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ASSESSING THE PRODUCTIVE EFFICIENCY OF NON-PROFIT ORGANISATIONS: A COMPARATIVE ANALYSIS

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Abstract

Empirical evidence on the productive efficiency of non-profit organisations is at present scarce and not conclusive. In the present work, we analyse this issue by relying on a new data-set about Italian for-profit and non-profit organisations engaged in the provision of communal services. While most of the existing evidence relates to health-care organisations only, our data-set also surveys organisations involved in other communal services. The results indicate that the efficiency of non-profit organisations does not significantly differ from that of other organisations, and shed some light about the determination of their performance. The selection procedures adopted in hiring labour are found to be very relevant. We also find that the production of relational goods (measured by two different proxies) is related to organisational efficiency and to the promotion efforts of non-profit organisations.

JEL classification*:* L31, D23, J41.

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1. Introduction

From the 1980s, the non-profit sector has acquired a very respectable size in advanced market economies, until reaching, in terms of share of the GDP, a weight even greater than the agricultural sector (see Salamon *et al*., 1999). Indeed, as an economy develops itself, consumer demand increasingly directs itself toward immaterial goods, including communal services. Besides, there has been a pervasive crisis of the welfare state, making it more difficult for consumers to obtain such services through this channel. Hence the public sector has found more and more convenient to tender their provision to non-profit organisations. But then, the need of greater cost-efficiency and transparency of expenditure decisions that has inspired in many countries studies of the efficiency of the public sector rebounds over these non-profit organisations, which should be selected on the basis of the same criteria (Barbetta, 1997). This explains why the evaluation of productive efficiency for non-profit organisations is becoming a high policy priority (Angeloni and Fiorentini, 1997; Andreaus, 1997).

There are still difficulties in considering non-profit organisations as economic agents (not only social or political ones), that is as producers of either relational or merit goods, especially because they rely on the gratuitous productive services supplied by members and volunteers. But these organisations also utilise public funding and donors' money to acquire such scarce resources as paid labour, capital, energy and material inputs. Furthermore, in any given organisation, volunteer labour must have an opportunity cost in terms of the services that might have been provided to the public in another organisation. More fundamentally, berating the merits of efficiency analysis within the non-profit sector seems to imply that, not moving within the sphere of market transactions, the members of these organisations should disregard the result of the their own effort (also meant in the financial sense). But the history of the non-profit sector in most countries indicates that great attention has always been paid to the effects of the organisations' action.

Also, a new study of the productive efficiency of non-profit organisations should prove rather useful from the analytical standpoint. According to Hansmann (1996), the fact that non-profit organisations lack stakeholders interested in the appropriation of residual surplus *could* lead to an attenuation of property rights and, hence, to a reduction of productive efficiency (the motives highlighted by Leibenstein's, 1966, famous analysis of X-efficiency are here highly relevant). Yet, the (few) empirical works on this topic, which have dealt with organisations engaged in the provision of health services, do not show any significant difference in the cost efficiency of non-profit, versus for-profit, organisations (Preston, 1988; Hansmann, 1996, pp. 238-240). As pointed out in Turati (2001), this outcome could arise because, even if property rights are attenuated, managers (and workers) in the non-profit sector are highly interested in their reputation. The importance of a strict ethical code in the non-profit sector could then successfully counterbalance the lack of a class of stakeholders interested in the appropriation of residual surplus.

In any case, more empirical evidence seems to be needed on this matter for the following reasons. First of all, while the objective function of for-profit firms is almost invariably given by some form of profit maximisation, the objective function of non-profit organisations is less clear-cut and very often multi-dimensional. This not only makes more complicated the assessment work of the stakeholders (Hansmann, 1996, p. 239), but also potentially biases the empirical measurement of efficiency. As was highlighted by Pestieau and Tulkens (1993) in their study of the appropriateness of efficiency analysis for the public sector, it appears that the only concept immune from these potential biases is that of *technical* efficiency, fundamentally based on the comparison between physical resources engaged and results obtained. On the other hand, the above quoted studies focus on cost efficiency and are potentially affected from this measurement bias.[1]

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[1] In the literature it is customarily assumed that this bias arises because the multi-dimensional objective function of non-profit organisations might include some redistributive purposes, leading to *higher* unit costs. But, the contrary could also be true; in particular it is sometimes maintained that non-profit organisations are viable only because of their recourse to underpaid labour.

In at least one case (Callen, 1994), measures of technical efficiency have already been provided for non-profit organisations. Interestingly, Callen (1994) introduces these measures in a model of donations to non-profit institutions[2] as an explanatory variable of the amount of donations received. Ex-ante, non-profit organisations are supposed to compete one with the other to attract donors' funds, even promoting their own image. Ex-post, they are assessed by the donors that can discontinue their funding if they deem as unsatisfactory the performance of the organisation they have chosen. In fact Callen (1994) finds that a measure of technical efficiency (among other more customary variables) affects significantly the amount of donors' money received in a sample of Canadian organisations. Our effort differs from Callen (1994) because in his paper the type of organisations analysed (fund-raising charities) makes it easier to define the output of these organisations: the amounts of funds raised. It could also be argued that the positive correlation between efficiency and donations is spuriously engendered by this definition of output. We attempt to measure efficiency in the provision of communal services, which we take to be a more representative case of the kind of action in which non-profit institutions are usually engaged.

Also, note that most of the existing evidence on the efficiency of non-profit organisations relates to health-care organisations only. But, from the analytical and the policy standpoints it would be interesting to gather some evidence about non-profit organisations involved in the provision of other types of communal services. Our data-set allows us this kind of assessment. As will be seen below, it includes organisations involved in the provision of a wide array of services (to be sure comprising health-care services).

Indeed, a distinguishing feature of the present work is that we rely on a new data-set about Italian for-profit organisations, non-profit organisations and public institutions engaged in the provision of communal services (Borzaga, 2000). This data-set is particularly interesting because it surveys organisations involved in a wide range of communal services, and because of its wealth of

[2] The *loci classici* of this literature are probably Weisbrod and Dominguez (1986), Posnett and Sandler (1989).

qualitative and quantitative information on these organisations. We believe this information makes our effort interesting both from the analytical and from the policy standpoint. Through our analysis, it will be possible to provide some indications of the impact of some structural characteristics of the organisations (localisation, organisational structure, and so on) on the technical efficiency of these institutions. This data-set has also some drawbacks, particularly as far as its size is concerned, and below we deal with the methodological aspects of estimating technical efficiency in these conditions.

