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ASSESSING THE ASSIGNATION OF PUBLIC SUBSIDIES: DO THE EXPERTS CHOOSE THE MOST EFFICIENT R&D PROJECTS?

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ASSESSING THE ASSIGNATION OF PUBLIC SUBSIDIES: DO THE EXPERTS CHOOSE THE MOST EFFICIENT R&D PROJECTS?[a,b]

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ABSTRACT: The implementation of public programs to support business R&D projects requires the establishment of a selection process. This selection process faces various difficulties, which include the measurement of the impact of the R&D projects as well as selection process optimization among projects with multiple, and sometimes incomparable, performance indicators. To this end, public agencies generally use the peer review method, which, while presenting some advantages, also demonstrates significant drawbacks. Private firms, on the other hand, tend toward more quantitative methods, such as Data Envelopment Analysis (DEA), in their pursuit of R&D investment optimization. In this paper, the performance of a public agency peer review method of project selection is compared with an alternative DEA method.

Keywords: Subsidies, R&D, DEA, Multi Criteria Decision Analysis, “peer review”.
JEL Codes: O32, C61, H25.

RESUMEN: La implementación de un programa de subvenciones públicas a proyectos empresariales de I+D comporta establecer un sistema de selección de proyectos. Esta selección se enfrenta a problemas relevantes, como son la medición del posible rendimiento de los proyectos de I+D y la optimización del proceso de selección entre proyectos con múltiples y a veces incomparables medidas de resultados. Las agencias públicas utilizan mayoritariamente el método peer review que, aunque presenta ventajas, no está exento de críticas. En cambio, las empresas privadas con el objetivo de optimizar su inversión en I+D utilizan métodos más cuantitativos, como el Data Envelopment Análisis (DEA). En este trabajo se compara la actuación de los evaluadores de una agencia pública (peer review) con una metodología alternativa de selección de proyectos como es el DEA.

Palabras clave: Subvenciones, I+D, DEA, Análisis de Decisión Multi-criterio, revisión de expertos.
Clasificación JEL: O32, C61, H25.

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1. Introduction

Support for R&D and the innovation process plays a central role in the public policies of developed countries and is based on arguments for which a wide consensus exists. Among the reasons for public intervention the most fundamental is market failure, which can cause R&D investment to be, without the public intervention, lower than the socially optimal (Arrow, 1962; Klette *et al*., 2000). Although the reasons for public support are well established in the literature as well as in practice, it is necessary to examine the degree of efficiency of this support.

In recent years, public policy evaluation has acquired growing importance, with the primary objectives being determination of policy impact as well as examination of additional effect generation. Although results are not entirely conclusive, in the case of R&D subsidies, some studies (David *et al*., 2000; García-Quevedo, 2004) indicate the existence of an additionality effect. These are *ex–post* evaluations of selected and already publicly subsidized projects however, and as such, the degree of additionality and even its existence is closely related with the *ex–ante* evaluation as well as the selection process. This relationship has only rarely been studied.

In general, public agencies across Europe and in the United States use the peer review method to select and assign subsidies to business R&D projects. Although this method presents certain advantages, it also has some drawbacks. Private firms, on the other hand, use more quantitative methods such as Multiple Criteria Decision Making (MCDM) or Data Envelopment Analysis (DEA) to optimize their R&D investment and to select and rank their feasible projects (Linton *et al*., 2002).

The objective of this paper is to examine two differing approaches to the evaluation and assignment of public subsidies to business R&D projects, peer review and DEA, and to analyze which methodology is preferable. This topic is not very well documented in the literature, primarily because of data availability. Nevertheless, the existence of a database containing information on both subsidized and unsubsidized R&D projects, with individual information for each project as well as evaluations made by external experts hired by the public agency allows us to examine if evaluators are choosing the most “efficient” projects. In other words, it allows us to evaluate the evaluators.

