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1 clear
2 capture log close
3 cd "/Users/yimingzhang/Desktop"
4 log using "PS2 example.log", replace
5
6 * Load the data
7 insheet using "pst2_data.csv", comma names
8
9 * Convert the date to Stata's date format
10 gen stata_date = date(date, "YMD")
11
12 * Set the time series variable
13 tsset stata_date
14
15 * Check for heteroskedasticity
16 tsline ret_spx
17
18 * a. Estimate a CAPM style regression for Microsoft
19 reg ret_msft ret_spx
20
21 * Test that the regression beta is equal to one
22 test ret_spx == 1
23 test ret_spx == 0.5
24
25 * Repeat the above steps for Tesla
26 reg ret_tsla ret_spx
27 test ret_spx == 1
28 test ret_spx == 0.5
29
30 * b. Test for heteroskedasticity for Microsoft
31 reg ret_msft ret_spx
32 estat hettest
33
34 * Correct the standard errors
35 reg ret_msft ret_spx, robust
36
37 * Test that the corrected beta is equal to one
38 test ret_spx == 1
39
40 * Repeat the above steps for Tesla
41 reg ret_tsla ret_spx
42 estat hettest
43 reg ret_tsla ret_spx, robust
44 test ret_spx == 1
45
46 * c. Attempt to correct the standard errors through GLS for
    Microsoft
47 qui reg ret_msft ret_spx, robust
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49 gen ehat_sq = ehat^2
50 gen ret_spx_gls = ret_spx / sqrt(ehat_sq)
51 gen ret_msft_gls = ret_msft / sqrt(ehat_sq)
52 gen cons_gls = 1 / sqrt(ehat_sq)
53 reg ret_msft_gls cons_gls ret_spx_gls, noc
54
55 * Repeat the above steps for Tesla
56 qui reg ret_tsla ret_spx, robust
57 predict ehat2, resid
58 gen ehat_sq2 = ehat2^2
59 gen ret_tsla_gls = ret_tsla / sqrt(ehat_sq2)
60 reg ret_tsla_gls cons_gls ret_spx_gls, noc
61
62 * Conduct a Hausman Test for Microsoft
63 qui reg ret_msft ret_spx
64 est store ols
65
66 qui reg ret_msft_gls cons_gls ret_spx_gls, noc
67 est store gls
68 suest ols gls
69 *test if constants and slopes are the same in the two specifications
70 test ([ols_mean]_cons=[gls_mean]cons_gls) ([ols_mean]ret_spx=[
gls_mean]ret_spx_gls)
71
72 * Repeat the above steps for Tesla
73 qui reg ret_tsla ret_spx
74 est store ols
75 qui reg ret_tsla_gls cons_gls ret_spx_gls, noc
76 est store gls
77 suest ols gls
78 *test if constants and slopes are the same in the two specifications
79 test ([ols_mean]_cons=[gls_mean]cons_gls) ([ols_mean]ret_spx=[
gls_mean]ret_spx_gls)
80
81 * d. Check the stability of the betas through the sample for
Microsoft
82
83 gen year = substr(date, 1, 4)
84 destring year, replace
85
86 reg ret_msft ret_spx, robust
87 xi i.year*ret_spx
88 drop _Iyear*
89 reg ret_msft ret_spx _I*, robust
90
91 * Repeat the above steps for Tesla
92 reg ret_tsla ret_spx, robust
93 xi i.year*ret_spx

```

```
94 drop _Iyear*  
95 reg ret_tsla ret_spx _I*, robust  
96
```