Another distinguishing feature of our work is that some attention is devoted (in Section 2) to the definition of the production set of a non-profit organisation. This analysis is needed to make sense of a comparison between for-profit and non-profit organisations. For the latter the distinction between input and output is not always clear a priori. For instance, the acquisition of new donors and volunteers widens the input or the output set of a non-profit organisation? Certainly, these are resources allowing them to provide more services, and hence should be considered as inputs. Yet, it could also be said that the diffusion of the organisations' values throughout society is for them a relevant result of their action. To answer a question like this we need a model of this organisation, defining its objective function, its resources and the results of its actions. Our model, whose crucial feature is the relationship between the production of communal services and of relational goods, allows us to define technical and organisational efficiency of the non-profit organisation, as well as to single out their determinants.

The rest of the paper has the following structure. In Section 3 we present our data set in greater detail, illustrating in particular our input and output measures. Another fundamental methodological point is the choice of the estimation procedure. This choice turns out to be greatly dependent on the nature of the input and output data. In Section 4 we argue that the nature of our data-set and our interest in the explanation of technical efficiency suggest to adopt a parametric frontier approach. Some emphasis is given to the procedures used for outlier search. In Section 5 we present the determinants of technical efficiency, distinguishing between those related to the environment and those related to the

internal structure of the organisations, that is to organisational efficiency. We also define some proxies for the relational goods provided by non-profit organisations. In Section 6 the results are given and commented, while some concluding remarks are offered in Section 7.

2. A simple model of the non-profit organisation

In order to propose a model of the non-profit organisation, we first need to define this kind of institution. By non-profit organisations we mean those institutions characterised by the non-distribution of profits and by the large presence of volunteer workers among its members. Moreover, non-profit organisations provide services, usually some kind of merit good, to the public *not necessarily* in exchange for a monetary counterpart (this has obvious implications for the measurement of output, which will be taken up in Section 3); correspondingly they obtain part of the resources needed for their survival from public funding and from private donations. Finally, an influential body of works (see for instance Gui, 2000, and the references therein) argues that the output of non-profit organisations does not simply amount to the merit goods they distribute, but includes the *relational goods* produced in this manner. By this term, the literature means the feelings of trust and reciprocity (in sociological parlance, the networks of trust) originated by the action of the non-profit organisation.

Naturally, there is no contradiction between the provision of merit goods and the production of relational goods. Rather, it is the case that the former fosters and sustains the latter. Gratuity is related to the motivations of the organisation members (altruism, self-satisfaction, self-interest,…) and not to the disregard toward the results of the organisation's action. See for instance what is said by a practitioner about this: "…the issue of the gift relates more to the volunteer worker and his/her motivations than to the recipient of the volunteer action: the latter is above all interested

that the service he/she needs be of good quality and given in such a way as to respect his/her dignity, in other words he/she expects a good service, rather than a good gift [our translation]".[3] This "good service", however, is not simply an end in itself, but also a token given in an exchange where the real aim for the organisation is the creation of a network of trust between the organisation and the people it assists.

We believe it is useful to give to these ideas a formal content (albeit an elementary one). Let us write:

$$(2.1)\ R = f(M ; P ; \mathbf{F} ; \mathbf{W} ; \varepsilon)$$

where R is the (quantity of) relational good, M is the (quantity of) merit good, P is the (quantity of) effort of promoting the values of the organisation, **F** is a vector listing the individual characteristics of the organisation, **W** is a vector gathering some environmental factors, and ε is a random element. The idea contained in (2.1) is that the organisation can produce relational goods both by providing to the public a merit good (a token given in an exchange whose real aim is the creation of a network of trust between the organisation and the people it assists), and by promoting among the public the founding values of the organisation. The success of the organisation also depends on some environmental factors (determining the responsiveness of the public) and on the individual characteristics of the organisation (its intrinsic capability of building a network of trust).

[3] Nervo (1999), p. 7. "… la questione del dono riguarda più il volontario e le sue motivazioni che il beneficiario dell'azione volontaria: a questi interessa soprattutto che la prestazione di cui ha bisogno sia di buona qualità e sia data in modo che rispetti la sua dignità; si aspetta cioè un buon servizio, più che un buon dono."

On the other hand, the production of M and P can be represented by:

$$(2.2)\ M = g(\mathbf{X}\ ;\ TE\ ;\ \varepsilon)$$

$$(2.3)\ P = h(\mathbf{X}\ ;\ TE\ ;\ \varepsilon)$$

In (2.2) and (2.3), M and P are a function of a set of input quantities, **X**, of the technical efficiency of the decision-making unit, TE, and of a random factor, ε. Provided that one has measures for M, P and **X**, it is possible to construct from (2.2) and (2.3) a multi-output multi-input distance function, to which frontier analysis can be applied in order to measure the technical efficiency of the organisations, that is their capability to obtain the maximum amount of outputs for given inputs, or to use the minimum amount of inputs for given outputs.

As explained in Fried *et al*. (1999), measures of technical efficiency usually conflate the role of organisational efficiency (dependent on the actions of the organisation) with that of some structural characteristics of the organisation unrelated to its behaviour. If one has data about these characteristics, frontier analysis allows one to isolate the role of organisational efficiency proper. Consequently, (2.2') and (2.3') can be rewritten as:

$$(2.2')\ M = g(\mathbf{X}; \mathbf{S}; OE; \varepsilon)$$

$$(2.3')\ P = h(\mathbf{X}; \mathbf{S}; OE; \varepsilon)$$

In (2.2') and (2.3'), M and P are a function of a set of input quantities, **X**, of a vector of structural characteristics, **S**, of the organisational efficiency of the decision-making unit, OE, and of a random factor, ε.

Note that the capability of an organisation of building a network of trust crucially depends on the effort and resourcefulness shown to the public, which surely must be included among the components of vector **F**. But both these factors must equally be included among the determinants of organisational efficiency. In the absence of more direct indicators of effort and resourcefulness, some measure of organisational efficiency is then likely to be included among the components of vector **F**. Hence, given the above model, non-profit organisations care about their organisational efficiency, because their ultimate aim (the production of relational goods) is best achieved if they maximise their production of M and P for given resources, and because, for given M and P, higher organisational efficiency is likely to be associated with the production of more relational goods.

