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Investigaciones Regionales

Public financing and entrepreneurship: behaviour and regional heterogeneity of SMEs*

Antonio García-Tabuenca[a], José Luis Crespo-Espert[b] and Juan R. Cuadrado-Roura[c]

ABSTRACT: The existence of restrictions for small- and medium-sized enterprises (SMEs) to access long-term credit has led governments to establish institutional systems to facilitate such access and reduce the cost of credit, with the condition that its feasibility is justified (and assessed) and there are no distortions as regards competition. Very few empirical in-depth studies exist regarding this field of academic research, and scarce attention has been paid from a regional perspective. Due to the characteristics of the business structures in the different regions, as well as the existence of agglomeration economies and the regional dispersion of the entrepreneurship rate, this paper analyses the effects of the productive financing support model, provided by the Government of Spain, through the Instituto de Crédito Oficial (ICO) [Official Credit Institute], on the behaviours and performances of the beneficiary companies. In the last decade, this source of financing has assigned 30,000 million euro. The results show the general acceptance of this policy due to its adaptation to the interests of the companies and its contribution to the improvement of the economic-financial efficiency indicators. Regionally, no substantial differences have been observed, but the results of this research show a greater contribution to the dynamism of the more progressive regions.

JEL classification: G-28, L25, L26, R30.

Key words: Public financing, business efficiency, entrepreneurial activity, regional differences.

[a] Senior Lecturer of Applied Economics at the University of Alcalá (Madrid, Spain) and Researcher in the Instituto de Análisis Económico y Social (IAES/SERVILAB). E-mail: antonio.gtabuenca@uah.es

[b] Senior Lecturer of Business Administration at the University of Alcalá (Madrid, Spain) and Researcher in the Instituto de Análisis Económico y Social (IAES/SERVILAB). E-mail: joseluis.crespo@uah.es

[c] Professor of Applied Economics at the University of Alcalá (Madrid, Spain) and Founder Director in the Instituto de Análisis Económico y Social (IAES/SERVILAB). jr.cuadrado@uah.es

Address: Facultad de Ciencias Económicas y Empresariales; Plaza de la Victoria, s/n; 28802 Alcalá de Henares (Madrid). Contact tel.: +34 918 855 225.

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Financiación pública y emprendimiento: comportamientos y heterogeneidad regional de las pequeñas y medianas empresas

RESUMEN: La generalizada aceptación de la existencia de restricciones al acceso al crédito a largo plazo por parte de las pequeñas y medianas empresas (Pyme), ha inducido a los gobiernos al establecimiento de sistemas institucionales que faciliten dicho acceso y abaraten el coste del crédito, siempre que pueda justificarse (y evaluarse) su viabilidad y no introduzcan distorsiones en la competencia. Abundantes estudios han profundizado en esta vía de investigación académica, aunque apenas han particularizado la perspectiva regional. Debido a las distintas características que presenta la estructura empresarial entre las regiones, así como a la existencia de economías de aglomeración y a la dispersión regional de la tasa de empresarialidad, en este trabajo se analiza la incidencia del modelo de apoyo a la financiación productiva, proporcionada por el gobierno de España, a través del Instituto de Crédito Oficial (ICO), en los comportamientos y desempeños de las empresas beneficiarias. Esta línea de financiación, de intermediación bancaria, ha destinado en la última década casi 30.000 millones de euros. Los resultados arrojan evidencias de la aceptación generalizada de esta política por su adecuación a los intereses de las empresas y por su contribución a la mejora de sus indicadores de eficiencia económico-financiera. Regionalmente, no se observan importantes disimilitudes, pero la investigación detecta una mayor contribución al dinamismo de las regiones más avanzadas.

Clasificación JEL: G-28; L25; L26; R30.

Palabras clave: Financiación pública, eficiencia empresarial, actividad emprendedora, diferencias regionales.

1. Introducción

Since the formulation of the well-known proposition of Modigliani and Miller (1958) on the irrelevance of the financial structure of the company, several authors and numerous, relevant papers on business finance have put forward evidence regarding the existence of financial restrictions on business investment decisions. Among the most significant are Grosman and Hart (1982), Jensen (1986), Bond and Meghir (1994) and Hellwig (1991). In practice, it is accepted that there are no perfect financial markets, therefore, the capital structure of a company is not irrelevant.

As regards the normal functioning of economies, it is acknowledged that the improvement in competitiveness and the productivity of companies is not so much (or is not only) a question related to the profitability of the business project measured through the return of its assets, but to the profitability of the resources invested in the business project measured through the financial return. That is to say, when a reference is made to the competitiveness of the company, this is not only done in economic terms but also in financial terms. In other words, the financial yield from the capital invested by the businessman is a powerful incentive when taking decisions on

the commencement or the consolidation of business activity. The difference between the financial yield from the investment made by the businessman and the salary he could obtain if he chose to work as an employed person constitutes an essential factor when assuming the challenge of the risk of being self-employed or the creation of one's own company (Praag and Cramer, 2001).

