[Glossary]

Prediction in Linear Models and Multicollinearity

Subject:	Business Economics
Course:	B. A. (Hons.), 5th Semester, Undergraduate
Paper No. & Title:	Paper – 531 Elective Paper Q1 – Advanced Econometrics
Unit No. & Title:	Unit – 1 Relaxing the Assumptions of The Classical Linear Model
Lecture No. & Title:	Lecture – 3 Prediction in Linear Models and Multicollinearity

Glossary

1 Prediction Error It is the difference between Observed and expected value of Y for given value of X

2 Mean Value Prediction It is the estimated mean value of Y for given value of X

3 Multicollinearity It refers to the situation when One or more explanatory variables are by themselves linearly related.

4 Auxilliary Regression It is the linear regression Relationship between i^{th} Explanatory variables X_i and all other explanatory variables

5 Condition Index Positive square root of the Ratio of maximum to minimum Eigen value of matrix X'X

6 Variance Inflation Factor (VIF) If R_i^2 is the multiple correlation coefficient for regression of X_i On all other X's then the term VIF is given by $(VIF)_i = \frac{1}{(1- R^2{}_i)}$

If VIF exceeds 10, there is multicollinearity

7 Tolerance (TOL) It is reciprocal value of variance inflation Factor. If TOL is near to zero we suspect multicollinearity

8 Ridge Regression It is an approach to deal with the problem of multicollinearity. Ridge Regression Estimator (RRE) is given by the relation $\hat{\underline{\beta}}_R = (X'X + CI_n)^{-1} X'\underline{y}$ with its Variance given by the formula

$$V\left(\hat{\underline{\beta}}_R\right) = \sigma^2 [(X'X + CI)^{-1} X'X(X'X + CI)^{-1}]$$