In accordance with the above presented model, our empirical analysis will begin with the measurement of technical efficiency and the assessment of the relationship between technical efficiency and the **S** variables; from this we should obtain a measure of organisational efficiency. Then, we will attempt to estimate an empirical counterpart of (2.1). Particular attention will be paid to the possibility that the vector **F** contains a measure of organisational efficiency.

3. The data set

3.a) The Borzaga (2000) Survey

The data-set utilised in the present work, and described in greater detail in Borzaga (2000), relates to a sample of 228 Italian organisations involved in the provision of communal services. The sample includes 268 operating units (31 organisations have 2 or 3 operating units). In the empirical work we will concentrate on the operating units (OU's), because they are more numerous and contain more disaggregate information. For organisational reasons, data could be gathered only in 10 North-Centre provinces (provincia, a territorial administrative unit roughly corresponding in population and scale to a British county, or a French *département*) and in 5 Southern provinces.[4] This choice is, at least to some extent, compatible with the requirement of yielding information about units belonging to different areas of the country. The choice of the organisations to be interviewed in every one of these provinces was preceded by the reconstruction of the population of organisations providing some communal services (old people care, health care, education, cultural animation, recreation, social assistance, job-search assistance, others) and belonging to different institutional categories (public administration, for-profit, non-profit). It is then believed that the data-set offers a sufficiently accurate image of the population as far as territorial distribution, type of service provided and institutional category are concerned.

As can be seen from Table 3.1, the majority of OU's in the sample belong to non-profit organisations, while not very many of them belong to for-profit organisations (the latter are concentrated in the provision of health care). Other important features of the sampled OU's are that most of them are of small size and operate at the local level. Furthermore, most of them provide more than

[4] The 10 North-Centre provinces are Cuneo, Torino, Brescia, Trento, Venezia, Gorizia, Pordenone, Trieste, Udine, Firenze. The 5 Southern provinces are Napoli, Salerno, Catanzaro, Reggio Calabria, Messina.

one type of service. Paid workers are evenly distributed across OU's belonging to different categories. On the other hand, non-paid labour mostly belongs to non-profit organisations (93% of religious non-profit organisations, 71% of non-religious non-profit organisations, 61% of social cooperatives have non-paid workers), but is also present in public administration (40% of the OU's belonging to public administration have non-paid workers, basically conscientious objectors).

3.b) The Production Set

The definition of inputs and outputs for the OU's under examination can take advantage from the existence of a sizeable literature about the efficiency of public and private services. Given the nature of many of the OU's, particularly useful is the literature about health-related institutions (see for instance Burgess and Wilson, 1993). Following the considerations made in the preceding section, we need to single out measures for M (the quantity of merit good), for P (the promotion effort), and for the input quantities included in vector **X**. We leave to Section 5 the measurement of the structural characteristics included in vector **S** and of the relational good R.

Surely, the easier task is to define and measure the key inputs included in vector **X**. The efficiency analysis of public and private services suggests that, in order to produce M, the followings inputs are usually relevant:

a) labour;

b) other variable inputs (fuel, …);

c) physical capital (buildings, beds, means of transportation, ...).

Our data provide some quantitative information for all these variables, but, as can be seen from Table 3.2, the response rates for some of these measures are very low. The data about labour allow the researcher to distinguish among male and female, full-time and part-time, paid and non-paid labour. The latter can be

disaggregated in volunteers (which operate in the OU gratuitously and continuously), conscientious objectors (which have opted out of the army draft system, choosing instead to spend their draft period in social service), and other operators (basically, members of the OU, which do not operate in it continuously). Furthermore, there are data about the standard weekly number of hours provided by either paid or non-paid labour. The last measures, which implicitly account for the presence of part-time workers and for the time-effort offered by volunteer workers, seem to be in principle the most appropriate ones. In practice, we shall use the number of paid and non-paid workers, which are available for a higher number of OU's and in preliminary work were found to give much the same results as standard weekly hours.

Other variable inputs can be measured through the non-personnel current expenditures of the OU. Obviously, this is a good measure only under the assumption that all OU's pay the same prices for these inputs and buy the same basket of intermediate goods. This is a commonly made hypothesis, but the real problem in our case is the extremely high number of non-available values for this variable.

The problem of a low response rate is also present to some extent for the measures of physical capital. While the response rate is high for the number of beds (a very important input for the OU's that provide old people and health care), the number of missing values is considerably large for another potentially important measure, the surface of buildings. The response rate is more satisfactory for the number of cars and the number of computers, but it can be thought a priori that these are less important inputs.

There is more difficulty in finding good measures for the OU's outputs, M and P. For most OU's, monetary measures of output do not make much sense, as services are not always provided within market transactions. From the efficiency analysis of health-related institutions one can derive quantitative proxies of M, such as the number of persons reached and/or treated. We take the number of service users, even if its response rate is a bit too low for comfort. It would be desirable to have a more precise measure, allowing for the fact that different services have different input requirements,

but such a correction (similar to that performed through *Diagnosis Related Groups* in health economics) cannot be performed on our data. Finally, our data-set does not contain any quantitative proxy for P. However, there is a categorical proxy (with a very high response rate), a variable taking values 1, 2, 3 if the Care of Users / Promotion of Organisation Values is non-existent, provided occasionally, provided systematically. To some extent, this proxy is also related to the quality of the services provided by the OU. The categorical nature of this variable prevents the specification of a multi-output distance function along the lines suggested in Coelli and Perelman (1999). In Section 4, however, we will suggest how we can still profit from this piece of information.

3.c) The Sectors under Examination

Perhaps of paramount importance among the prerequisites of efficiency measurement is the comparability of the units being examine, which must have sufficiently similar technology, input and output composition. This requirement is certainly relevant here, as OU's may provide widely different mixes of communal services. Efficiency is to be measured across OU's characterised by a sufficiently similar service-mix, keeping in mind that the number of observations for our data-set is relatively low. This means that our sample can be partitioned in two, at most three, more homogeneous sub-groups.

To ascertain the kind of partition that we apply to our sample, we consider various sets of Spearman's rank correlations, exploring the associations between different characteristics of the OU's. First of all, in Table 3.3, we consider the correlations among binary indicators for the presence of a given type of service. As in the following Tables, we highlight relatively high correlations. This exercise suggests the existence of two clusters: one the one hand the OU's that provide old people care tend to provide health care too. On the other hand, there is positive correlation between education, cultural animation, recreation, social assistance, and, to

a lesser extent, between social assistance and the residual sector, others. To gain further insight about these service groups, we consider the correlations between the numbers of users per OU for the following 14 groups of users: old people, physically handicapped, drug addicts, AIDS sufferers, alcoholics, mental illnesses, children, risk areas, young people, immigrants/homeless, detainees and former detainees, family problems, female condition problems, others. From the correlations shown in Table 3.4, we proceed to aggregate these groups, creating clusters that have negative or zero correlation among themselves: old people, physically handicapped; children; drug addicts + AIDS sufferers + alcoholics + mental illnesses + detainees and former detainees + others; risk areas + young people + immigrants/homeless + family problems + female condition problems. Then, in Table 3.5, we assess the correlation between these clusters and the service groups.

