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论文

ADMISSIBILITY AND Γ-MINIMAXITY OF LOSSESTIMATORS IN MULTIVARIATE LINEAR MODEL

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摘要 Let an n \times m matrix of observations, Y, have distribution N(XB, G \oplus V), where X, G > 0 and V > 0 are known n \times p, n \times n and m \times m matrices respectively, B is an unknown P \times m matrix of parameters. We consider the problem of estimatingthe loss L = (SX\bar{B} - SXB)C(SX\bar{B} - SXB)', where S and C > 0 are known t \times n and m \times m matrices respectively \bar{B} = (X'G^{-1}X)^- X'G^{-1}y. It is proved that the uniformly minimum risk unbiased estimator of L, \bar{L}_{0} = (tr CV)SX(X'G^{-1}X)^-X'S', is admissible for q = rankSX = 1 and m \leq 4, or for q\geq 2 and m\leq 2 and inadmissible for m \geq 5 witha matrix loss function. It is also shown that the above \bar{L}_0 is a Γ-minimax estimator of L against a class of priors.

关键词 Admissible loss estimator, r-minimax los

分类号

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Abstract Let an n \times m matrix of observations, Y, have distribution N(XB, G \oplus V), where X, G > 0 and V > 0 are known n \times p, n \times n and m \times m matrices respectively, B is an unknown P \times m matrix of parameters. We consider the problem of estimatingthe loss L = (SX\bar{B} - SXB)C(SX\bar{B} - SXB)', where S and C > 0 are known t \times n and m \times m matrices respectively \bar{B} = (X'G^{-1}X)^- X'G^{-1}y. It is proved that the uniformly minimum risk unbiased estimator of L, \bar{L}_{0} = (tr CV)SX(X'G^{-1}X)^-X'S', is admissible for q = rankSX = 1 and m \leq 4, or for q\geq 2 and m\leq 2 and inadmissible for m \geq 5 witha matrix loss function. It is also shown that the above \bar{L}_0 is a Γ-minimax estimator of L against a class of priors.

Key words Admissible loss estimator r-minimax loss estimator matrix loss function

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