```
clear
capture log close
cd "/Users/yimingzhang/Desktop"
log using "PS2 example.log", replace

* Load the data
insheet using "pst2_data.csv", comma names

* Convert the date to Stata's date format
gen stata_date = date(date, "YMD")

* Set the time series variable
tsset stata_date

* Check for heteroskedasticity
tsline ret_spx

* a. Estimate a CAPM style regression for Microsoft
reg ret_msft ret_spx

* Test that the regression beta is equal to one
test ret_spx == 1
test ret_spx == 0.5

* Repeat the above steps for Tesla
reg ret_tsla ret_spx
test ret_spx == 1
test ret_spx == 0.5

* b. Test for heteroskedasticity for Microsoft
reg ret_msft ret_spx
estat hettest

* Correct the standard errors
reg ret_msft ret_spx, robust

* Test that the corrected beta is equal to one
test ret_spx == 1

* Repeat the above steps for Tesla
reg ret_tsla ret_spx
estat hettest
reg ret_tsla ret_spx, robust
test ret_spx == 1

* c. Attempt to correct the standard errors through GLS for
Microsoft
qui reg ret_msft ret_spx, robust
```

```
gen ehat_sq = ehat^2
gen ret_spx_gls = ret_spx / sqrt(ehat_sq)
gen ret_msft_gls = ret_msft / sqrt(ehat_sq)
gen cons_gls = 1 / sqrt(ehat_sq)
reg ret_msft_gls cons_gls ret_spx_gls, noc

* Repeat the above steps for Tesla
qui reg ret_tsla ret_spx, robust
predict ehat2, resid
gen ehat_sq2 = ehat2^2
gen ret_tsla_gls = ret_tsla / sqrt(ehat_sq2)
reg ret_tsla_gls cons_gls ret_spx_gls, noc

* Conduct a Hausman Test for Microsoft
qui reg ret_msft ret_spx
est store ols

qui reg ret_msft_gls cons_gls ret_spx_gls, noc
est store gls
suest ols gls
*test if constants and slopes are the same in the two specifications
test ([ols_mean]_cons=[gls_mean]cons_gls) ([ols_mean]ret_spx=[
gls_mean]ret_spx_gls)

* Repeat the above steps for Tesla
qui reg ret_tsla ret_spx
est store ols
qui reg ret_tsla_gls cons_gls ret_spx_gls, noc
est store gls
suest ols gls
*test if constants and slopes are the same in the two specifications
test ([ols_mean]_cons=[gls_mean]cons_gls) ([ols_mean]ret_spx=[
gls_mean]ret_spx_gls)

* d. Check the stability of the betas through the sample for
Microsoft

gen year = substr(date, 1, 4)
destring year, replace

reg ret_msft ret_spx, robust
xi i.year*ret_spx
drop _Iyear*
reg ret_msft ret_spx _I*, robust

* Repeat the above steps for Tesla
reg ret_tsla ret_spx, robust
xi i.year*ret_spx
```

```
drop _Iyear*
reg ret_tsla ret_spx _I*, robust

```