Although there are differences between the project evaluation objectives of a public agency and a private firm, both entities seek to identify those projects which are superior in all relevant dimensions and, in turn, guarantee that the selected projects have a high potential to generate economic benefits. In order to evaluate both private and public project selection objectives, we propose a two-stage methodology. First, we compare grading obtained by each evaluator assigning a particular grade to a project (peer review) with grading obtained by means of the DEA technique. Second, using the Propensity Score Matching technique, we analyze which set of selected projects (graded with peer review or DEA) is able to reach the objectives set by the agency.

The paper is organized as follows. In section 2, the different methods of selection of R&D projects are examined and their advantages and disadvantages are discussed. In section 3, the database is described and estimates of the DEA scores are obtained and compared with those obtained by the peer review method used by the public agency. Section 4 presents the second-stage, which analyzes if there is a differential impact between the projects selected by the agency and those that would be selected using the DEA method. Section 5 concludes.

2. Methods of R&D projects selection

The design of a public program of subsidies to business R&D projects requires defining a selection and ranking system in order to decide which projects should be supported. The decision criteria of the agency should be part of the evaluation of a public program because, as the structural models on this subject show (David *et al.*, 2000), such decision criteria in the selection of projects has as major impact on the results of the program as well as on the effect of the subsidies.

In their calls for applications, public agencies define, with varying degrees of precision, the criteria for the selection of projects to be subsidized. In principle, these criteria should be oriented to the objective of correcting market failures so that subsidies to firms generate, in the presence of spillovers, the appropriate incentives for an efficient allocation of resources. Frequently, however, other objectives appear in the decisions of the agencies (Blanes and Busom, 2004). Such objectives can include, among others, support for specific technologies or sectors, development of projects with high diffusion capacity and profound economic impact, or giving priority to projects which generate behavioral additionality by stimulating, for example, cooperation among firms (OECD, 2006).

The process of selection and ranking of projects for the allocation of subsidies faces substantial difficulties which stem both from the limited information available to the agency in general as well as from the existence of information asymmetries. This is particularly true in the case of R&D projects, which are characterized by a high degree of complexity and uncertainty. The selection process seeks to find the value of the project's contribution to technological advancement, as well as its economic potential and the need for public funding (Feldman and Kelley, 2003). The most common method used in the United States, the European Union, and in the majority of national and regional agencies is the peer review system. The European Union, in its 7th R&D Framework Program, emphasizes that expert evaluation is at the core of both the selection system as well as the concession of financial support. Furthermore, the National Academy of Sciences in the United States also considers that the most effective way to evaluate R&D projects is by peer review.

The peer review system presents substantial advantages in the evaluation and selection of projects, particularly in terms of independence, impartiality, and transparency. It also brings in expert knowledge in the evaluation of technological projects, expertise which can often be difficult for the agency to have internally. Peer review also presents significant limitations, however, and is not free of criticism.

In the specific case of subsidies to business R&D, the main criticism has been conservative and institutional bias (Brezis, 2007). Conservative bias relates to the tendency to reject inventive projects which may suppose substantial innovations but far from existing technology and, therefore, difficult to evaluate. This tendency, which favors the approval of conventional projects, can have negative effects on the impact of subsidies at the productivity level. Similarly, institution bias means that firms of a certain size and which have R&D experience are favored in the concession of subsidies. Other limitations which appear in the peer review method are the difficulties which an agency may face in identifying appropriate experts, the subjectivity of those experts found, as well as possible conflict of interest, especially in areas of small territorial dimension (Rigby, 2002). In addition to the aforementioned limitations, the use of external experts can also represent substantial cost to the agency, in both time spent on the evaluation process as well as in remuneration of the experts. In the case of the European Union, which has a database of 50,000 experts for their R&D programs, around 5,000 annual evaluations are requested. This figure represents an estimated cost of nearly 2% of the total budget of each program in question.