With several nuances, the flaws or imperfections of the market, which hinder free competition among companies, are also considered to be accepted. These flaws have been studied from several perspectives of economic analysis: agency theory and costs (Jensen and Meckling, 1976; and Ross, 1977), the asymmetric information between companies and financial agents (Leland and Pyle, 1977; and Greenwald, Stiglitz, and Weiss, 1984), other conditioners of the financial intermediaries or the composition of the capital (La Porta *et al*., 1999; and De Miguel and Pindado, 2001), the incentives in the financial structure of the company (Grosman and Hart, 1982), or due to dimension, where the smaller-sized companies are prejudiced by negative external factors which increase the cost of their capital resources and make their products more expensive in the markets (Brewer *et al*., 1996, Salas, 1996, and Maroto 1997).

With regard to this last flaw, the restrictions on access to credit, especially long-term credit, and its cost, make it difficult for smaller-sized companies to achieve a suitable ratio of financial leverage, which makes possible a financial return greater than the performance of the assets. The establishment by governments of institutional systems which facilitate such access to credit and reduce its cost has been oriented precisely to reducing or eliminating this difficulty. This reduced access to financing for new entrepreneurs and small companies entails restricting or preventing economic development perspectives, the encouragement of innovation and the creation of employment which would derive from the consolidation and growth of business projects.

The analysis of the relationships between financing business projects and the size of the companies has been studied extensively. However, little in-depth study, or much less study, has been carried out of the relationship between financing and localisation (area-region). This is probably due to the fact that such analyses started from the presumption that financial globalisation and innovation in financial products uniformly extended throughout the territories of countries or regions with the same Monetary, Economic or Customs, Union.

However, this financial argument could be discriminated by the territorial differences due to the characteristics of the business structure observed between regions, or to the urban-regional environment and their economies of agglomeration which work in favour of the creative entrepreneur through the creation of networks (Nijkamp, 2000) or developments of sector clusters or technological and innovative environments (Porter, 1998, Costa Campi *et al*., 2000), or to the difference in the behaviour of the business rates between regions (Audretsch *et al*., 2002; Thurik and Verheul, 2002, and García-Tabuenca, Crespo-Espert and Cuadrado-Roura, 2007).

Furthermore, there are only very few studies which analyse the behaviour of company financing from a regional perspective, particularly where public support exists which tries to minimise the deficiencies due to company size.

In light of this background, this paper contains five sections and this introduction is the first. The second presents the focus and objectives of the paper; the third gives a general and regional panorama of the empirical case under study; the fourth analyses the efficiency of the behaviour of the companies studied. Finally, the fifth presents a summary of the paper and the main conclusions.

2. Objectives, approach and methods

The main objective of this paper is to analyse the behaviour and possible robustness of companies derived from the business decision to access long-term credit through the use of public resources for the financing of Spanish small- and medium-sized enterprises (SMEs) from a regional perspective. Specifically, a study is carried out for the decade between 1997 and 2006 of the line of credit ICO-SMEs which the Instituto de Crédito Oficial (ICO) [Oficial Credit Institute] annually places at the disposal of Spanish SMEs, through the bank intermediation mechanism. The mission of the ICO is to act as a financial agent of the State and as a development bank in order to encourage certain productive activities[1].

Another fundamental objective of this paper is to assess the usefulness of the public line of credit for company financing, as well as its suitability for the interests of the companies and entrepreneurs and other economic agents.

The database of the ICO makes it possible to differentiate the beneficiary companies, among other categories, depending on the regions where they are located (17 Autonomous Communities), on their business size (micro-, small and medium-sized enterprises), and on the legal form they adopt ('self-employed' and commercial – limited liability, limited and other types of companies). In the present study, only the differences among regions are considered, avoiding the companies' sizes and legal forms.

The regional analysis uses the regional groups established by 'Eurostat' in the NUTS-1, which are made up of several administrative regions (Autonomous Communities in the case of Spain) with common territorial and socioeconomic characteristics in a single region. 'Eurostat' considers seven NUTS-1 for Spain: Northwest, Northeast, East, Centre, Madrid, South and the Canary Islands. For the purposes of this paper, the Canary Islands, which is a NUTS-1, has been included in the NUTS-1 SOUTH.

