Week 7 Assignment

Applied Econometrics

1. Which of the following can be considered as a Dynamic Panel data Model?
   a. $Y_{it} = \alpha_0 + \beta_1 X_{it} + a_i + v_{it}$, where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$
   b. $Y_{i,t-1} = \alpha_0 + \beta_1 X_{it} + a_i + v_{it}$ where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$
   c. $Y_{i,t-1} = \alpha_0 + \beta_1 X_{i,t-1} + a_i + v_{it}$ where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$
   d. $Y_{it} = \alpha_0 + \beta_1 X_{i,t-1} + a_i + v_{it}$ where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$
   e. $Y_{it} = \alpha_0 + \beta_1 X_{it} + \beta_2 Y_{i,t-1} + a_i + v_{it}$ where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$
2. Which of the following can be the problem of using OLS as the method of estimation of Dynamic Panel Data Model?
   a. Endogeneity due to lagged dependent variable.
   b. Autocorrelation of first order
   c. Both A & B
   d. Multicollinearity due to lagged dependent variable.
   e. All the above.
3. If we use First Difference Method to estimate the following Dynamic Panel Data Model; $Y_{it} = \alpha_0 + \beta_1 X_{it} + \beta_2 Y_{i,t-1} + a_i + v_{it}$ where $t = 1, 2, ..., T$ & $n = 1, 2, ..., N$, explanatory variable $(Y_{i,t-1} - Y_{i,t-2})$ will be correlated with;
   a. v_{it}
   b. $v_{it} + a_i$
   c. $v_{it} - v_{i,t-1}$
   d. a_i
   e. $v_{i,t-1}$
4. According to Nickell Bias, if $T \to \infty$;
   a. $Bias \to \infty$
   b. $Bias \to 1$
   c. $Bias \to -1$
   d. None of the above
5. In a dynamic panel data model GMM can be used to control for;
   a. Endogeneity
   b. Omitted Variable bias
   c. Unobserved heterogeneity
   d. Measurement errors
   e. All the above.

6. Which of the following are the suggestions of Holtz-Eakin et. al. to avoid the trade of between Sample Length and Lag Length?
   a. Use Second and Third period lad of dependent variable as the only instrument for all the period.

   b. Use only third period lag of the dependent variable as the instrument for all the period.
   c. Replace missing values with 1
   d. Include all available lags for untransformed variable.
   e. None of the above
7. If number of period in the Dynamic Panel Data is 5, according to Arellano Bond Model, number of instruments should be;
   a. 5
   b. 6
   c. 3
   d. 1
   e. None of the above
8. Arellano Bond Model for Dynamic Panel data is applicable only if;
   a. Number of periods is small along with a large number of observations
   b. Fixed individual effect is present in the model
   c. A Linear functional relationship is present in the model.
   d. Heteroskedasticity is present within individual unit but not across
   e. All the above
9. The presence of ________ represents the dynamism in the Arellano Bond Model for dynamic panel Data.
   a. AR(2)
   b. AR(3)
   c. Both A & B
   d. AR(1)
   e. All the above