked per day
- restaurn =1 if state restaurant smoking restrictions



EQUAÇÃO 1

Dependent Variable: CIGS
Method: Least Squares
Included observations: 807

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.764094	8.717952	-0.431764	0.6660
CIGPRIC	-0.011621	0.102726	-0.113123	0.9100
LOG(INCOME)	1.432961	0.678940	2.110586	0.0351
RESTAURN	-2.961276	1.129754	-2.621168	0.0089

R-squared	0.013067	Mean dependent var	8.686493
Adjusted R-squared	0.009380	S.D. dependent var	13.72152
S.E. of regression	13.65701	Akaike info criterion	8.071327
Sum squared resid	149770.7	Schwarz criterion	8.094590
Log likelihood	-3252.780	Hannan-Quinn criter.	8.080260
F-statistic	3.544030	Durbin-Watson stat	2.003072
Prob(F-statistic)	0.014301		

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	3.950124	Prob. F(3,803)	0.0082
Obs*R-squared	11.73620	Prob. Chi-Square(3)	0.0083
Scaled explained SS	24.83906	Prob. Chi-Square(3)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Included observations: 807

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-379.9392	243.7736	-1.558574	0.1195
CIGPRIC	1.149190	2.872441	0.400074	0.6892
LOG(INCOME)	52.99621	18.98469	2.791523	0.0054
RESTAURN	-69.58487	31.59047	-2.202717	0.0279

R-squared	0.014543	Mean dependent var	185.5894
Adjusted R-squared	0.010861	S.D. dependent var	383.9717
S.E. of regression	381.8808	Akaike info criterion	14.73304
Sum squared resid	1.17E+08	Schwarz criterion	14.75630
Log likelihood	-5940.781	Hannan-Quinn criter.	14.74197
F-statistic	3.950124	Durbin-Watson stat	1.944886
Prob(F-statistic)	0.008210		

Heteroskedasticity Test: White

F-statistic	2.325991	Prob. F(8,798)	0.0180
Obs*R-squared	18.38900	Prob. Chi-Square(8)	0.0185
Scaled explained SS	38.91935	Prob. Chi-Square(8)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Included observations: 807
Collinear test regressors dropped from specification

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3634.239	2509.398	1.448252	0.1479
CIGPRIC^2	0.237594	0.386431	0.614841	0.5388
CIGPRIC*LOG(INCOME)	5.997382	3.738823	1.604083	0.1091
CIGPRIC*RESTAURN	16.38619	12.24504	1.338190	0.1812
CIGPRIC	-85.07542	55.14168	-1.542852	0.1233
LOG(INCOME)^2	-1.774045	16.14240	-0.109900	0.9125
LOG(INCOME)*RESTAURN	-50.51277	46.19677	-1.093427	0.2745
LOG(INCOME)	-258.9685	329.0516	-0.787015	0.4315
RESTAURN^2	-579.4888	870.0242	-0.666061	0.5056

R-squared	0.022787	Mean dependent var	185.5894
Adjusted R-squared	0.012990	S.D. dependent var	383.9717
S.E. of regression	381.4696	Akaike info criterion	14.73703
Sum squared resid	1.16E+08	Schwarz criterion	14.78937
Log likelihood	-5937.391	Hannan-Quinn criter.	14.75713
F-statistic	2.325991	Durbin-Watson stat	1.958159
Prob(F-statistic)	0.018009		

Heteroskedasticity Test: Breusch-Pagan-Godfrey – **WHITE SIMPLES**

F-statistic	5.567798	Prob. F(2,804)	0.0040
Obs*R-squared	11.02445	Prob. Chi-Square(2)	0.0040
Scaled explained SS	23.33268	Prob. Chi-Square(2)	0.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Included observations: 807

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	103.7004	279.5372	0.370972	0.7108
FIT	-14.70021	71.43970	-0.205771	0.8370
FIT^2	2.689972	4.453429	0.604023	0.5460

R-squared	0.013661	Mean dependent var	185.5894
Adjusted R-squared	0.011207	S.D. dependent var	383.9717
S.E. of regression	381.8139	Akaike info criterion	14.73145
Sum squared resid	1.17E+08	Schwarz criterion	14.74890
Log likelihood	-5941.142	Hannan-Quinn criter.	14.73815
F-statistic	5.567798	Durbin-Watson stat	1.942592
Prob(F-statistic)	0.003968		

Dependent Variable: CIGS
Method: Least Squares
Included observations: 807
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.764094	8.582280	-0.438589	0.6611
CIGPRIC	-0.011621	0.108328	-0.107273	0.9146
LOG(INCOME)	1.432961	0.556535	2.574791	0.0102
RESTAURN	-2.961276	1.034504	-2.862506	0.0043

R-squared	0.013067	Mean dependent var	8.686493
Adjusted R-squared	0.009380	S.D. dependent var	13.72152
S.E. of regression	13.65701	Akaike info criterion	8.071327
Sum squared resid	149770.7	Schwarz criterion	8.094590
Log likelihood	-3252.780	Hannan-Quinn criter.	8.080260
F-statistic	3.544030	Durbin-Watson stat	2.003072
Prob(F-statistic)	0.014301	Wald F-statistic	4.289197
Prob(Wald F-statistic)	0.005153		

Dependent Variable: CIGS
Method: Least Squares
Included observations: 807
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-6.429073	8.591872	-0.748274	0.4545
CIGPRIC	-0.003987	0.105962	-0.037629	0.9700
LOG(INCOME)	0.876493	0.596620	1.469097	0.1422
EDUC	-0.501656	0.162388	-3.089238	0.0021
AGE	0.770592	0.138323	5.570955	0.0000
AGE^2	-0.009023	0.001463	-6.167971	0.0000
RESTAURN	-2.839908	1.006094	-2.822706	0.0049

R-squared	0.052719	Mean dependent var	8.686493
Adjusted R-squared	0.045614	S.D. dependent var	13.72152
S.E. of regression	13.40492	Akaike info criterion	8.037756
Sum squared resid	143753.4	Schwarz criterion	8.078467
F-statistic	7.420360	Durbin-Watson stat	2.012720
Prob(F-statistic)	0.000000	Wald F-statistic	10.79250
Prob(Wald F-statistic)	0.000000		

Wald Test:
Equation: EQ01

Test Statistic	Value	df	Probability
F-statistic	1.079577	(2, 800)	0.3402
Chi-square	2.159154	2	0.3397

Null Hypothesis: C(2)=C(3)=0
Null Hypothesis Summary:

Normalized Restriction (= 0)	Value	Std. Err.
C(2)	-0.003987	0.105962
C(3)	0.876493	0.596620

Dependent Variable: CIGS
Method: Least Squares
Included observations: 807
White heteroskedasticity-consistent standard errors & covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.152140	3.181160	0.047825	0.9619
EDUC	-0.450400	0.155971	-2.887712	0.0040
AGE	0.822327	0.135912	6.050415	0.0000
AGE^2	-0.009589	0.001441	-6.654779	0.0000
RESTAURN	-2.746372	0.991517	-2.769869	0.0057

R-squared	0.051000	Mean dependent var	8.686493
Adjusted R-squared	0.046267	S.D. dependent var	13.72152
S.E. of regression	13.40033	Akaike info criterion	8.034612
Sum squared resid	144014.2	Schwarz criterion	8.063691
F-statistic	10.77509	Durbin-Watson stat	2.010361
Prob(F-statistic)	0.000000	Wald F-statistic	15.77726
Prob(Wald F-statistic)	0.000000		