INFERENSI *ASYMPTOTIC VARIANCE* BERDASARKAN ESTIMATOR *GENERALIZED METHOD OF MOMENT* PADA MODEL REGRESI LINIER BERGANDA

SKRIPSI

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ABSTRAK

Skripsi ini membahas proses inferensi *asymptotic variance* pada model regresi linier berganda berdasarkan metode *Generalized Method of Moment* (GMM). Regresi linier berganda dinyatakan dalam bentuk matriks sebagai $Y = X'\beta + u$. Untuk mengestimasi parameter regresi linier berganda dengan menyelesaikan persamaan $\frac{1}{T}\sum_{i=1}^{T} m_i(\theta) = \frac{1}{T}\sum_{i=1}^{T}\begin{pmatrix} \psi\left(\frac{Y_i - X_i'\beta}{\sigma}\right)X_i \\ \rho'\left(\frac{Y_i - X_i'\beta_0}{\sigma}\right)X_i \\ \rho\left(\frac{Y_i - X_i'\beta_0}{\sigma}\right) - b \end{pmatrix} = \mathbf{0}$. Metode yang digunakan untuk menyelesaikan persamaan tersebut dengan metode Newton-Raphson melalui *software S-Plus 2000*. Hasil yang didapat dari estimator GMM pada data *Salinity* dengan $n = 28$, $p = 4$ adalah $\hat{\beta} = (-163137.668, -463.154, 5701.690, 9430.206)'$ untuk estimator MM, $\hat{\beta}_0 = (650078.091, -9286.556, -17353.788, -21413.856)'$ untuk estimator LMS dan nilai *scale estimate* adalah $\hat{\sigma} = -4626.005$.

Hasil inferensi *asymptotic variance* berdasarkan $H_0^2 : A\,\mathrm{var}_2(\beta) = A\,\mathrm{var}(\beta)$ dan $H_1^2 : A\,\mathrm{var}_2(\beta) \neq A\,\mathrm{var}(\beta)$ diperoleh keputusan H_0^2 ditolak, sehingga disimpulkan bahwa untuk mengestimasi *asymptotic variance* tidak menggunakan estimator *Heteroskedasticity dan Autocorrelation Consistent* (HAC).

Kata Kunci : Model Regresi Linier Berganda, Estimator *Generalized Method of Moment*(GMM), *Asymptotic Variance, Heteroskedasticity dan Autocorrelation Consistent* (HAC).

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ABSTRACT

This *skripsi* discusses *asymptotic variance* inference process in multiple linear regression model based on *Generalized Method of Moment* (GMM). Multiple linear regression can be written in the matrix form as $Y = X^t\beta + u$. To estimate multiple linear regression parameter is done by finding the result of the equation $\frac{1}{T}\sum_{i=1}^{T} m_i(\theta) = \frac{1}{T}\sum_{i=1}^{T}\begin{pmatrix} \psi\left(\frac{Y_i - X_i^t\beta}{\sigma}\right)X_i \\ \rho'\left(\frac{Y_i - X_i^t\beta_0}{\sigma}\right)X_i \\ \rho\left(\frac{Y_i - X_i^t\beta_0}{\sigma}\right) - b \end{pmatrix} = \mathbf{0}$. Newton-Raphson method is used to solve the equation by implementing *software S-Plus 2000*. The results which have gotten from GMM estimator in *Salinity* data with $n = 28$, $p = 4$ are $\hat{\beta} = (-163137.668, -463.154, 5701.690, 9430.206)^t$ for MM estimator, $\hat{\beta}_0 = (650078.091, -9286.556, -17353.788, -21413.856)^t$ for LMS estimator and $\hat{\sigma} = -4626.005$ as a *scale estimate* number..

The result of *asymptotic variance* inference based on $H_0^2 : A\,\mathrm{var}_2(\beta) = A\,\mathrm{var}(\beta)$ and $H_1^2 : A\,\mathrm{var}_2(\beta) \neq A\,\mathrm{var}(\beta)$ which has gottten that results in rejection of this hypothesis, so it doesn't used *Heteroskedasticity dan Autocorrelation Consistent* (HAC) estimator to estimate *asymptotic variance*.

Key Words : Multiple Linear Regression Model , *Generalized Method of Moment* (GMM) Estimator, *Asymptotic Variance, Heteroskedasticity dan Autocorrelation Consistent* (HAC).