Private firms must also establish a ranking for their portfolio of R&D projects as well as value each project in accordance with its expected rate of return. The fact is, however, that measurement of the potential of the available project portfolio to optimize selection among a wide group of generally incomparable projects is problematic. Likewise, it is also difficult to measure a project's expected rate of return. Although numerous methods have been considered, a definite solution has not been reached (Linton *et al*., 2002). One adequate option is to use quantitative measurements for each projected possibility, such as current net value or other financial methods. It is clear, however, that an approach such as this is insufficient because it does not capture the broad complexity of an R&D project. In consequence, alternative quantitative methods have been proposed. Among these, the DEA method is of special interest because it may be of particular use in the selection and classification of R&D projects, especially projects which are characterized by a high degree of uncertainty (Linton *et al*., 2002; Linton *et al*., 2007).

The DEA method presents as its main advantage the ability to simultaneously analyze multiple inputs and outputs; it does not require the supposition of specific functional forms which relate inputs with outputs. It also allows the comparison of the analysis units either among themselves or with a subset. DEA also presents some limitations, however, in that it is an extreme point technique in which measurement errors can cause significant problems. It is also a non-parametric technique and as a consequence, statistical tests can be difficult to implement. Furthermore, DEA gives relative efficiency measurements but not absolute efficiency measurements, and therefore results with a "theoretical maximum" cannot be compared. However, this characteristic of offering relative efficiency results is appropriate to the objectives of our analysis. The purpose of using the DEA is to choose, among all projects, those which achieve a maximum output with a specific input level. In this case, the results of the DEA should be interpreted as a way to rank projects and to compare among them.

3. Peer-review vs. DEA. Methodological proposal and case study

To compare peer-review with the alternative DEA method of project selection, we make use of data from R&D public subsidies granted by the Agency for Innovation and Business Development (CIDEM) of Catalonia (Spain). Since 2004, this agency has called for subsidies to promote R&D projects. In this paper, we analyze the 2005 call for R&D subsidies for firms operating in the high technology sector. The available database includes detailed information on the characteristics of applicant firms, of the R&D projects presented, and of the scores that external experts gave to the projects, the so called peer review scores. The scores given by experts are used by an agency committee in the selection and subsequent ranking of projects.

The criteria that the Agency has established in the call for R&D subsidies for the evaluation of projects are presented in Table 1. The six criteria can be grouped into the three main objectives of Agency:

- Development of technologically outstanding projects that have a potential to generate spillovers ("technological contribution").
- Economic impact of projects in terms of Gross Value Added and/or R&D investment ("economic potential").
- Impact on other sectors and firms ("behavioral effect").

Firms which want to obtain an R&D subsidy must first present an application with information (qualitative and quantitative) about the firm and the R&D project. Then, in accordance with each established criteria, external experts evaluate the projects and give a score which allows all presented projects to be ranked. Finally, a committee organized by the agency uses this information to determine which projects will receive subsidies and the percentage of the total cost of the selected projects to be subsidized. In the present study, the original dataset contains information for 216 projects, 52% of which obtained a subsidy.

Table 1. Agency's objectives and criteria for selecting R&D strategic projects.

Objectives of the Agency	Specific criteria
Technological contribution	• Technological relevance and technical viability of the project. • Increase in the capacity of the applicant's R&D.
Economic potential	• Socioeconomic impact. • Contribution to the internationalization of the economy. • Consolidation of the firm in the market.
Behavioral effect	• Cooperation with other agents and diffusion of results

Source: own elaboration from the order TRI/163/2005 of April 13, DOGC 4369.

With this selection method of R&D projects in mind, we present the DEA technique as an alternative, one which requires choosing criteria that can be quantified. As such, we have deleted from the original database all those projects without relevant data, and have come up with a final number of 148 projects. The available information comes from the applications of the projects and includes data not only for 2005 but also for 2004 as well as 2006. This information allows carrying out robustness exercises of the estimated DEA scores.

Table 2. Agency's objectives and output measures.