This analysis focuses on two fields of interest. The first describes the profile and shows the evolution of the almost half a million operations of the ICO-SMEs line of

[1] Since the start of the nineties, the Instituto de Crédito Oficial (ICO) —the Financial Agency of the State— established a line of credit for small and medium-sized companies to facilitate credit through bank intermediation, as in other countries in the same environment. The Institute obtains resources mainly in the financial markets which are placed at the disposal of the commercial banks interested, through a general and specific agreement, so that these, in a determined maximum period and *spread* conditions as regards the EURIBOR and assuming the risk of the operations, can grant credit to the SMEs which submit feasible investment projects to them.

credit executed in the period and of the more than 270,000 beneficiary companies. Also, the level that the companies in the regions have used this line of credit has been examined as has the intensity with which the different types of companies have resorted to the financing through the intermediation of the ICO.

The second field of interest refers to the performance of the companies through economic-financial indicators of business efficiency: economic return, financial return, productivity, EBITDA over total assets and over turnover[2]. These indicators act as a direct indication of the incentive of the entrepreneur as regards the activity and the risk assumed. This economic-financial analysis is carried out regionally in order to segment all the companies benefiting from lines of credit throughout the decade under analysis. It also divides the companies depending on the intensity with which they use the line of credit: one or more times.

The analysis adopts a *counterfactual* focus which contrasts the earnings of the companies which resorted to the lines of credit (once or on repeated occasions) with those which did not. To achieve this, control groups with the same segmentation criteria were established. Thus, the regional differences in the results of the management of the companies benefiting from the lines of credit in comparison with the rest of the companies in the same region are identified. The analysis makes it possible to verify whether the decision to resort to the ICO-SMEs lines of credit, together with the rest of the business decisions, generate results which are different from those companies which did not resort to this line of credit.

Due to the possible existence of an endogeneity problem generated by the previous selection of the sample (beneficiary enterprises), the aim of this analysis is not to establish a causality between public financing and performance, but to compare the aggregate results of those companies –measured with the aforementioned indicators- receiving financing (one or more times) and of those which did not. The possible endogeneity is due to the fact that the beneficiary companies were selected by banking intermediaries and were selected depending on their risk level. Thus, the enterprises receiving financing would be those with the best management and solvency.

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[2] The economic and financial ratios of profitability respectively indicate the efficiency of the performance of the entrepreneur and his corresponding remuneration. The first shows the proper use of tangible investment in fixed and current assets through the quotient of the profit before interest and tax and the total annual average of the assets of the company. The second, defined as the relationship between the net earnings of the company and the equity used, indicates the excess freely disposable by the entrepreneur as remuneration for the risk assumed.

Together with the yield, the productivity shows the business efficiency in terms of the use of human capital. It measures the added value obtained per employee and indicates how the suitable combination between the human factor and the technical structure affects the generation of wealth for the company.

As regards the EBITDA (Earnings before interests, taxes, depreciation and amortization), this is the indicator which most approximately provides the liquid funds generated by the company not subject to the application of accounting criteria for the imputation of amortization and depreciation or to tax criteria, nor to the selection between own financing and external financing in the financial structure of the company. In this study, the total assets and the turnover are relativised: the former represents the generation of liquidity as regards the total investment of the company and the latter, as regards the earnings obtained. Such relativising is always necessary in order to establish comparisons between companies.

For these purposes, we have used the aforementioned ICO-Pyme database and the database Sistema de Análisis de Balances Ibéricos (SABI) [System for the Analysis of Iberian Balance Sheets]. The first, including the companies that are beneficiaries of the ICO-Pyme line between 1997 and 2006, is created on the basis that the support provided by the Instituto de Crédito Oficial is available for each of the year of the series. The SABI database, which is a source of business information from commercial registers, includes data on most of the Spanish companies with commercial forms. The calculation of the comparative values can only be carried out for the eight years during which this database offered complete information (1999-2006). Based on these values, the average statistical figures which represent the evolution and tendencies of the indicators mentioned are constructed. This *counterfactual* analysis, which contrasts the results of the two groups of companies which accessed the lines of credit with the results of their respective control groups, is complemented with a confirmatory analysis which uses the non-parametric contrast test of *Kruskal-Wallis*.

3. Descriptive panorama of the ICO-SMES line of credit, 1997-2006

This section provides a characterisation of the operations and the beneficiaries of the ICO-SMEs line of credit throughout the decade from 1997 to 2006. A description is given of the use of the line of credit and its evolution, the degree to which the companies in the different regions resorted to use the line of credit and the intensity (one or more times) with which the types of productive units obtained financing through the intermediation of the ICO.

3.1. Operations and evolution of the ICO-SMEs line of credit

Throughout the mentioned period, the Instituto de Crédito Oficial executed 477,068 operations: 25% were assigned to self-employed persons and 75% to commercial companies and other legal forms. Of the total number of operations, 53.9% of the beneficiaries are limited companies, 17.4% are limited liability companies and 3.7% are others. In this last group, cooperative companies benefited from 1.7% of the total. The total number of resources assigned by the State to the line of credit in the referred to decade was approximately 30,000 million euros. In 2006, approximately 7,000 million euros were assigned, which corresponds to 23.9% of the total operations of the decade studied 1997-2006.

