



Evaluating the delivery performance of public spending programs from an efficiency perspective



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ARTICLE INFO

Article history:

Received 23 July 2013

Received in revised form 12 March 2014

Accepted 13 March 2014

Available online 24 March 2014

Keywords:

Public policy implementation

Performance measurement

Performance management

EU LEADER

Data Envelopment Analysis (DEA)

ABSTRACT

There is increasing recognition that performance evaluation of national as well as foreign public economic development programs should emphasize on their implementation rather than focus solely on their outcomes. This paper presents a framework for comparing the delivery or administrative efficiency of public spending programs at local level, based on a novel application of Data Envelopment Analysis (DEA). It is focused on the European Union context and specifically on the Greek LEADER operational program. The results of this application indicate that DEA, in contrast to traditional performance metrics, is an insightful tool in revealing administrative inefficiencies in program delivery by capturing the operational and scale components of performance while taking into account the complex mix of tasks and interventions carried out by its operators. The proposed technique may be easily integrated into a program evaluation scheme and may be utilized as a tool to support rational decision-making and program improvement.

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1. Introduction

Recent reforms, intended to promote more accountable and responsive government, have increased public attention to performance analysis and accelerated the production and use of information on agency performance and public program outcomes (Heinrich, 2008). Many studies have investigated the scope and significance of performance measurement in public organizations. Nonetheless, there is more to learn about the challenges facing public managers who want to measure organizational outputs and use the feedback to improve performance (Nicholson-Crotty, Theobald, & Nicholson-Crotty, 2006). As a result, the search for better performance indicators is an ongoing effort (Johnsen, 2005).

The current research on policy implementation and performance and the related discussion are influenced by an ongoing change in policy-making and implementation. More specifically, there is a shift from hierarchical and centrally steered government to more networked governance that overcomes traditional administrative borders and includes different actors from outside the public sector (Aakkula, Kröger, Kuokkanen, & Vihinen, 2006). The evaluation community has responded with a shift from

traditional impact analyses to implementation studies that fit within this new, more flexible structure. While impact analysis encompasses the research question most commonly associated with program evaluations – whether the program or policy has the desired effect on critical outcomes, implementation analysis seeks to understand the program in its own right (Corbett & Lennon, 2003).

Although there is a substantial research literature on public policy implementation, this is mainly restricted in the fields of education, health and social issues (Hill & Hupe, 2002; Saetren, 2005). However, the delivery of development programs differs from the provision of other types of public service both in terms of the type of services and in the sense that the implementers of development programs typically focus on their quick and timely delivery. Hence it makes sense to study the delivery of such programs systematically.

As stated by Pülzl and Treib (2006), implementation research has a lot to learn from European integration studies because policy making at international level has become increasingly important. Initially, the delegated management of EU public spending programs had been the focus of sustained academic and practitioner criticism for many years (Levy, 2003). Subsequently, the EU implementation literature concentrated on the efficiency dimension of program performance. Studies on the efficiency of implementation mechanisms initially focused on absorption capacity which reflects the ability of member states to fully spend

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in an efficient and effective way the allocated financial resources provided by the structural funds (Boot, de Vet, & Feekes, 2001). More recently, studies by Ferry, Gross, Bachtler, and McMaster (2007) concentrated on the structures and the determinants of implementation methods in order to improve their efficiency; see ÖIR (2003), Milio (2007) and Lion, Martini, and Volpi (2008).

How best to define performance measures is a much-debated issue (Sager, Ritz, & Bussmann, 2010) and, typically, absorption indicators of aggregated output defined as the budgetary funds mobilized in proportion to the funds initially allocated, are used as proxies for the efficiency of implementation of public spending programs. See Milio (2007) and Cace, Cace, and Nicolăescu (2010) and the above mentioned EU formal evaluation literature as examples of this approach. However, an absorption indicator does not consider efficiency. As stated by Fried, Lovell, and Schmidt (2008) efficiency is measured in terms of the maximum expansion (minimum contraction) of all outputs (inputs) that is feasible with current inputs (outputs) and technology; see Fried et al. (2008). Nonetheless, using different performance measures for the same concept can provide different feedback to managers about their organizations (Nicholson-Crotty et al., 2006).

In this background, this study extends the implementation literature by focusing on estimating the implementation of economic development programs from an efficiency perspective. In many cases these programs are delivered at sub-national level by particular public (or non-profit) entities that have to mobilize funds in order to achieve sufficiently broad economic development objectives. Since the performance in any delivery network is largely determined by the operation of the nodes of such a network, we adopt a bottom up approach concentrating on the performance of the implementers themselves.