Objectives of the Agency	Measures of Output
Technological contribution	• Output 1: Estimate of new R&D projects as a result of the project (2005-2006). Expressed in €.
Economic potential	• Output 2a: Estimate of the contribution of the project to firm's exports (2005-2006). Expressed in %. • Output 2b: Estimate of industrial investments induced by project (2005-2006). Expressed in €.
Behavioral effect	• Output 3: Estimate of subcontracted activity in R&D (2005-2006). Expressed in %.

Note: as a robustness exercise DEA scores have been carried out using output data for 2005 and 2006 (separately) and for the sum and mean of both years.

DEA methodology, which is presented in detail in Charnes *et al*. (1978) and in Coelli *et al*. (1998), requires defining inputs and outputs which are common to all projects. In the case of the selection of R&D projects, and following Linton *et al*. (2002, 2007), we consider the cost of the project as input. The definition of outputs should respond to the objectives of the agency. In the case of the private sector, Linton *et al*. (2002, 2007) use as output different estimates of the discounted cash flow estimated for the project. In the concession of public subsidies to promote R&D, the objectives of the agency are essentially to promote technological advancement, to foment economic growth, and to provoke behavioral changes in the firms by means of an increase in cooperation among firms, which favors knowledge diffusion. In accordance with these objectives and starting from the available statistical information, Table 2 presents the chosen outputs. In addition, Table 3 presents the main descriptive statistics of the 148 projects analyzed.

Once inputs and outputs are defined, the procedure maximizes outputs for a given level of inputs assuming a variable returns to scale (VRS) production function. In our framework, the VRS hypothesis seems adequate since all projects are compared to each other while still retaining different dimensions in inputs and outputs.

Table 3. Input/Output descriptive statistics

	Mean	Std. dev.	Min.	Max.
Input	848,555.5	1,791,711.0	60,269.8	15,806,918
Output 1	571,432.0	2,604,700.9	0.0	31,000,000.0
Output 2a	27,3%	46,0%	0%	100%
Output 2b	517,242.8	1,231,134.2	0.0	10,037,000.0
Output 3	4,8%	12,6%	0,0%	45.0%

Note: the descriptive statistics for the 148 projects correspond to output values for 2006.

The DEA scores are indexes of relative efficiency (project scores) and should be interpreted merely as a form of ordering the projects. This procedure allows the selection of those projects which obtain a maximum output (objective of the agency) given a certain level of input (cost). Efficiency indexes range from 0 (inefficient) to 1 (efficient). However, this range of DEA scores does not permit a full ordering of projects, especially among those which the DEA considers to be efficient (with a score equal to 1). To solve this problem the super-efficiency option of DEA techniques allow the assignment of values higher than 1 to efficient projects, reducing the number of projects with the same score and allowing a more precise ranking of projects. Allowing for super-efficiency, DEA efficiency scores are distributed between 0 and 10.

The efficiency scores allow a precise ranking of projects. The resulting ranking is compared with the one obtained for the peer-review. To compare the degree of similarity between both methods we consider the number of projects approved by the experts (93 of 148). If we look at the first 93 projects from the DEA ranking we find that the degree of similarity between both distributions of approved/refused projects is around 14-16%. Therefore, the degree of similarity between the scores of the peer-review and the DEA is rather low, indicating that the two project selection methodologies give different results.

To further compare both methodologies, we also perform an exercise which considers the 50 best projects in both rankings (see Table 4). Nearly half of the projects considered as efficient under the peer-review methodology also obtained a high score using the DEA technique. In the case of projects refused by the experts, there is a 73% coincidence with the DEA results (72 of 98), while 26 projects refused with peer-review were approved when given the score received with DEA. Summarizing, as a global measure of similarity between ranking methodologies we find that peer-review and DEA have a 65% coincidence in the final evaluation (approved/refused) of projects, with a 35% difference in the final evaluation of projects granted by either one or the other methodology.

