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# THE PROFITABILITY OF SOCIALY RESPONSIBLE COMPANIES: PUBLIC SUBSIDIES FOR SHELTERED EMPLOYMENT CENTERS

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**Abstract:** During economic crises, more than ever, the companies realize the impact of their activities on society through their social responsibility. Firms that practice social responsibility strategies are more attractive to their customers, and sometimes this is a way to obtain competitive advantages such as creation of value, better social image, high consumer loyalty and, in consequence, higher profits. Prior literature justifies that there is a positive association between corporate social responsibility and financial performance.

A kind of company with a special commitment to develop its business in a responsible way for society is sheltered employment centers, businesses whose workers are mostly disabled people. The objective of this paper is to analyse whether the sheltered employment centers that receive public subsidies achieve greater economic profitability on average than those centers that do not receive it. Although the number of these firms has been growing during the crisis, when governments have reduced their financial help, some theoretical papers justify their profitability due to public subsidies received.

After obtaining the total sample of sheltered employment centers in the Community of Madrid using statistical and artificial intelligence

methods, our results show that sheltered employment centers, on average, are productive enterprises in which their profitability is not conditioned by the public aid granted. The model obtained shows that these companies are profitable businesses when they can pay their interest expenses with profits every period. Additionally, the social and labour integration of disabled people is a way to improve their corporate social responsibility.

**Context:** The sample includes the whole sheltered employment centers in the community of Madrid, one of the regions with most sheltered employment centers in Spain.

**Aims:** The aim of this study is to test whether the sheltered employment centers which receive public subsidies obtained better profitability (measured as return on assets), on average, than firms that do not receive them. Additionally, we want to know the key variables to justify the solvency or insolvency of these special companies.

**Settings and Design:** Firstly, we searched all the sheltered employment centers in the community of Madrid through its website. There were 180 centers. Then, using their fiscal identity numbers, we looked for their financial statements' information through the commercial database SABI, by Bureau Van Dijk. We found financial information for 100 companies. Afterwards, we prepared the main ratios and separated the sheltered employment centers into those that received public aids and those that did not.

**Methods and Material:** We contrast our main hypothesis using a t-test method. After descriptive statistics, we use an artificial intelligence tool, PART methodology, to classify our sample according to our criteria: whether they are profitable or not, according to their return on asset ratio.

**Statistical analysis used:** We started with a mean differences non-parametric test to check if the return of asset ratio is statistically different between sheltered employment centers that received public aids and those centers that did not.

**Results:** The main result of our study provides evidence that sheltered employment centers, on average, are productive enterprises whose prof-

itability is not conditioned by the public aid granted. Additionally, we run a PART algorithm to obtain the key variables to analyze the profitability of these centers. Only three variables are necessary to classify the sheltered employment centers in the profitable or unprofitable type: the interest coverage ratio, the equity amount and the ratio cash flow to sales.

**Conclusions:** The main conclusion is that public subsidies do not condition the profitability of sheltered employment centers and that their profitability depends mainly on their interest coverage ratio. Additionally, these firms are socially responsible business because they are part of the social and labour integration of disabled people.

**Keywords:** *sheltered employment centers, corporate social responsibility, profitability, public subsidies.*

**Key Messages:** Sheltered employment centers are profitable businesses with and without financial subsidies and also a way to improve the corporate social responsibility of industries.

## INTRODUCTION

It is in times of economic crisis, more than ever, when companies recognize the impact of their activities on the society in which they are developing their businesses, and openly acknowledge their corporate social responsibility (CSR). CSR is considered part of their identity and most of the times is focused on helping the most disadvantaged sectors (Server and Vicedo, 2009; Chumaceiro, Hernández and Ziritt, 2013). Companies that practice CSR are most attractive to their customers and, at certain times, CSR becomes a strategy to reduce their financial risk (Orlitzky and Benjamin, 2001). They also have other advantages in the market, such as competitiveness, better social image, high customer loyalty and higher performance (Orlitzky, Schmidt and Rynes, 2003; Garcia and Llorente, 2009). The results obtained to date suggest that there is generally a clear positive association between CSR and financial performance (Orlitzky et al., 2003; Pelosa, 2009).

