Week 10 Assignment

Applied Econometrics

1. According to Nickell Bias, if $T \to \infty$;
   a. $Bias \to \infty$
   b. $Bias \to 0$
   c. $Bias \to 1$
   d. $Bias \to -1$
   e. None of the above
2. If number of instruments is more than the number of parameters to be estimated under IV estimation method for a regression equation where $Z = Set\ of\ Instuments$, we can derive a Quadratic Loss Function, in which W_n is nothing but,
   a. A kXL matrix of weights that chosen optimally which gives smallest variance, where L = number of instruments used.
   b. A LXL matrix of weights that chosen optimally which gives smallest variance, where L = number of instruments used.
   c. A $1XL$ matrix of weights that chosen optimally which gives smallest variance, where L = number of instruments used.
   d. A $LX1$ matrix of weights that chosen optimally which gives smallest variance, where L = number of instruments used.
   e. A LXk matrix of weights that chosen optimally which gives smallest variance, where L = number of instruments used and K = Number of parameters to be estimated.
3. In Forward Orthogonal Deviation for first differenced Unbalanced Dynamic Panel data model;
   a. We will subtract the mode of all the future observations available to minimize the gap of the missing observation.
   b. We will subtract the median of all the future observations available to minimize the gap of the missing observation.
   c. We will subtract the average of all the future observations available to minimize the gap of the missing observation.
   d. We will add the average of all the future observations available to minimize the gap of the missing observation.
   e. We will add the median of all the future observations available to minimize the gap of the missing observation.
4. The sample Moment Condition for the regression model $Y_i = X_i\beta + U_i$; under OLS estimation is;
   a. $\frac{1}{N}\sum X_i^{'}\left(y_i^{'} - X_i^{'}\beta\right) = 0$
   b. $\sum X_i^{'}\left(y_i^{'} - X_i^{'}\beta\right) = 0$
   c. $\sum X_i^{'}\left(y_i^{'} - X_i^{'}\hat{\beta}\right) = 0$

d. $\frac{1}{N}\sum X_i^{'}\left(y_i^{'} - X_i^{'}\hat{\beta}\right) = 0$

e. $\frac{1}{N}\sum\left(y_i^{'} - X_i^{'}\hat{\beta}\right) = 0$

Answer the following question using abdata.dta.

Suppose, you want to find out the determinants of firm employment for 140 firms in UK, where firm employment is dependent upon previous year's employment for two successive years, wage, previous year's wage, capital, lag of capital for two successive years, actual output, lag of actual output for two successive years. The model is following,

$$n = \rho nL_1 + \beta_1 nL_2 + \beta_2 w + \beta_3 wL_1 + \beta_4 k + \beta_5 kL_1 + \beta_6 kL_2 + \beta_7 ys + \beta_8 ysL_1 + \beta_9 ysL_2 + \beta_{10} yr^{*} + u_i$$

5. If you estimate the above model using System GMM estimator what will be the number of instruments used in the model?
   a. 41
   b. 42
   c. 46
   d. 45
   e. 47
6. After estimating the model using System GMM estimation, suppose you want to check the presence of higher order autocorrelation (upto 3rd order) in the model.
   Which of the following is true in this case?
   a. 2nd order autocorrelation is there as Z value is less than 1.5
   b. 1st order autocorrelation is there as the probability of Z value for 1st order is less than 0.05
   c. 3rd order autocorrelation is there as Z value is less than 1.5
   d. 2nd order autocorrelation is there as the probability of Z value for 2nd order is greater than 0.05
   e. 3rd order autocorrelation is there as the probability of Z value for 2nd order is greater than 0.05