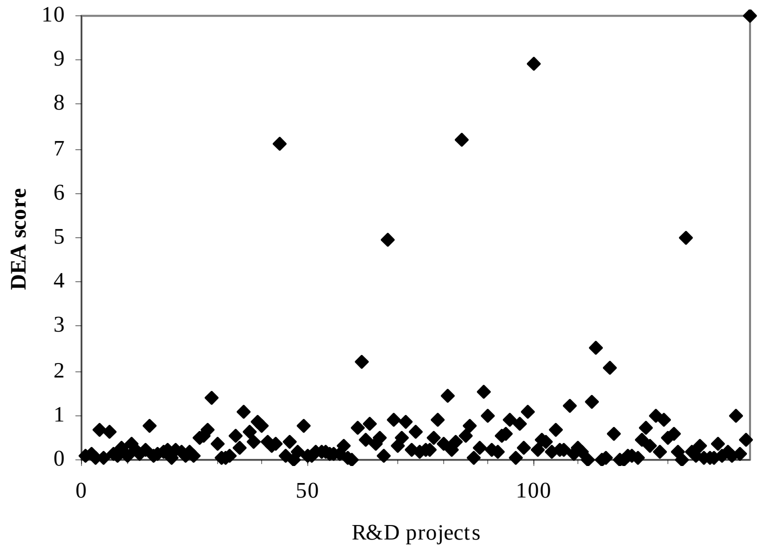
Table 4. Assignment of projects (approved/refused) according to methodology

	Approved DEA	Refused DEA	Total
Approved peer-review	24	26	50
Refused peer-review	26	72	98
Total	50	98	148

Note: DEA results obtained with 1 input, 4 outputs (data for 2006), and assuming VRS.

4. Evaluating peer review and DEA. A second stage in the project selection process

The results of the previous section show a low correlation between the projects selected by each method of *ex–ante* evaluation. This seemingly contradictory conclusion calls for the comparison of the expected results of each set of projects in order to be able to determine if one is socially preferable to the other. If the objective of the agency is to generate the maximum possible impact, defined as the attainment of a higher social profitability derived from the co-financing of these projects, then it is necessary to compare the additionality that would be generated in each of the two scenarios.



Mean	0.67
Std. error	0.11
Median	0.32
Std. Dev.	1.32
Sample var.	1.76
Min.	0.002
Max.	10.00
N	148

Note: DEA results calculated for values of outputs in 2006. Robustness exercises show that DEA scores vary little if the sum of the 2005 and 2006 outputs or the average value of both data is used. More precisely, correlations between different scores are higher than 90%.
Figure 1. DEA results

Clearly, the ideal procedure to carry out an evaluation would be to observe the same unit (firm) in two different situations at the same time: to analyze its results both with treatment (subsidy) and without (non treatment or control). Since this is impossible, it is necessary to control for the counterfactual situation, that is, for what would happen in the case contrary to the one which the unit really faces. To do that, it is possible to use a non-parametric association method known as Propensity Score Matching (PSM). Starting with the work of Rosenbaum and Rubin (1983), PSM has been increasingly used in the evaluation of public policy. In the case of studies that perform R&D subsidies evaluation, this method has been used recurrently in recent years (Duch *et al*., 2006; Herrera and Heijs, 2007; Almus and Czarnitski, 2003, among others). The PSM is a method that allows estimation of the average effect of the treatment on units that receive it (denominated Average Effect of Treatment of the Treated or ATT), observing the performance variable exposed to treatment (“factual state”) (Y1) against the non treated (“counterfactual state”) (Y0).

An estimate of the propensity score (PS) is not enough to compute the ATT, as the probability of observing two units with exactly the same PS tends to zero. A way of matching treated and control units is found in looking for the control unit with the most similar PS for each treated unit, a process called nearest neighbor matching (NNM). Although it is not strictly necessary, the method is usually applied with substitution, in the sense that a unit of the control group can be the best match for more than one treated unit. Once each treated unit is matched with a corresponding control unit, the difference between the performance of the treated units and that of the control units is obtained. The ATT is then obtained as the median of these differences.