The picture from Table 3.5 is rather clear-cut: the old people care and health-care binary indicators are associated with large numbers of users from the old people group. The indicators for education, cultural animation, social assistance, others, and, to a lesser extent, recreation are associated with large numbers of users from risk areas + young people + immigrants/homeless + family problems + female condition problems. The indicator for job-search assistance is associated with large numbers of users from drug addicts + AIDS sufferers + alcoholics + mental illnesses + detainees and former detainees + others, and, to a lesser extent, physically handicapped. This strengthens the impression of two service clusters: old people care + health care; education + cultural animation + recreation + social assistance + others; job-search assistance remaining something of a standalone.

In Table 3.6 we consider the correlation among service group indicators and a binary indicator for the provision of residential services. Much the same clusters found before are revealed by these correlations. Tables 3.7 and 3.8 prove the importance of distinguishing between residential and non-residential services as far as the input mix is concerned. Both a binary indicator for the presence of beds and the number of beds itself are very highly correlated with the provision of residential services. Actually, all important inputs are positively correlated with the provision of

residential services, but the input-mix in these services appears to be very strongly tilted in favour of beds.

All the above evidence suggests the following sample partition (wholly based on information contained in the data-set):

A) all OU's that provide old people and health care, and that have non-zero beds among their inputs;

B) all OU's that provide education, cultural animation, recreation, social assistance, others, and that do not have beds among their inputs;

C) all OU's that *mainly* provide job-search assistance.

While the latter group is rather small (20 OU's) and cannot be used for estimation, the other two groups are sufficiently large even when allowance is made for some missing values. The two groups consist of 84 and 98 observations in a baseline production set with number of users and the categorical variable for Care of Users / Promotion of Organisation Values as outputs; paid and non-paid labour, plus eventually beds, as inputs. We will base our analysis on these two sectors, henceforward denoted as A and B. We exclude from the input set non-personnel current expenditures and the surface of buildings because their high number of missing values severely reduces the degrees of freedom available and is detrimental to the respect of the original sample design. It is perhaps not inappropriate to point out at this stage that these variables have been included in our preferred estimates and not found significant.

4. The empirical procedure

The nature of the data, especially as regards the size of the sample, was of great importance in determining the structure of the empirical analysis. Recent studies (Park et al., 1997; Kneip et al., 1998; Gijbels et al., 1999) have shown that a major problem of small-sample bias arises in non-parametric frontier approaches (both DEA and FDH). Also, our interest in the explanation of efficiency means that our baseline production set must be

augmented with potential determinants of efficiency, leading to an even fiercer degrees-of-freedom constraint. For these reasons, we adopt a parametric frontier approach.

There are two ways to assess the role of potential determinants of efficiency within the parametric approach. We could estimate a production function, obtain the efficiency scores, and regress them on the **S** variables. Alongside with the **S** variables, one could also include regressors that are direct proxies of organisational efficiency (for the sake of exposition, we gather the latter in a vector **O**). However, these two-stage estimates are at least inefficient, and possibly inconsistent if the **S**'s and the **O**'s are correlated with the inputs; hence the appropriateness of a one-stage procedure. In the present work we first experimented the ML procedure proposed in Battese and Coelli (1995), that straightforwardly allows to incorporate the explanation of inefficiency u_{it} in the estimation of the production function. Consider the following Cobb-Douglas function:

$$(4.1)\ y_i = \mathbf{x}_i \beta + (v_i - u_i)$$

where y_i is the natural log of the production of producer i; $\mathbf{x}_i$ is a vector of (natural logs of the) input quantities of producer i; β is a vector of coefficients. Also, assume that $v_i \sim$ iid $N(0, \sigma_v^2)$, independently distributed with respect to the u_i, non-negative random variables which stand for technical inefficiency and are determined by:

$$(4.2)\ u_i = \mathbf{z}_i \delta + w_i$$

where $\mathbf{z}_i$ is a vector of determinants of efficiency of producer i; δ is a vector of coefficients, and $w_{it} \sim$ id $N(0, \sigma_v^2)$ are random variables obtained truncating a normal distribution with zero mean so as to

make u_i non-negative: the truncation point is equal to $-\mathbf{z}_i\delta$ so that $w_i \geq -\mathbf{z}_i\ \delta$. It is not necessary to assume that the w_i are either identically distributed or non-negative. The **z** vector includes all the variables that explain the difference between y_i and $\mathbf{x}_i\ \beta + v_i$. Parameters β and δ are estimated simultaneously and the technical efficiency of producer i at time t is defined by:

$$(4.3)\ TE_i = \exp\{-u_i\} = \exp\{-\mathbf{z}_i\ \delta - w_i\}$$

Naturally, in our case the **z** vector should include both the **S** and the **O** variables:

$$(4.3')\ TE_i = \exp\{-u_i\} = \exp\{-\mathbf{S}_i\ \delta_1 - \mathbf{O}_i\ \delta_2 - w_i\}$$

A measure of organisational efficiency can then be retrieved from the linear combination $\mathbf{O}_i\ \delta_2 + w_i$. Within this set-up it is easy to take into account the proxy Care of Users / Promotion of Organisation Values. Even if the categorical nature of this variable prevents the specification of a multi-output distance function along the lines suggested in Coelli and Perelman (1999), the proxy can be included in the **z** vector. We expect it to be negatively correlated with technical efficiency in the production of y_i, as Care of Users / Promotion of Organisation Values uses up resources otherwise devoted to that output.

