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Assessing Cost and Profit Efficiency by a Joint Application of Parametric and Non-parametric Approaches: Evidence from the Algerian Banking System

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ABSTRACT

The aim of this paper is twofold: First, we provide an empirical assessment of cost and profit stochastic frontiers based on a panel dataset of Algerian commercial banks over the 2003-2012 period. In addition, we examine the effect of certain bank specific factors (profitability, bank size and ownership status) on differences in efficiency. Second, on the basis of the same data set, we also compare the most widely used parametric (Stochastic Frontier Approach SFA) and non-parametric (Data Envelopment Analysis DEA) techniques to cost efficiency measurement in a purpose to demonstrate the robustness of the explanatory results obtained. We check the consistency conditions among frontier techniques by comparing efficiency means, rank order, correlation coefficients and the correlation with accounting measures of performance. Our most striking results is that Algerian banks are more efficient at generating profits (score of 70,39 %) than controlling costs (score of 45,74 %) and that cost efficiency worsened while profit efficiency improved substantially during the study period. While all banks perform similarly in terms of profits, the cost efficiency scores vary considerably according to the size and the ownership status. In fact public banks perform private banks which are disadvantaged by their allocative efficiency. The results indicate also the presence of a relative consistency between the two approaches; in contrast with standard performance measures making our empirical findings derived from the frontier methods more informative about the reality of the Algerian banking industry performance.

KEYWORDS Cost Efficiency; Profit efficiency; Algerian Banking System; Stochastic Frontier Approach; Data Envelopment Analysis