

# [Econometrics](https://assignbuster.com/econometrics/)

[](https://assignbuster.com/)[Literature](https://assignbuster.com/essay-subjects/literature/), [Russian Literature](https://assignbuster.com/essay-subjects/literature/russian-literature/)

Question 3 Use the data set shorttbills. wf1. Limit the sample so that it begins in 2002. Regress the three month treasury bill rate (tb3ms) on the lagged three month rate and the twice lagged 6 month rate (tb6ms(-2)). Do the coefficients make much sense? (Okay, explain why they don’t.) Test, at the 1% level, for first-order serial correlation using the Breusch-Godfrey test. Now run the regression correcting for serial correlation by including AR(1) in the regression. Do the coefficients make sense now? Correct for second order serial correlation (add AR(1) and AR(2)). How about the coefficients now?   
The regression output looks like   
Dependent Variable: TB3MS   
Method: Least Squares   
Date: 09/17/12 Time: 15: 24   
Sample: 2002M01 2010M01   
Included observations: 97   
Variable   
Coefficient   
Std. Error   
t-Statistic   
Prob.   
C   
0. 063194   
0. 040434   
1. 562912   
0. 1214   
TB3MS(-1)   
1. 346506   
0. 090650   
14. 85396   
0. 0000   
TB6MS(-2)   
-0. 357690   
0. 092599   
-3. 862769   
0. 0002   
R-squared   
0. 985022   
Mean dependent var   
2. 193814   
Adjusted R-squared   
0. 984703   
S. D. dependent var   
1. 628331   
S. E. of regression   
0. 201392   
Akaike info criterion   
-0. 336687   
Sum squared resid   
3. 812524   
Schwarz criterion   
-0. 257057   
Log likelihood   
19. 32931   
Hannan-Quinn criter.   
-0. 304488   
F-statistic   
3090. 922   
Durbin-Watson stat   
1. 666622   
Prob(F-statistic)   
0. 000000   
Do the coefficients make much sense?   
From the above illustrations, the coefficients are sensible. For instance an increase in six months rate can lead to a future reduction in three months rate, any coefficient bigger than 1 at intervals of three months rate may bring about a significant discharge.   
Testing at the 1% level, for first-order serial correlation using the Breusch-Godfrey test we get:   
If we test for one lag, it is discarded as shown by the test below.   
. Breusch-Godfrey Serial Correlation LM Test:   
F-statistic   
5. 033116   
Prob. F(1, 93)   
0. 0272   
Obs\*R-squared   
4. 980075   
Prob. Chi-Square(1)   
0. 0256   
If we run the regression correcting for serial correlation by including AR (1) in the regression, the coefficients make sense and we get a dependant variable as indicated below.   
TB3MS   
Method: Least Squares   
Date: 09/17/12 Time: 15: 28   
Sample: 2002M01 2010M01   
Included observations: 97   
Convergence achieved after 5 iterations   
Variable   
Coefficient   
Std. Error   
t-Statistic   
Prob.   
C   
0. 008697   
0. 090545   
0. 096051   
0. 9237   
TB3MS(-1)   
0. 779682   
0. 169038   
4. 612475   
0. 0000   
TB6MS(-2)   
0. 196326   
0. 157707   
1. 244879   
0. 2163   
AR(1)   
0. 607484   
0. 134082   
4. 530678   
0. 0000   
R-squared   
0. 986450   
Mean dependent var   
2. 193814   
Adjusted R-squared   
0. 986013   
S. D. dependent var   
1. 628331   
S. E. of regression   
0. 192581   
Akaike info criterion   
-0. 416241   
Sum squared resid   
3. 449118   
Schwarz criterion   
-0. 310068   
Log likelihood   
24. 18770   
Hannan-Quinn criter.   
-0. 373310   
F-statistic   
2256. 760   
Durbin-Watson stat   
1. 978718   
Prob(F-statistic)   
0. 000000   
Inverted AR Roots   
. 61   
From the above illustration the coefficients make sense however, if we Correct for second order serial correlation (add AR(1) and AR(2)), the coefficient are more sensible from the approximations. We can say that they go hand in hand with the projections or the expectations.