However, we did not find the conditions appropriate to the estimation of the Battese and Coelli (1995) model, as the empirical counterparts of the (4.1) kept showing highly heteroskedastic residuals.[5] Hence, we stuck to a simpler one-stage approach, applying OLS to:

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[5] We are aware that Reifschneider and Stevenson (1991) propose to estimate efficiency scores within a model with heteroskedastic errors. We do not think that such, computationally difficult, development is necessary for the reasons pointed out in the text. On these matters, see Kumbhakar and Lovell (2000), pp. 271-273.

$$(4.1') \; y_i = \mathbf{x}_i \beta + \gamma_0 P + \mathbf{S}_i \gamma_1 + \mathbf{O}_i \gamma_2 + \varepsilon_i$$

where ε_i is a (possibly heteroskedastic) zero-mean residual, γ_1, γ_2 are vectors of coefficients and the other terms have already been defined (P is the promotion effort, proxied by the variable Care of Users / Promotion of Organisation Values, and γ_0 is the coefficient attached to it). Indeed, we are not very much interested in decomposing the error terms in a stochastic and an inefficiency component. Rather we are interested in which of the **S** or **O** variables explain the difference between y_i and $\mathbf{x}_i \beta + \varepsilon_i$. This can be straightforwardly done in an OLS set-up, provided that the standard errors are consistently estimated. A measure of organisational efficiency can then be obtained from the linear combination $\mathbf{O}_i \gamma_2$.

In any case, we do not worry about the potential endogeneity bias existing in a production function, relying on the results by Zellner *et al*. (1966), according to which consistent estimates can be obtained, provided that the objective function of the producers is maximised with respect to expected (rather than actual) variables. On the other hand, we are worried that, due to the relative novelty of data-collection for this kind of organisations, our data may contain some outliers, that is "observations that do not fit in the pattern of the remaining data points and are not at all typical of the rest of the data" (Gunst and Mason, 1980). Regression analysis provides many tools for ascertaining the existence of such outliers. In this work we consider *externally studentized residuals* and the *added variable plot*.

Externally studentized residuals are obtained expanding the standard regression model in the following way:

$$(4.4) \; E(y|\mathbf{x}, u) = \mathbf{x} \beta + u \omega$$

where u = 1 for every i-th case, and = 0 for all other observations. The test of $\omega = 0$ can be obtained as a t-statistic with n-k-2 degrees of freedom, and is equal to the i-th externally studentized

residual. In typical applications, outliers are not known in advance, and they are usually searched among the largest (in absolute value) externally studentized residuals. Hence, we need to adjust the significance level of the test for the multiple testing inherent in using the largest of n statistics. An upper bound on this significance level can be obtained relying on Bonferroni inequality and multiplying the standard n-k-2 p-value by n.

The added variable plot (AVP) is a graphical object that gives visual information about the numerical calculation of a regressor coefficient, providing diagnostic information on the model (finding whether the residuals contain relevant information on the slope estimates) and a visual assessment of the net effect of a regressor (that is the effect of a regressor on the dependent variable keeping all other regressors fixed). Consider the regression model

$$(4.5)\ E(y|\mathbf{x}) = \mathbf{x}\beta = x_1\beta_1 + \mathbf{x}_2\beta_2$$

The AVP for x_2 is a plot of the residuals of the OLS regression of y on $\mathbf{x}_1$ against the residuals from the OLS regression of x_2 on $\mathbf{x}_1$, where y is the dependent (or response) variable; $\mathbf{x}$ is a kx1 vector of regressors; β is a vector of unknown parameters, and we partition the kx1 vector of regressors $\mathbf{x}$ in $\mathbf{x}_1$ with k-1 elements and x_2 with the remaining variable. The AVP for x_2 is a plot of the residuals of the OLS regression of y on $\mathbf{x_1}$ against the residuals from the OLS regression of x_2 on $\mathbf{x_1}$. In other words, it is a graphical representation of the partial correlation between y and the regressor of interest x_2, adjusted for the effect of the other regressors.

Potentially influential data points are to be searched among extreme values along the axes, that is among values far away from the others. Dynamic identification and deletion allows a fast evaluation of the influence of these points. In the case of a linear regression model, an outlier search through the AVP's corresponds to an influence analysis performed within the local influence approach (Cook, 1986). Based on this method, the influence of small data perturbations on the maximum likelihood

estimate of the model is assessed. It can be shown that potentially influential cases can be identified in the AVP for x_2 as they maximize the rate of change in the maximum likelihood estimator of β_2 with respect to an appropriate vector of weights (using a weighted least square set-up). Finally, under normality of residuals, case-weight perturbation contours can be drawn to single out these observations (Cook and Weisberg, 1994).

Andrews and Pregibon (1978) have first discussed the so-called masking problem, when influential data points lying close to each other in the variable space mask themselves to single-observation diagnostic tools. In order to deal with masking, the calculation of externally studentized residuals could be carried out on subsets of observations, but this would greatly increase its computational burden. On the other hand, our results show that highly influential outliers can be found even if no allowance is made for masking.

5. The determinants of technical efficiency

Through our basic production set (including two outputs - the number of users and the proxy for the promotion effort - and three inputs - paid labour, non-paid labour, beds) we can measure the technical efficiency of any given organisation. Furthermore, it is desirable for both analytical and policy reasons to discriminate the role of organisational efficiency (dependent on the actions of the OU) from that of some structural characteristics of the OU unrelated to its behaviour. As already explained in the previous section, we do this through a single-stage procedure, including these potential determinants along with inputs in an OLS set-up, and basing our inference on White heteroskedasticity-corrected standard errors. Our data-bank is quite rich in qualitative information and we can test the significance of a rather large number of potential determinants of technical efficiency (both **S** and **O** variables).

The list of the potential determinants of technical efficiency here considered derives from theoretical arguments of general

character (for instance, the impact of public intervention; Färe *et al*., 1985, still provide a very valuable survey of these factors) as well as from the literature concerning non-profit organisations (for instance, the nature and severity of the organisation's stakeholders; see Turati, 2001).

Empirical proxies of the structural characteristics have been searched among: the age of the OU; the territorial partition (North-Centre, South) where the OU is situated; the customary duration of the relationship with the users; the presence of training activities, the size of the area served; the number of different services provided, the presence of other OU's in the same organisation. Among the potential determinants of organisational efficiency we include first of all a set of binary variables allowing for the institutional nature of the OU (public administration, for-profit, social cooperative, religious non-profit, non-religious non-profit). The role of public intervention was represented by the share of public funding in the OU's receipts. Other determinants of organisational efficiency, related to labour and managers' satisfaction and motivation, are the strength of quality controls and the nature of the institutions taking care of them (members, users, users' organisations, the OU itself, public administration, local community), the participation to UE projects, the selection procedure for hiring paid labour (study title, tests, former experiences in the same sector, former experiences generally, former experiences in volunteering, personal acquaintance, strong motivation), the educational attainment of paid labour (we have no equivalent data for non-paid labour).