It is obvious; however, that some of these matches could be quite poor, as for some treated units the nearest neighbors can have a very different PS, despite contributing equally to the estimation of the ATT independently of their distances. With the kernel estimator, all units in the treatment group are matched with a weighted average of all units in the control group with weights that are inversely proportional to the distance of the PS of those treated and those in the control group. It is clear from the previous considerations that these two methods can derive different results, mainly in terms of the tradeoff between the quality and the quantity of the matching, with none of them being a priori superior to the other. Their simultaneous consideration, nevertheless, offers a way to analyze the robustness of the estimates.

Despite the growing popularity of PSM, relatively little has been written on the problem of variable selection. Some studies based on simulations (Brookhart *et al*. 2006, Judkins *et al*. 2007) show that selection of the variables which are included in the calculation of the PS can affect the bias, or the variance and the average quadratic error of an estimate of the ATT. These studies in turn suggest that variables not related to the treatment but related to the result should always be included in the calculation of the PS. On the other hand, the inclusion of variables related to treatment but not to results has been seen to increase the variance of the ATT without reducing the bias. For the calculation of the PS, variables referring to firms’ characteristics are used. These include sales, the number of workers, and the number of years the firm has been operating in the market. Several dummy variables are also included, which indicate if the firm operates in a high technology manufacturing sector, in a knowledge-intensive services sector and, finally, if it is located in the metropolitan area of Barcelona.

The following tables show the results of *ex–post* evaluation under the two described scenarios;

the selection of projects through the agency's peer-review (ATT-A) and the selection of projects through the DEA method (ATT-D) using the described estimators. For this evaluation exercise, we use both the R&D intensity (R&D as a percentage of sales) to proxy financial additionality as well as the percentage of research subcontracted by firms to proxy behavioral additionality.

Departing from the data used in the previous section, we add projects by firm and then filter some outliers. We end with data for 112 firms. From the information provided by the Agency, we have 67 firms that actually received a subsidy and the other 45 we have as a control group. Since we have computed the efficiency scores for these firms, we rank them in descending order and we assume that those with the highest efficiency scores would have received a subsidy had the agency used it as a selection mechanism. As in the previous case, those firms with low efficiency scores act as controls for treated firms under DEA. In so doing, we are thus able to compare the two sets of firms, those actually subsidized by the agency and those with potentially more efficient R&D projects selected through the DEA method.

As indicated in Table 5, even if both methods select different projects to be subsidized, the results on the ATT show that both actually discriminate for the best projects. We can see from the table that in both cases, although with differences in terms of statistical significance, treated firms show a higher R&D intensity than firms in the control group. These results are robust since the conclusions that can be extracted are the same for the two estimators considered. The results shown in the table indicate that, on average, treated firms selected by the DEA method would have a slightly higher impact on financial additionality.

Table 5. Impact on financial aditionality

	ATT-A			**ATT-D**		
	Coeff.	**T**	**C**	**Coeff.**	**T**	**C**
NNM	**6.41** (1.69*) [1.75*]	61	26	**9.18** (2.25**) [2.05**]	62	23
Kernel	**5.45** (-.-) [1.73*]	61	39	**10.17** (-.-) [2.76***]	62	38

Note: Standard errors in parenthesis. Bootstrapping standard errors in brackets. T is the number of treated firms; C is the number of control firms. *, * * and * * * indicate statistical significance at 90, 95 and 99 percent, respectively.

The picture changes somewhat when considering the impact on behavioral additionality. Table 6 shows that only the treated firms selected with the DEA methodology have a significant statistical effect on the percentage of subcontracted research activities. Moreover, the estimated effect is substantial and demonstrates that treated firms would show an approximately 10% higher percentage of subcontracted research activities than non-treated firms.

