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	9.593	7.316	−7.139	27.963
beta_1_fgls	100	0.963	0.399	0.008	1.914
beta_2_fgls	100	1.058	0.398	0.039	1.925
var_b0_fgls	100	25.108	24.960	4.807	124.044
var_b1_fgls	100	0.061	0.057	0.013	0.291
var_b2_fgls	100	0.052	0.122	0.008	1.016
se_b0_fgls	100	4.594	2.011	2.192	11.138
se_b1_fgls	100	0.229	0.094	0.115	0.539
se_b2_fgls	100	0.189	0.130	0.089	1.008
t_val_b0_fgls	100	2.412	2.169	−2.619	9.611
t_val_b1_fgls	100	4.607	2.307	0.052	12.498
t_val_b2_fgls	100	6.800	3.684	0.294	17.659
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

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

where,

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