Homework 6 –Tuo Wang

Find the value of rho at which the problem goes away:

|\_smpl 1 1000

|\_genr x=nor(1)

|\_genr y=nor(1)

|\_smpl 2 1000

|\_genr x=0.001\*lag(x)+0.999\*nor(1)

|\_genr y=0.001\*lag(y)+0.999\*nor(1)

|\_smpl 1 1000

|\_?ols y x/tratio=ttest

|\_genl sight:#=dum(abs(ttest:1)-1.96)

|\_endo

EXECUTION BEGINNING FOR DO LOOP # = 1

EXECUTION FINISHED FOR DO LOOP # = 1000

|\_smpl 1 1000

|\_genr sumsight=sum(sigt)

|\_genr count=sumsight:1000

|\_print count

COUNT

47.00000

After running the program a few times, it becomes clear that as we decrease the value of the rho we reduce the rejection rate significantly. When rho is equal to 0.001, we reject 47 out of 1000 runs. That rounds up to a 0.05% rejection rate, which is generally what is widely accepted today as the threshold for significance.

How much dependence is needed before AUTO is more efficient than OLS?

When there is independence, the difference between alpha and beta does not exist. They essentially depict the same thing. However, when you add dependence to the errors, you get no information about alpha meaning that you get no distinction between what is true and what is not true. In the run that was done previously in the example, we were rejecting the truth 70% of the time for alpha. Also, because dependence shrinks volatility, the power of the beta curve seems to change dramatically. Therefore, if we have a rho value that generates a high rejection rate(higher than what we have presented in the first problem), we would have dependence. If we have dependence, then it is more efficient to use the AUTO over the OLS technique.