In Spain sheltered employment centers are socially responsible companies because they play an important role within society not only by helping people with disabilities to enter the labour market but also to lead

a normal life. A sheltered employment center is a business in which at least 70% of their workers are disabled people (with a disability degree higher than 33%) and because they are being responsible companies, they receive public financial aid for its creation, for business payments to the social security, for maintenance of jobs, etc. (Royal Decree 2273/1985 of 4<sup>th</sup> December). Prior literature has shown the interest of this kind of firms because they have grown in some Spanish regions even despite the economic crisis (Redondo and Martín, 2014). This is an important issue because due to the economic downturn, many governments (national, regional or even municipal) have reduced their public subsidies to these firms but, however, their number has increased. Subsidies remain as a very important factor for the growth and profitability of sheltered employment centers. In consequence some theoretical studies point out that the key to success of these types of company could be the financial aid that they receive continuously for finding work for disabled people (Laloma, 2007; Jordán de Urriés and Verdugo, 2010).

Bearing all these factors in mind, the objective of this paper is to test whether the sheltered employment centers that receive public subsidies obtained better profitability (measured as return on assets), on average, than firms that do not. They are also competitive in the market and they are doing well in the field of CSR. Several papers have studied their evolution and their importance for people with disabilities (Laloma 2007; Cueto et al., 2008; Rodriguez, García and Toharia, 2009; Jordán de Urriés and Verdugo, 2010; Camacho-Miñano and Perez, 2012), but there is still a lack of information about their economic viability and profitability in the market, except for the study of Redondo and Martín (2014) but only for one region: Castilla and León. From this fact, the following hypothesis is presented:

H: The sheltered employment center that receives public subsidies, obtains better profitability measured as return on assets ratio, on average, than firms that do not receive those subsidies.

According to theoretical studies consulted, the hypothesis should be positive, i.e., that the sheltered employment center with subsidies would be more profitable than those that do not receive public aids. Additionally, we want to classify the solvent and insolvent centers according to their main financial variables in order to check the key variable for their survival in the market.

The main contribution of this paper is to provide evidence that sheltered employment centers, on average, are productive enterprises in which

their profitability is not conditioned by the public aid granted. Additionally, the key variable to analyze the profitability of these centers in order to classify the sheltered employment centers as solvent or insolvent is the interest coverage ratio. This means that those firms that can pay their interest expenses with the operating profits generated will be solvent.

The rest of the paper is organized as follows. The Section below details the methodology used to gather evidence in order to test our hypothesis. It also describes the sample selection procedure. Then we present and discuss the empirical results and, finally, conclude this research highlighting its main implications and limitations.

## SUBJECTS AND METHODS

According to the literature review, there are few studies on the economic and financial viability of sheltered employment centers in Spain (Redondo and Martín, 2014). For this reason, a viability analysis of these companies in particular is needed. Due to the difficulties to access their data, we select all the sheltered employment centers in Madrid's website. Data have been collected through the autonomous community of Madrid. There were 180 sheltered employment centers that carried out different activities, as shown in Table 1. The activities of cleaning, handling and consultancy companies are the aim of these businesses. Those are routine tasks that mostly tend to be performed very competently by disabled workers (table 1).

Then, we used the fiscal number of those centers in order to search for their financial information in the commercial database SABI. As would be expected at the beginning of the research process, it has not been possible to collect data of all these centers in Madrid. Finally, we could access the information of the financial statements of 100 companies from the existing 180 ones. This sets the final sample for this study.

The financial and economic variables used in our study are the following. The dependent variable is the financial profitability or economic viability measured as return on assets (as explanatory variable). The independent variables are explained in table 2.

