论文

超效率DEA模型的区间扩展

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Extension of Super-efficiency Data Envelopment Analysis to Interval Case

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摘要 将一种改进的DEA模型-超效率DEA(SE-DEA)模型[1]拓展到区间投入产出情形,得到区间SE-DEA模型。定义了一种反映决策者满意度的区间数序关系。当决策者给定一满意度水平,将区间SE-DEA中的区间不等式约束转化为确定型约束。研究了该满意度水平的另一层含义,即决策者对除被评价决策单元外的其它决策单元的偏好程度,据此将区间SE-DEA中的区间等式约束和区间目标函数转化为确定型。最终将区间SE-DEA转化为某一满意度水平下的确定型SE-DEA,并进行求解。最后将文中方法应用于天津市某4家科研所的效率预测问题之中。

关键词： 区间数   超效率   DEA   满意度   序关系

Abstract： When the input and output data of the modified DEA-SE-DEA[1] are interval numbers,the SE-DEA model was extended to interval SE-DEA.An order relation between interval numbers which can express the decision-maker's satisfaction degree was defined.Based on this definition the inequality constraints of interval SE-DEA can be transformed into exact constraints at a certain satisfaction degree.Another meaning of the satisfaction degree was also studied,viz.the preference to the DMUs except the DMU being evaluated.Based on those anlysis the equality constraints and objective function of interval SE-DEA can be transformed into exact ones.As a result,the interval SE-DEA was transformed into an exact SE-DEA at a certain satisfaction degree of the decision-maker and we could gain its solution.And the method was applied in efficiency forecasting on four research institues of Tianjin.

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