Data envelopment analysis of the efficiency of academic departments at a public university in Iran

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Abstract: This paper examines the performance efficiency of 77 academic departments at a public university in Iran using data envelopment analysis (DEA), which applies a multiple input and output variables approach. To conduct reasonable analyses, four types of academic staff accompanied with salary paid were used as the input measures and two indexed measures of output which include students taught and research performance. Using various DEA models, we obtained different estimates for efficiency scores which show that the type of model used affects the efficiency scores. We also found that average efficiency is relatively high and about one half of all academic departments at the university, based on the results of input-oriented variable return to scale models, perform efficiently. The results of the DEA models employed also illustrate the existence of scale inefficiencies and the relatively large heterogeneity among the departments. However, we did not find sufficient evidence supporting efficiency heterogeneity across different fields of study (i.e., humanities and social sciences against sciences and engineering). The determinants of departmental efficiency were also examined.

Keywords: data envelopment analysis; DEA; efficiency evaluation; scale effects; Iranian academic departments; education and research performance; Iran.


Biographical notes: Abolghasem Naderi is a Professor of Economics of Education at the University of Tehran, Tehran, Islamic Republic of Iran. His main interests cover fields such as economics of education and training, education finance, economics of human capital development, cognitive economics, neuroeconomics, knowledge-based economy/organisation, development economics, multilevel modelling, and frontier analysis.

1 Introduction

Higher education units (HEUs) are considered as the main centres for generating and transferring knowledge through two main activities namely education and research. During the last three decades the units have been faced with growing resource limitations...
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