The subsidies variable was converted into a dummy variable in order to test our hypothesis. During the year 2011, there were 51 sheltered employment centers that had received public aid and 49 that had not. These data were processed statistically. A linear regression and a t-test

Table 1. The sheltered employment centers  
of the Community of Madrid by activity

	2011
Artistic, recreational and entertainment activities	4
Agriculture and livestock	4
Food and hotel industry	6
Graphic arts and related services	8
Automobile and related activities	4
Consulting business management, advertising and other business services	29
Waste management	3
Gardening	14
Cleaning and maintenance	46
Manipulated trade and industry	38
Health and social services	10
Information services	14
TOTAL	180

*Source: Own formulation based on the data of National Institute of Employment (2011) and the Community of Madrid's website.*

were used to test our hypothesis. Additionally, we used a robust test with artificial intelligence (AI) methodology, in order to confirm our prior results. AI methods have become a new approach to analyze financial problems (for example, Serrano and Martin del Brio, 1993; Sanchis et al., 2007; Diaz, Sanchis and Segovia, 2009, all of them applied to Spanish data). Indeed, AI methods are a complement and in some cases a substitute of statistical methods. In any case, they can give another point of view to the problems we are analyzing.

Consequently, we will study the role of subsidies in the profitability of sheltered employment centers using the PART algorithm, that is, we will obtain the key variables to analyze the profitability of our data sample by means of an AI tool. The PART results generate decision rules and they have the following form: “if conditions, then decisions”, that is, what decisions (actions) should be undertaken when certain conditions are satisfied. The number of objects that satisfy the condition part of the rule is called the strength of the rule and is a useful concept to validate a rule.

Table 2. Variables used in our study

Independent variables	Definition
AGE	Number of years since the firm was founded
E	Equity
NE	Number of employees
RS	Non-current assets/ Equity
RL (%)	Current ratio: Current asset/current liability
RLI(%)	Quick ratio: (Current assets-inventory) /current liability
RE(%)	Indebtness ratio: Liabilities/(Liabilities+Equity)
RCI	Interest coverage ratio: EBIT <sup>1</sup> /Interest expenses
RAV(%)	Cash Flow/Net sales
RAA(%)	Cash Flow/total assets
S	Subsidies (1=yes; 0=no)
Dependent Variable	(Profitability Ratio: 1-positive; 0-otherwise)
ROA	Return on assets: Net income/total asset

Source: Own elaboration.

<sup>1</sup>EBIT: Earnings before interest and taxes

In short, we can define the PART algorithm as a rule-learning algorithm based on partial decision trees (Witten and Frank, 2005). It represents a hybrid alternative approach to decision list induction and the decision tree learning (Díaz et al. 2009). Its main advantage over other schemes is not performance but simplicity: PART builds a partial decision tree (that is, an ordinary decision tree that contains branches to undefined sub-trees) instead of a fully explored one; once this sub-tree has been found, tree-building ceases and a single rule is read off. PART aims at the most general rule by choosing the leaf that covers the greatest number of instances. PART Algorithm has been performed using free data mining package WEKA from the University of Waikato (Witten and Frank 2005).

## RESULTS AND DISCUSSION

The main objective of this study is to test whether the sheltered employment centers that receive public subsidies obtained better profitability, on average, than those firms that do not. During the year 2011, 51 out of 100 centers with available data received public aid. In table 3 we can see the mean and standard deviation of return of assets (ROA) divided by those with and without public subsidies. The first interesting result is that the

means of both subsamples are positive. It is important because it shows that the sheltered employment centers in Madrid are profitable. The second interesting result is that the profitability of sheltered employment centers without public aids is higher (2.66%) than those that receive public financial helps (1.72%). However, the standard deviation is very high for both subsamples. It means that there are a lot of dispersions of data because the range is very high in both cases.

Table 3. Descriptive statistics

	N	Mean	Standard deviation	Standard error of mean
ROA Without public aid	49	2.66	17.62	2,52
With public aid	51	1.72	18.19	2,55

Source: own elaboration

The next step is to analyze if those differences between firms with and without financial aids or subsidies are statistically significant. To test this hypothesis we use the t-test method. The results are shown in Table 4.

Table 4. Results of t-test for mean differences

F		Levene test for the equality of variances		T-test for equality of means	
		Sig.	t	Sig. (bilateral)	
ROA	Equal variances are assumed	0.08	0.76	0.26	0.79
	Equal variances are not assumed			0.26	0.79

Source: own elaboration

This prior result confirms that there is not enough evidence of equality of means because the p-value (0.79) is not significant due to it being higher than 0.05. For this reason there are no statistically significant differences in the economic profitability (ROA) between the centers with and without public aids.