Two points about these variables are worth some emphasis: first, there are some missing values in the data-set for both the **S** and the **O** variables. This means that the samples used in testing the significance of these variables will be smaller than the baseline samples of, respectively, 84 and 98 observations. Secondly, the binary variables representing the institutional nature of the OU are likely to interact with other proxies of organisational efficiency. As a consequence, it seems advisable to test the significance of the institutional dummies before and after the inclusion of other proxies of organisational efficiency.

Finally, in order to assess empirically the model proposed in Section 2 we test whether the outputs and the efficiency of non-

profit OU's significantly affect two proxies of relational goods: a (self-assessed) categorical measure of reputation and the number of cooperation actions with other non-profit OU's. From our data-bank we can only retrieve a self-assessment of reputation; while this has obvious drawbacks, we believe this variable can still be used to gauge the extent of the trust network shared by the OU. As for the other proxy, a high number of cooperation actions with other non-profit OU's signifies the existence of a wide network of trust across non-profit organisations, which is likely to extend to the members of the community.

6. The results

Once partitioned our sample we proceed to the estimation of regressions for sectors A and B. We only attempt the estimation of Cobb-Douglas functional forms.[6] Given our number of observations, most other functional forms would run against a degrees-of-freedom constraint. The main results, shown in Table 6.1, can be summarised as follows, first for sector A and then for sector B.

As for sector A, the initial attempts to estimate a production function met with some problems. In particular, the coefficient on the (natural log of the) number of beds was insignificant, a highly unlikely result given the residential nature of the services provided in this sector. An outlier search, carried out along the lines expounded in Section 4, led to the detection of two outliers (both according to the externally studentized residuals for these observations and to the added variable plots). Once deleted these observations (their perusal suggested no obvious way in which they could be corrected), the coefficient on the number of beds

[6] Actually, we estimate hybrid Cobb-Douglas functions. Non-paid labour is often equal to zero and cannot be logged; however, all the observations for this variable were divided by their sample mean, so as to yield coefficients interpretable as elasticities.

became highly significant. No impact for the institutional nature of the OU's was found before or after the deletion of the two outliers.

Then, a specification search was conducted on the **S** variables, and only one of them (Duration, the customary duration of the relationship with the users, which probably singles out OU's providing old people care) was found to be significant. The inclusion of this variable did not imply sizeable difference among the technical efficiency of non-profit, for-profit, and public administration units (finer distinctions, between social cooperatives, religious non-profit, non-religious non-profit, were never found to be significant).

Then, a specification search was also carried out for the organisational variables, and we found a highly significant role for a selection procedure adopted for hiring paid labour (strong motivation, to be denoted Hiring_7). Not surprisingly, OU's that select workers on the basis of their motivation are more efficient than the other ones. However, more interestingly, as Hiring_7 enters the equation, the binary variable for public administration increases in size and significance. This means that, controlling for the hiring procedures, these units are more productive. Since, *without* controlling for the hiring procedures, these OU's are in average just as productive as the other units, this means that they choose to hire (or are bound to choose by institutional reasons) not very highly motivated workers.

The categorical proxy for the Care of Users / Promotion of Organisation Values was never found to be significant. This lack of significance makes some sense: if services are provided residentially, not many extra resources must be put on the care of users and the promotion of the organisation values among them. Indeed, we get the opposite results for sector B, to which we now turn.

Recall that the OU's in Sector B are not endowed with beds. It is to some extent surprising, however, that no other input than paid labour was found to be significant here. Measures of the surface of buildings, of number of cars and of computers, and above all, of the amount of non-paid labour, were not significant (to be sure, the role of non-paid labour in this sector is less important than in Sector A). It must be surmised that this result reflects an actual feature of the data, inasmuch as they do not depend on the

presence of outliers.[7] No anomalous observations could be found, despite our rather careful search procedure.

Again, we find interactions between the institutional dummies and other organisational variables. When South, the geographical location of the unit, and Pluri, the presence of other OU's in the same organisation (the only **S** variables found to be significant) were included along with labour, no sizeable difference emerged among the efficiency of non-profit, for-profit, and public administration units. This changed when the organisational variables found to be significant through a specification search were included in the equation: two kinds of selection procedures for hiring paid labour (Hiring_3: former experiences in the same sector, and Hiring_6: personal acquaintance); the nature of the institutions taking care of quality controls (users, in this case - Quality_2); the educational attainment of paid labour (Education). OU's that hire workers because of the past experiences of the latter, and rely on personal acquaintance with the worker, show higher productive efficiency. As Education, Quality_2, and, in particular, Hiring_3 and Hiring_6 enter the equation, the binary variable of for-profit units jumps up in (absolute) size and significance. Controlling for these variables, these units are *less* productive, meaning that they are better endowed with these factors, relatively to units belonging to the other institutional categories. Much as this is an interesting insight on the comparisons between non-profit and for-profit institutions, we hasten to add that it only calls for further research on the matter, as there are only 2 for-profit firms in our sector B. Also note that, like in sector A, distinguishing between social cooperatives, religious non-profit, non-religious non-profit never led to significant results.

Finally, when testing the categorical proxy for the Care of Users / Promotion of Organisation Values, we find that this variable is

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[7] This statement may not hold true if we could produce a finer partition of the sample (for instance, cars should matter in the operating units providing home-care!). Here we run against a data constraint, especially because, at finer disaggregation levels, the problem of missing values may impinge more heavily on the design of the sample. In any case, note that communal services, especially of the kind provided in sector B, are highly labour-intensive.

significant with the expected negative sign, at least if some control variables are also included in the equation (South and Pluri seemed to be the decisive variables in this respect). If services are not provided residentially, extra resources must be put on the care of users and the promotion of the organisation values among them.

Now, in order to test the model given in Section 2, we can construct for non-profit OU's some measures of organisational efficiency as a function of the **O** variables entering the production functions. We are talking about Hiring_7 for sector A; Quality_2, Hiring_3, Hiring_6, Education for sector B. We thought that, within sector A, Duration is a structural variable unrelated to the units' behaviour, and should then be excluded from this calculation. For sector B, it is less clear whether South actually stands for structural or for organisational factors. However, this is immaterial for our conclusions, as shall be explained below. In Table 6.2, we show the estimates obtained for our preferred specifications (the samples only include non-profit OU's). We also single out the variables and parameters utilised in constructing a measure of efficiency for each observation of both sectors.

