

HW1 Econometrics 3

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OLS

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
beta_0_ols	100	9.590	9.716	-13.569	35.337
beta_1_ols	100	0.971	0.520	-0.481	2.243
beta_2_ols	100	1.050	0.386	0.344	1.896
var_b0_ols	100	70.313	35.817	17.030	193.850
var_b1_ols	100	0.203	0.103	0.049	0.559
var_b2_ols	100	0.145	0.074	0.035	0.399
se_b0_ols	100	8.139	2.029	4.127	13.923
se_b1_ols	100	0.437	0.109	0.222	0.748
se_b2_ols	100	0.369	0.092	0.187	0.632
t_val_b0_ols	100	1.262	1.271	-1.565	5.098
t_val_b1_ols	100	2.335	1.219	-0.644	5.307
t_val_b2_ols	100	3.038	1.401	0.665	7.349
BP_testStat_ols	100	6.292	4.894	0.061	20.898
GV_HET_Test_ols	100	4.797	3.828	0.001	16.076

good 1 = meats

good 2 = dairy

good 3 = beans

FGLS

Estimate the model using FGLS techniques Assume multiplicative hetero...

Table 2: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
beta_0_ols	100	9.590	9.716	-13.569	35.337
beta_1_ols	100	0.971	0.520	-0.481	2.243
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beta_0_fgls	100	9.836	7.165	-6.479	29.558
beta_1_fgls	100	0.965	0.385	-0.008	1.857
beta_2_fgls	100	1.044	0.369	0.022	1.865
alpha_0_fgls	100	-2.100	2.320	-7.556	3.861
alpha_1_fgls	100	0.192	0.113	-0.157	0.452
var_b0_fgls	100	21.369	20.497	4.819	100.744
var_b1_fgls	100	0.052	0.046	0.013	0.225
var_b2_fgls	100	0.022	0.013	0.008	0.096
se_b0_fgls	100	4.272	1.774	2.195	10.037
se_b1_fgls	100	0.214	0.082	0.115	0.474
se_b2_fgls	100	0.142	0.038	0.088	0.309
t_val_b0_fgls	100	2.573	2.236	-2.263	10.344
t_val_b1_fgls	100	4.911	2.391	-0.045	12.458
t_val_b2_fgls	100	7.864	3.571	0.168	18.313
var_b0_HCCM_0	100	73.048	62.861	8.697	357.686
var_b1_HCCM_0	100	0.233	0.196	0.031	1.094
var_b2_HCCM_0	100	0.085	0.049	0.024	0.280
var_b0_HCCM_3	100	126.622	115.448	12.261	645.598
var_b1_HCCM_3	100	0.395	0.358	0.048	2.010
var_b2_HCCM_3	100	0.164	0.123	0.038	0.704

good 1 = meats

good 2 = dairy

good 3 = beans

MLE

$$\ln L = -0.5n \log(2\pi) - 0.5 \sum (\sigma^2) - 0.5 \sum \left[\frac{(y - X'\beta)^2}{\sigma^2} \right] \quad (1)$$

where,

$$\sigma^2 \simeq \exp(\alpha_0 + \alpha_1 x_1)$$

[1] 0.7758764 [1] 19.19565