These results should be interpreted with care because of reduced sample size and the sensibility of PSM to the inclusion or omission of variables. Also, the impossibility of having pre-treatment and post-treatment data conditions the estimated ATT effects. That being said, the results clearly indicate that a more rigorous *ex–ante* evaluation is needed, given that the differing impacts of the R&D projects selected by the two methods point to different conclusions. In the absence of such an uncompromising *ex–ante* evaluation, it is possible to conclude that R&D projects which do not conform to the objectives of the agency are in fact being subsidized. As such, the DEA method of project selection should be regarded as both a complement to the more traditional method of peer review evaluation as well as a demonstration of the importance of linking *ex–ante* with *ex–post* evaluation of R&D projects.

Table 6. Impact on behavioral additionality

	ATT-A			**ATT-D**		
	Coeff.	**T**	**C**	**Coeff.**	**T**	**C**
NNM	**0.53** (0.01) [0.08]	61	27	**10.63** (2.94***) [2.34**]	62	26
Kernel	**1.37** (-.-) [0.27]	61	39	**9.77** (-.-) [2.47**]	62	38

Note: Standard errors in parenthesis. Bootstrapping standard errors in brackets. T is the number of treated firms; C is the number of control firms. *, * * and * * * indicate statistical significance at 90, 95 and 99 percent, respectively.

5. Conclusions

Support for innovation is a key element in the public policy of the European Union, the United States, and the majority of national and regional governments. Although the reasons which justify public support for business R&D are widely accepted, it is necessary to demonstrate that these public programs are effective. This need has lead to the growing use of evaluation analyses, particularly *ex-post* evaluation, to help determine if public intervention generates an additional effect.

Within such evaluation analyses, one subject that has been largely overlooked is the question of whether *ex-ante* evaluation systems for the selection and the ranking of projects and the concession of subsidies are appropriate. The impact of public programs is closely related to project selection processes, as the results and additional effects of programs rely on precision in the selection of projects which both fulfill agency objectives as well as generate substantial impact.

This research has sought to analyze and assess the adequacy of the *ex-ante* evaluation mechanisms used in the assignation of public subsidies to business R&D. The method most frequently used by public agencies in their evaluation of projects is evaluation by experts, or the peer review method. Private firms, on the other hand, use different methods to value and rank their R&D projects, in accordance with the projects' expected returns. These methods have a more quantitative character and, among them, the DEA has been seen to be particularly appropriate.

In this paper, a methodology for the evaluation of the methods of selection for R&D projects and the concession of subsidies has been proposed. Accordingly, the applicability of this methodology has been demonstrated, using information drawn from the specific case of a regional agency business R&D project subsidy program. In short, the proposed methodology consists of comparing, in a first stage, the results of the peer review method with another possible method, specifically the DEA. In a second stage, a quasi-experimental technique of *ex-post* evaluation, Propensity Score Matching, has been used to estimate the results and additionality generated by both project selection methods.

The results of the research show that the selection and classification of projects by peer review and DEA share a low correlation. In addition, a comparison of the results of the analyses of the simulation of the impact derived from projects selected by both methods shows the difficulty in reaching definitive conclusions about the superiority of peer review over another method.

Although the peer review method can be preferable in the qualitative evaluation of projects as well as in the resolution of the problem of asymmetric information, results show both the convenience of supplementing it with other methods as well as the necessity to advance in the knowledge of *ex-ante* evaluation methods. The ideas proposed in this paper seek to improve available information as well as consider project ranking and selection an integral process which closely links *ex–ante* and *ex–post* evaluation.

Following similar studies (David *et al.*, 2000; García-Quevedo, 2004), the results of this research point to the necessity of improving the evaluation procedures for R&D subsidies. Similarly, and in accordance with other recent analyses (Jaffe, 2002; Brezis, 2007), the research also highlights the convenience of examining the various alternative methods disposed to public agencies in their evaluation and subsequent selection of R&D projects.

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