

ECONOMICS 6002 CLASS 6
HETEROSKEDASTICITY

1. The IID assumption for the disturbances ε
 - a. Heteroskedasticity
 - b. Serial correlation

2. Properties of OLS without the IID assumption
 - a. OLS no longer **best** linear unbiased
 - b. OLS standard errors are invalid

3. Consequences of heteroskedasticity I
 - a. OLS is inefficient
 - i. Large-variance observations are overweighted
 - b. Generalized Least Squares estimator is BLUE
 - i. But requires knowledge of the covariance matrix of the disturbances ε
 - c. If the covariance matrix is not known but can be estimated consistently, the Feasible GLS (FGLS) estimator is asymptotically equivalent to GLS
 - i. However FGLS frequently requires strong assumptions about the nature of the process generating the disturbances, which may be difficult to support.
 - ii. There is a growing inclination to regard the presence of non-spherical disturbances as evidence of model misspecification. Correction of the disturbances is a last resort

4. Consequences of heteroskedasticity II
 - a. The variance of the OLS estimator is incorrectly estimated
 - i. The White estimator is a consistent robust alternative, but may overreject in small samples

5. Testing for Heteroskedasticity
 - a. White Test
 - i. General, but has low power
 - b. LM test (Breusch-Pagan)
 - i. Tests a specific model of heteroskedasticity (skedastic function)