Additionally, we want to know the key variables to justify the profitability or not of these special companies using IA methods. We have



transformed the dependent variable in dummy, 1 (profitable center) if companies have a positive ROA and 0 (unprofitable center) otherwise. Table 5 shows the decision list:

**Table 5: PART results**

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*If Interest coverage ratio  $> -0.33$  and Equity  $> 2335$  and ratio cash flow/sales  $> 0$  then 1 (profitable center). Strength 48*

*If Interest coverage ratio  $\leq -0.33$  then 0 (unprofitable center). Strength 33.*

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*Source: own elaboration*

WE CAN READ THEM AS:

“If the interest coverage ratio is higher than  $-0.33$ , the equity amount is higher than 2,335€ and the ratio cash flow divided by sales positive, then the sheltered employment centers belong to the profitable class”. This rule (pattern) is satisfied by 48 cases (strength).

“If the interest coverage ratio is less than or equal to  $-0.33$ , then the sheltered employment centers belong to the unprofitable class”. This rule (pattern) is satisfied by 33 centres (strength).

We have validated the algorithm before analyzing it. We have obtained a 91.95% share of correct classified firms in terms of classification with a cross validation procedure<sup>1</sup>. Therefore, the results obtained are quite satisfactory in terms of classification and they allow us to interpret the rules to draw the following conclusions:

- A subsidy variable does not appear in any rule. Therefore it is not a key variable to analyze the profitability of sheltered employment centers in Madrid. We obtained the same results with a different methodology, which means that our results are robust.
- As we can see, only three variables are necessary to classify the sheltered employment centers in the solvent or insolvent groups: the interest coverage ratio, the equity amount and the ratio cash flow to sales.

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<sup>1</sup> Cross-Validation is a statistical method of evaluating and comparing learning algorithms by dividing data into two segments: one used to learn or train a model and the other used to validate the model. (<http://leitang.net/papers/ency-cross-validation.pdf>)

The AI results confirm the statistical ones: Subsidies are not a discriminatory variable for this type of firms in relation to its profitability. This means that the sheltered employment centers which receive public subsidies do not obtain better profitability measured as return on assets ratio, on average, than firms that do not receive them. The public subsidies are not a factor that conditions the profitability of sheltered employment centers. There are profitable businesses even without public subsidies, although these financial helps are needed to improve the labour life of disabled people.

## CONCLUSIONS

The interest in the sheltered employment centers is growing due to their role in society and the performances that they are showing despite the current economic crisis. Our study is based on the analysis of their profitability and relationship with public subsidies: grants, donations and bequests received. Prior literature shows a dearth of economic studies on these lucrative enterprises that have a special relevance in society by integrating work and socially disabled people.

The objective of this study is to show whether they are economically profitable enterprises with or without public aid and if subsidies are key to their profitability. The main conclusion reached, despite the claims made in a theoretical way, is that sheltered employment centers, on average, are productive companies since their profitability is not dependent on public subsidies. It is also noted that the profitability of these centers depends on their interest coverage ratio, equity and cashflow/sales. Indeed, these firms are a referent in corporate social responsibility and they could serve for developing other socially responsible firms. Furthermore, the impact of sheltered employment centers is very positive for society because in addition to profitability terms, they will work in favor of the social and labour integration of disabled people. In consequence, governments should boost this kind of business as a way to improve the life of people with disabilities and their families. Medical and social expenses could be offset with the normalization of employment for disabled workers.

Finally, we consider this type of economic and financial research on these businesses necessary and interesting, as they are firms of a great social importance, given the lack of such studies in the current academic literature. This study will also serve to give academic and social visibility

to such enterprises, as well as to highlight the important work carried out to create a better society every day for everyone.

However, this study is not free of limitations. The sample is focused on only one region of Spain. Future studies should be done using the whole number of sheltered employment centers in Spain. Additionally, we only test the impact of subsidies on their profitability. Perhaps there are other factors that could condition their return on assets. Future research should be carried out in this line.

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## CONSULTED LEGISLATION

Real Decreto 2273/1985, de 4 de diciembre, por el que se aprueba el Reglamento de los Centros Especiales de Empleo definidos en el

artículo 42 de la Ley 13/1982, de 7 de abril, de integración social del minusválido. (BOE 294, de 9 de diciembre de 1985).

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