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论文

EXISTENCE OF CONSISTENT ESTIMATES OF LINEAR REGRESSION COEFFICIENTS WHEN THE ERROR VARIANCES ARE UNEQUAL

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摘要 Consider the linear regression model $Y_i=x_i'\beta+\sigma_ie_i, i=1,\ldots,n,\ldots$, where $E(e_i)=0$, $E(e_ie_j)=\delta_{(ij)}$, $0<\sigma_1^2\le \sigma_2^2\le \ldots$ and $\{x_i\}$ satisfies $A_1\le \sum_{i=1}^{n} x_ix_i'/n\le A_2$, for n large, $A_1>0, A_2>0$. This paper shows that (i) if $\sigma_i^2, i=1,2\ldots$, are known, then the necessary and sufficient condition for the consistency of the best unbiased linear estimate of β is $\sum_{i=1}^{\infty} \sigma_i^{-2}=\infty$;(ii) if $\{\sigma_i^2\}$ is only known to belong to the set $\{(h_1,h_2,\ldots)$: 0

关键词 Linear regression model,consistency

分类号

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Abstract Consider the linear regression model $Y_i=x_i'\beta+\sigma_ie_i, i=1,\ldots,n,\ldots$, where $E(e_i)=0$, $E(e_ie_j)=\delta_{(ij)}$, $0<\sigma_1^2\le \sigma_2^2\le \ldots$ and $\{x_i\}$ satisfies $A_1\le \sum_{i=1}^{n} x_ix_i'/n\le A_2$, for n large, $A_1>0, A_2>0$. This paper shows that (i) if $\sigma_i^2, i=1,2\ldots$, are known, then the necessary and sufficient condition for the consistency of the best unbiased linear estimate of β is $\sum_{i=1}^{\infty} \sigma_i^{-2}=\infty$;(ii) if $\{\sigma_i^2\}$ is only known to belong to the set $\{(h_1,h_2,\ldots)$: 0

Key words Linear regression model consistency

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