In Table 6.3, the measures of organisational efficiency are used as explanatory variables of our two proxies of the relational goods produced by the OU's: the number of cooperation actions with other non-profit institutions and a categorical variable for the reputation of the unit. As suggested by our model, we also consider whether the OU's outputs, number of users and Care / Promotion, and an environmental variable, South, have a role in determining the production of relational goods.[8] Our results show that the latter is indeed related to efficiency and to Care / Promotion. Efficiency is more closely related to the number of cooperation actions, a result supportive of the idea that non-profit organisations care about organisational efficiency because it leads to a wider and stronger network of trust. The Care of Users / Promotion of Organisation Values has also some impact on the

[8] Hence, the eventual presence of South among the determinants of organisational efficiency does not impinge on the conclusions reached about the impact of organisational efficiency and Care / Promotion on the production of relational goods.

production of relational goods, especially in Sector B. The number of users is never significant (and is not included in the reported estimates).

7. Concluding remarks

The evaluation of efficiency for non-profit organisations has become a high policy priority. From the theoretical standpoint, it has long been known that the lack in the non-profit sector of a stakeholder class interested in appropriating the residual from production is a priori likely to increase the chances of opportunistic behaviour from the part of workers and managers, raising the costs of firms in this sector vis-à-vis their for-profit counterparts. On the other hand, it is widely thought that non-profit organisations highly care about the network of trust they share with other members of the community. In this paper, we have provided a model which relates these relational goods to the productive efficiency of the organisation.

Relying on a new data-set about Italian for-profit and non-profit organisations engaged in the provision of communal services, we have also provided measures of technical and organisational efficiency and of the link between the latter and the production of relational goods. Our data-set is particularly interesting because it surveys organisations involved not only in health-care, but also in other communal services (including some educational services). Most of the existing evidence relates to health-care organisations only.

We find that the technical efficiency of non-profit organisations does not significantly differ from that of other organisations, and shed some light about the determination of their performance. The selection procedures adopted in hiring paid labour seem to play a paramount role in this respect. No significant role was found for the categories distinguishing among non-profit organisations (social cooperative, religious non-profit, non-religious non-profit). Our results also show that

the production of relational goods (measured by two different proxies) is indeed related to efficiency and, to a lesser extent, to the promotion efforts of the operating units. In this sense our results show that, even in the absence of a stakeholder class interested in appropriating the residual from production, non-profit organisations do not indulge in opportunistic behaviour. They also point out a reason of this efficiency-seeking behaviour on the part of workers and managers.

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Table 3.1. The Sampled Operating Units by Institutional Category.

Institutional Category	**n.**	**%**
Public Administration	62	23.1
For-profit Organisations	19	7.1
Social Cooperatives	89	33.2
Other Non-religious Non-Profit Organisations	63	23.5
Other Religious Non-Profit Organisations	35	13.1

Table 3.2. Missing Values for the Input and Output Measures.

Variables	**n.**	**%**
Inputs		
Number of Paid Workers	9	3.4
Number of Non-Paid Workers	12	4.5
Standard Weekly Hours (Paid Workers)	21	7.8
Standard Weekly Hours (Non-Paid Workers)	41	15.3
Non-Personnel Current Expenditures	126	47.0
Surface of Buildings	76	28.4
Number of Beds	12	4.5
Number of Cars	26	9.7
Number of Computers	23	8.6
Outputs		
Number of Service Users	45	16.8
Care of Users / Promotion of Organisation Values	4	1.5

Table 3.3. Correlations among types of services

	Serv1	Serv2	Serv3	Serv4	Serv5	Serv6	Serv7
Serv2	**.384**						
Serv3	-.181	-.218					
Serv4	-.126	-.138	**.346**				
Serv5	.050	.116	**.262**	**.433**			
Serv6	-.135	-.108	**.316**	**.300**	**.174**		
Serv7	-.019	-.194	.092	.074	-.075	**.145**	
Serv8	-.200	-.102	.061	.077	-.086	**.247**	-.069

Table 3.4. Correlations among groups of users

	Ut1	**Ut2**	**Ut3**	**Ut4**	**Ut5**	**Ut6**	**Ut7**	**Ut8**	**Ut9**	**Ut10**	**Ut11**	**Ut12**	**Ut13**
Ut2	-0.14												
Ut3	-0.19	-0.04											
Ut4	-0.09	-0.02	**0.56**										
Ut5	-0.10	0.07	**0.29**	**0.29**									
Ut6	-0.11	0.09	**0.10**	**0.12**	**0.33**								
Ut7	-0.11	0.01	-0.13	-0.08	-0.03	0.02							
Ut8	-0.20	-0.07	**0.10**	**0.18**	0.08	-0.08	0.06						
Ut9	-0.21	0.03	0.05	-0.02	-0.04	-0.09	0.00	**0.35**					
Ut10	-0.11	-0.05	0.02	-0.03	**0.10**	**0.12**	0.01	0.02	**0.14**				
Ut11	-0.11	**0.15**	**0.11**	**0.10**	**0.21**	**0.24**	-0.01	-0.04	**0.14**	**0.13**			
Ut12	0.01	**0.10**	0.04	0.05	**0.14**	0.05	**0.19**	**0.30**	**0.21**	**0.30**	**0.18**		
Ut13	-0.01	0.06	0.06	**0.15**	**0.16**	0.05	0.09	**0.29**	0.08	0.10	0.08	**0.41**	
Ut14	-0.07	0.09	0.01	0.03	**0.16**	0.09	-0.02	0.03	**0.19**	-0.04	**0.13**	**0.15**	**0.10**

Table 35. Correlations between groups of users and types of services

	Serv1	Serv2	Serv3	Serv4	Serv5	Serv6	Serv7	Serv8
Ut8+9+10+12+13	-0.26	-0.29	**0.35**	**0.25**	0.12	**0.53**	-0.02	**0.20**
Ut3+4+5+6+11+14	-0.03	-0.05	-0.01	-0.05	-0.23	0.07	**0.40**	0.03
Ut1	**0.44**	**0.54**	-0.36	-0.11	0.10	-0.25	-0.27	-0.20
Ut2	0.03	-0.06	0.08	-0.04	-0.01	0.07	**0.14**	0.09
Ut7	-0.16	-0.20	**0.20**	0.07	0.03	-0.08	-0.13	-0.06

Table 3.6. Correlations between types of services and the provision of residential services

