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ASYMPTOTIC DISTRIBUTION OF THE WEIGHTED LEAST SQUARES ESTIMATOR

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Abstract. This paper derives the asymptotic distribution of the weighted least squares estimator (WLSE) in a heteroscedastic linear regression model. A consistent estimator of the asymptotic covariance matrix of the WLSE is also obtained. The results are obtained under weak conditions on the design matrix and some moment conditions on the error distributions. It is shown that most of the error distributions encountered in practice satisfy these moment conditions. Some examples of the asymptotic covariance matrices are also given.

Key words and phrases: Heteroscedasticity, weighted least squares, asymptotic distribution, asymptotic covariance matrix, consistency.