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About the Efficiency Behavior of the Portuguese Manufacturing Firms During the Financial Crisis

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ABSTRACT

This work studies some effects of the World Financial Crisis on firms in terms of efficiency scores, by measuring how 23K units used inputs and produced outputs, obtained from a set of Portuguese manufacturing firms on three time periods: pre-crisis (2006-2008), pre-troika (2009-2011) and troika (2012-2013). We adopt a non-parametric approach, which combines Multidirectional Efficiency Analysis (MEA) with other techniques as cluster analysis, principal component analysis and dimensionality testing, to examine three empirical hypotheses: (H1) the performance of the firms in the manufacturing sector has been adversely affected by the financial crisis; (H2) due to the financial crisis, the manufacturing sector acquired long-term debt deliberately; and (H3) the financial crisis has affected substantially the food subsector. The results indicate that (H1) is confirmed, but not totally, (H2) is confirmed and (H3) is rejected. We also found surprisingly good affine fittings between inputs and capital, and outputs and EBIT with really good p-values. Hence, we also propose a reduction of the dimensionality of the MEA model, when it is possible to apply model fitting. If the reduction results in one input and one output, we give procedures to visualize and compare between efficiencies scores.

KEYWORDS World Financial Crisis; Multidirectional Efficiency Analysis; Manufacturing Sectors

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