

عنوان مقاله:

Malmquist productivity index in multi-stage production systems with network structure

محل انتشار:

ششمین کنفرانس بین المللی تحلیل پوششی داده ها (سال: 1393)

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خلاصه مقاله:

Conventional multi-stage data envelopment analysis (DEA) models measure the overall performance of a production system composed of multi stages (processes) in a specified period of time, where variations in different periods are ignored. This paper takes the operations of individual periods into account to develop a multi-period and stage dynamic network DEA model, which is able to measure the overall and period efficiencies at the same time, with the former expressed as a weighted average of the latter. Since the efficiency of a multi-processes system in a period is the product of the deferent process efficiencies, the overall efficiency of a decision making unit (DMU) in the specified period of time can be decomposed into the process efficiency of each period. Based on this decomposition, the sources of inefficiency in a DMU can be identified. The efficiencies measured from the model can also be used to calculate a common-weight global Malmquist productivity index (MPI) between multi periods, in that the overall MPI is the product of the multi stages MPIs.

کلمات کلیدی:

Malmquist productivity index, DEA, network, overall efficiency

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