	Residence
Serv1	**.530**
Serv2	**.357**
Serv3	-.197
Serv4	-.169
Serv5	-.007
Serv6	-.136
Serv7	-.040
Serv8	-.174

Table 3.7. Correlations between binary indicators for the presence of beds and non-paid workers and the presence of residential services

	Rsdnc	Beds
Beds	**.855**	
Vols	.156	.165

Table 3.8. Correlations between input quantities and the provision of residential services

	Residence	Beds	Paid Work.	N. Paid Work.
Beds	**.877**			
Paid Workers	.183	.165		
Non Paid Workers	.241	.350	-.176	
Surface	.457	**.619**	-.028	.525

TABLE 6.1 - Production Functions; dependent variable: number of users

(White Heteroskedasticity-Consistent Standard Errors)

Variable	**Coeff**	**t-ratio**	**Coeff**	**t-ratio**	**Coeff**	**t-ratio**	**Coeff**	**t-ratio**	**Coeff**	**t-ratio**	**Coeff**	**t-ratio**
SECTOR A	**N=82**		**N=82**		**N=72**		**N=72**		**N=72**		**N=72**	
Care /Promotion			-0.01	-0.09			0.07	0.66			0.08	0.76
Beds	0.29	2.91	0.28	2.89	0.27	2.83	0.27	2.74	0.28	3.03	0.28	2.93
Paid Workers	0.46	5.27	0.46	5.30	0.44	5.01	0.45	5.26	0.44	5.43	0.45	5.73
NonPaid Workers	0.10	2.66	0.11	2.42	0.08	2.01	0.07	1.78	0.06	1.51	0.05	1.25
Duration					0.34	2.14	0.32	2.08	0.37	2.44	0.38	2.47
For-Profit	0.05	0.48	0.05	0.48	-0.01	-0.11	-0.02	-0.18	-0.03	-0.24	-0.04	-0.30
Public Adm.	-0.07	-0.38	-0.07	-0.38	0.11	0.86	0.12	0.92	0.21	1.80	0.23	1.87
Hiring_7									0.07	2.82	0.07	2.77
R-sq. Adj.	**0.60**		**0.59**		**0.66**		**0.65**		**0.67**		**0.67**	

TABLE 6.1 - *continuation*

SECTOR B	**N=98**		**N=98**		**N=88**		**N=88**		**N=88**		**N=88**	
Care Promotion			-0.12	-0.67			-0.52	-2.26			-0.58	-2.86
Beds												
Paid Workers	0.54	6.31	0.53	5.45	0.56	5.60	0.55	5.21	0.64	7.86	0.63	7.19
Non-Paid Workers	-0.01	-0.20	-0.01	-0.20	0.00	0.02	0.00	-0.02	0.03	0.67	0.03	0.68
South					0.89	3.71	1.00	4.05	0.54	1.93	0.66	2.48
Pluri					0.75	2.99	1.00	3.96	0.54	2.19	0.83	3.46
For-Profit	0.87	1.12	0.86	1.08	-0.66	-1.10	-0.48	-0.67	-1.20	-4.56	-1.01	-3.47
Public Adm.	-0.16	0.57	-0.16	0.60	-0.28	-1.07	-0.25	-0.94	0.22	0.66	0.31	0.95
Quality_2									0.11	2.23	0.11	2.26
Hiring_3									0.14	2.35	0.16	2.77
Hiring_6									0.10	1.64	0.11	1.92
Education									0.01	2.64	0.01	2.91
R-sq. Adj.	**0.23**		**0.22**		**0.34**		**0.38**		**0.43**		**0.48**	

TABLE 6.2 - Constructing a Measure of Organisational Efficiency for Non-profit OU's

Production Functions; dependent variable: number of users

(White Heteroskedasticity-Consistent Standard Errors)

Variable	Coeff.	t-ratio	
SECTOR A	**N=46**		
Beds	0.25	2.37	The organisational efficency of non-profit operating units is calculated as: OE_A = 0.08*Hiring_7
Paid Workers	0.49	4.47	
Non-Paid Workers	0.07	1.16	
Duration	0.45	2.59	
Hiring_7	0.08	1.90	
R-sq. Adj.	**0.63**		

SECTOR A	**N=46**		
Care/Promotion	-0.65	-3.01	The organisational efficency of non-profit operating units is calculated as: OE_B = 0.92*pluri + 0.09*Quality_2 + 0.13*Hiring_3 + 0.13*Hiring_6 + 0.01*Education
Paid Workers	0.66	7.01	
Non-Paid Workers	-0.02	-0.06	
South	0.51	1.67	
Pluri	0.92	2.89	
Quality_2	0.09	1.63	
Hiring_3	0.13	1.98	
Hiring_6	0.13	2.20	
Education	0.01	2.05	
R-sq. Adj.	**0.48**		

TABLE 6.3 - Relating Organisational Efficiency to the Production of Relational Goods

(White Heteroskedasticity-Consistent Standard Errors)

	Dependent variable: Number of cooperation actions						Dependent variable: Reputation					
SECTOR A												
N = 46												
	Coeff.	**tratio**	**Coeff.**	**tratio**	**Coeff.**	**tratio**	**Coeff.**	**tratio**	**Coeff.**	**tratio**	**Coeff.**	**tratio**
OE_A	12.64	2.17	14.50	2.10			5.18	1.35	6.12	1.53		
Care/ Promotion	2.07	1.42			2.62	1.58	1.03	1.04			1.26	1.27
South	-1.88	-0.63	-1.45	-0.51	-0.55	-0.21	3.00	3.57	3.22	3.73	3.55	4.63
R-sq. Adj.	**0.05**		**0.04**		**0.01**		**0.23**		**0.22**		**0.21**	
SECTOR B												
N = 64												
	Coeff.	**t-ratio**	**Coeff.**	**t-ratio**	**Coeff.**	**tratio**	**Coeff.**	**t-ratio**	**Coeff.**	**t-ratio**	**Coeff.**	**t-ratio**
OE_B	1.94	1.80	2.15	2.38			1.07	1.26	1.57	2.00		
Care/ Promotion	0.48	0.34			0.90	0.70	1.13	1.82			1.37	2.41
South	-3.25	-3.81	-3.25	-3.81	-2.90	-3.69	0.79	0.97	0.79	0.97	0.98	1.25
R-sq. Adj.	**0.09**		**0.10**		**0.07**		**0.11**		**0.07**		**0.10**	