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Technical efficiency in the Italian performing arts companies

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Synopsis

This paper evaluates the determinants of firms' technical efficiency in the Italian Performing Arts (PA) sector for 107 firms over the period 2005-2012. This research firstly finds that the Italian PA firms are scale-inefficient as they generally operate in either an increasing or decreasing returns to scale landscape. This result is reinforced by the fact that the smaller firms (10-49 employees) are the most technically efficient firm size class. Secondly, this research proves that the efficiency score is on average 66%, demonstrating that PA firms' output could be substantially increased without the use of new inputs. Thirdly, it confirms that the quality matters and competences increase the efficiency in the sector. Finally, the environmental factors (especially the quality of institutions) have a strong impact on technical efficiency of PA firms, supporting that regional differences also exist in this sector.

Introduction and Background

Firms' performance has been studied in different countries and regions from various perspectives, such as: labour and total factor productivity, technical efficiency, allocative and cost efficiency. However, scholars have usually concentrated on studying the manufacturing sector whilst little attention has been paid to the cultural sector. In particular, the PA sector has been underestimated due to the lack of reliable data on inputs and outputs. The Italian PA sector is an interesting case study for two reasons. Firstly, the economic and public budget crises have reduced the subsidies that the sector has received in the past years. Secondly, the PA sector is usually characterised by the absence of technological change and by increasing wages (Baumol and Bowen 1965). These two conditions make the PA sector an important research area because firms that operate in this sector have to use their inputs efficiently if they want to survive in the market. We define the technical efficiency (TE) as the firm's ability to obtain maximum output from a given input vector, whilst scale efficiency is that situation in which the firm is operating at its optimal scale of production, where the firm minimises its average cost. PA firms that are not operating on the production frontier and/or not at the optimal scale, are technically and/or scale inefficient, enlarging their productivity gap from the rest of the economy.

Methodology

To measure TE of the Italian PA firms, this paper adopts parametric Stochastic Frontier Approach (SFA) techniques to assess the dimension of the gap between the efficient production frontier and a firms' current state of production. In order to account for the non-standard features of production associated with the PA sector, we apply a flexible translog (logarithmic transcendental) production function. We explore different panel data SFA models such as the Latent Class and True Random Effects models that control for unobserved heterogeneity of the PA Italian firms. We also examine the impact of various environmental factors on TE of

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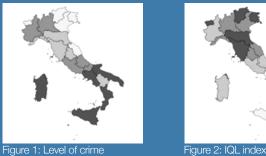
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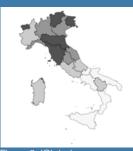Department of Economics,
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Figure 1: Level of crime

Figure 2: IQL index

Figure 3: IQI index

Italian PA firms by directly parametrizing the variance of inefficiency in the SFA model.

Data and Variables

The panel data set for 107 firms over the period 2005-2012 comes from the AIDA database provided by the Bureau van Dijk which contains detailed accounts following the scheme of the Fourth Directive of the EEC Council. From the 99 sectors present in AIDA, we choose the sector 9001 - Performing arts. Output is measured as total annual revenues coming from different PA company activities. Labour input is the total number of employees at the end of the year and capital stock in a given year is proxied by the nominal value of tangible and intangible assets after depreciation. Output and capital stock are deflated using 2-digit consumer price index and investment deflators, respectively.

We use the size of the firm, the wages as the proxy for quality, age of the firm, the regional dummies and other environmental factors as the potential efficiency determining variables. Data on the level of crime (the number of car thefts) and the quality of life index (IQL) are used at the provincial level, and are taken from the annual survey published by the most authoritative Italian financial and economic newspaper, Il Sole 24 ore. Data on the institutional quality index (IQI) are taken from the Nifo and Vecchione (2014) database. The IQI is derived from five groups of elementary indexes: voice and accountability, government effectiveness, regulatory quality, rule of law and corruption. Figures 1-3 display the average number of car thefts, the IQL and the IQI indexes for 20 Italian regions. The regions that have higher index values are marked with darker shade. Whilst the highest level of crime is present in the Southern regions, the highest quality value of life and the institutional quality indexes exist in the Northern part of Italy.

Outcomes and Findings

Our results confirm that controlling for both unobserved and observed heterogeneity of the PA firms in the SFA framework is crucial in order to get meaningful and realistic estimates of TE scores. We also conclude that whilst all inputs elasticities are positive, the returns to scale and hence economies of scale vary across different groups of firms

in the Italian PA sector. This finding confirms that firms in this sector face potential barriers of output expansion. More importantly, we provide robust estimates of the TE scores for the PA companies. The estimated TE scores are considerably low and equal around 66% implying that the PA firms could increase their output by around 34% using the same level of inputs.

A further contribution of this research lies in investigating the impact of the firm size on TE of PA firms. We have found that the small-sized (10-49 employees) firms are the most technically efficient, confirming that the scale inefficiency is important in the Italian PA sector. A natural corollary of this finding is that the PA firm efficiency could be increased by moving up or down to the most efficient small size class. Both micro (1-9 employees) and larger firms (more than 49 employees) are scale-inefficient. They suffer from either economies or diseconomies of scale and could increase their efficiency by revising their scale of activity. In particular, smaller firms that have between 10 and 49 employees account for around 40% of the overall sector, whilst around 52% of all PA firms in the sample are micro firms with less than 10 employees. This implies that managers of micro-sized firms should realise that increasing the scale of operation could increase TE, thus permitting the overall Italian PA sector to take a step further in improving its performance.

Our findings also confirm that the firms' environmental context plays a strong role in determining efficiency. In fact, whilst the level of crime, as expected decreases firm efficiency, both the quality of life index and the institutional quality index positively affect TE. To stimulate the performing arts activities in many Italian regions, policymakers should work on those contextual factors that affect the technical efficiency of companies operating in the performing arts as well as in other economic sectors.

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