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### **Assessing R&D efficiency using a two-stage dynamic DEA model: A case study of research institutes in the Chinese Academy of Sciences**

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#### *Abstract*

Various studies have been devoted to the evaluation of the research and development (R&D) performances of universities and research institutes. However, existing studies tend to focus on static systems, that is, systems with no intertemporal effect. To tackle this issue, this study attempts to assess relative R&D efficiency of institutes from a dynamic perspective. The unified two-stage model proposed by Kao (2017) made a contribution to combining division efficiencies in the multiplier form with frontier projections in the envelopment form in a unified framework. We develop his model in a dynamic framework into which the effects of carry-over activities are embedded across the period. If the dynamic effects in the efficiency measures are not considered, the results will be biased. This is one of the few studies to examine dynamic effects within the framework of the R&D process. Our analysis is based on samples of 17 research institutes in the Chinese Academy of Sciences over the period of 2012 to 2015. When compared with the proposed data envelope analysis (DEA) model, results show that the static DEA model may underestimate the R&D efficiency scores. The institutes experienced significant improvements in system efficiency, mainly due to the improvements in transfer efficiency. However, there is still much room for improvement in transferring scientific and technological (S&T) achievements. We also find that the resource scale played an important role in influencing basic research. Finally, the projections of inefficient institutes indicate that most institutes had insufficient carry-over inputs (newly approved projects and management cost) based on the average four-year values, and existing slack resources for managers to improve the future performance.

**Vabljeni:** raziskovalci in učitelji, študenti in diplomanti ter ostala zainteresirana znanstvena in strokovna javnost.

Lepo pozdravljeni,

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prodekanja za znanstveno-raziskovalno dejavnost