The main contribution of this paper is that, to the best of our knowledge, this approach is one of the first attempts to use a frontier production model, namely Data Envelopment Analysis (DEA), for evaluating the delivery efficiency of public spending programs. More specifically, our objective focuses on the extent to which DEA can be utilized as a tool to support rational management decision-making and program improvement.

DEA is a well known non-parametric operational technique for evaluating the operational efficiency of a set of comparable units, called Decision Making Units (DMUs) that utilize multiple inputs to produce multiple outputs. DEA was introduced by Charnes, Cooper, and Rhodes (1981) who generalize a radial (equiproportional) approach for estimating efficiency, originally proposed by Farrell (1957). Under the assumptions of the radial approach, the values of all controllable (input or output) variables of an inefficient DMU are proportionally improved until the DMU becomes efficient. Numerous DEA extensions have appeared in the literature to include weight restrictions, non-discretionary or categorical variables, changes in productivity and efficiency over time. More than 4000 published articles on DEA and its applications in measuring efficiency and productivity are listed in Emrouznejad, Parker, and Tavares (2007). For a comprehensive review on DEA models and their theoretical extensions over the past three decades see Cook and Seiford (2009). A thorough introduction in DEA can be found in Cooper, Seiford, and Zhu (2004).

Through the use of linear programming, DEA constructs a frontier from a subset of best practice observed DMUs and identifies which DMUs are not on it. This frontier “envelops” the remaining DMUs, hence the term “Data Envelopment Analysis”. Consequently, the subset of DMUs which construct the frontier are deemed relatively efficient while the rest are relatively inefficient within the sample under assessment. DEA provides efficiency scores which give the magnitude of the inefficiencies in relation to the distance of the inefficient DMUs to the frontier that is

enveloping them. The underlying reasons for the wide range of DEA applications is the fact that it may handle multiple inputs and outputs without having to specify a priori a production relationship for these inputs and outputs and can be used in cases where public/priceless goods and services are provided. Moreover, since it uses the best and not the average practice for construction of the frontier, it is a more appropriate tool for benchmarking purposes than parametric methods (Bogetoft, 2012).

Banking, education, health care, and hospital efficiency were found to be the most popular application areas (Emrouznejad et al., 2007). DEA has also been used for evaluating the efficiency of various fields of public policy at international, national or local level. Recent examples concern either social welfare programs (Habibov & Fan, 2010), or government-sponsored R&D projects (Hsu & Hsueh, 2009). In particular, as far as economic development is concerned we mention the works of Karkazis and Thanassoulis (1998), Kutan and Yigit (2007), Cherchye (2001) and Afonso, Schuknecht, and Tanzi (2010). This literature is not primarily focused on the implementation phase of the public policy cycle. Most of it rather concentrates either exclusively on the long term outcomes of public policy or its outcomes along with the related outputs in order to measure the (in) efficiency in producing them. Consequently, this literature is not very helpful in management decisions concerning policy or program implementation per se. On the other hand, DEA literature dedicated to the efficiency assessment of public services with an administrative nature is still scarce, as stated by Cordero, Pedraja, and Jiménez (2011).

The remainder of the paper is organized as follows. In the next section we discuss the methodological issues for the evaluation of a program when the focus is on its implementation. In the following section we demonstrate the framework in the case of Greek Leader, an innovative EU rural development program. We then present the empirical results achieved using DEA and discuss their potential managerial implications while contrasting them with the traditional performance indicator, namely the absorption rate. Finally, before we conclude, we examine two critical factors, operational size and environmental context, that influence the success of implementation.

2. Methodology

2.1. Program performance measurement

Data on performance can be used to support a variety of decisions. Perceptions about which decisions will be affected are critical to those charged with selecting performance measures (Newcomer, 1997). Typically, evaluation of a public spending program is primarily focused on the impacts of its interventions on target areas/populations, which are elements *outside* the program. In this context the main elements of evaluation are the long term impacts of the program. This macro approach appears to be more relevant to the performance objectives of policy stakeholders and is related to program effectiveness. However, when the focus is on program implementation i.e. *within* the program, a micro approach might be more appropriate, as more tactical objectives with operational nature are relevant. Furthermore, while outputs are realized in the short term, their outcomes are long-lasting. This makes the latter inappropriate for an interim program evaluation whose primary purpose is to provide information quickly so that managers may perform the required adjustments in program implementation. Hence, although evaluation in terms of impacts is important, when the evaluation objective is to identify and resolve implementation problems and the information gained is for the support of internal management, the outputs, rather than the associated results or impacts must be the focus of the performance evaluation scheme.

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