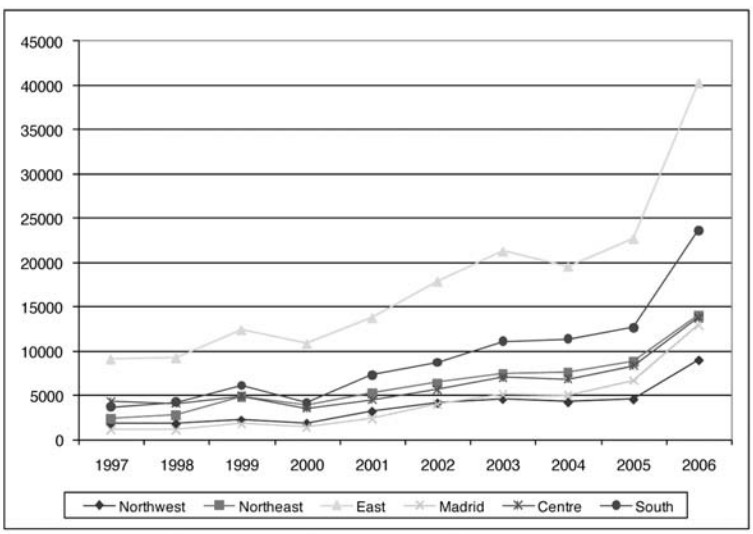
As regards NUTS-1, 37.2% of the operations figure in the East regions, and following this, also with two digits, are the South, Northeast and Centre regions, with 19.6%, 13.3% and 13.3% respectively. These are followed by the Madrid and Northwest regions, with 8.7% and 7.9%, respectively.

Depending on the number of workers employed by the beneficiaries of the line of credit, the operations formalised with productive units which have less than 10 workers entail 61.2% of the total, while the rest, 38.8%, is shared between those which

have more than 9 and less than 50 workers (30.8%), and those with less than 49 workers (8%).

As the decade under study continues, the resources assigned by the ICO to the credit line experienced an increase and, therefore, also the number of operations increases practically each year. Figure 1 illustrates the evolution of the line of credit by NUTS-1 and the number of annual operations. It can be observed that, throughout the period, the East, South and Northeast regions accounted for most of the operations. Although these were not those with the greatest absolute and annual growth rates as regards the use of the line of credit, which is demonstrated by the greater volume of operations at the beginning.

Figure 1. ICO-SMEs line of credit operations formalised by NUTS-1 and year (amount)



Source: Own elaboration, ICO database.

The growth by number of operations between 1997 and 2006 was 408%, meaning an accrued average annual increase of 19.8%, as stated as a figure in Table 1. The Madrid region is the one showing most growth as regards the number of operations, with an increase of over 1,000% in the total period, and with the highest average annual increase of over 30%. At the other end of the scale, the regions which are below the average are: Centre (13.74%), East (18.02%) and Northeast (19.31%). The other two NUTS-1, Northeast and South had an average annual accrued growth above average, amounting to 22.06% and 22.91 %, respectively.

Table 1. Growth of the number of line of credit ICO-SMEs operations per NUTS-1, 1997-2006 (in percentages)

Operations 1997 - 2006	*Total growth for the period 1997-2006*	*Annual accrued growth*
Northwest	390.05	19.31
Northeast	501.37	22.06
East	344.15	18.02
Madrid	1051.59	31.20
Centre	218.65	13.74
South	540.03	22.91
Total Spain	**408.02**	**19.79**

Source: Own elaboration-ICO database.

3.2. Beneficiaries, intensity as per business density and repeater beneficiaries

The 477,068 operations mentioned were carried out with 272,630 productive units (or an average of 1.75 operations per beneficiary). The situation shown by the operations by NUTS-1 is reproduced when the productive beneficiary units are considered. The East region represents 37% of the total number of beneficiaries in the decade and the South 20.5%, while the Northwest and Madrid demonstrate only 8.7% and 9.1% of the beneficiaries, respectively.

These results and their evolution show variations when, for each segment analysed, the beneficiary productive units are compared with those in the business network, taking into consideration the fact that the data is provided annually by the Directorio Central de Empresas (DIRCE) [Central Directory of Companies] of the Instituto Nacional de Estadística (INE) [National Institute of Statistics]. Table 2 offers these new results: the intensity of the ICO-SMEs line of credit by business density. It should be noted that the DIRCE does not provide data on the agrarian productive units, thus, the corresponding beneficiaries of the ICO, slightly over 20,000 units during the decade under study, were excluded.

The comparison of the total number of units in each NUTS-1 which used the line of credit compared with the average number of those existing shows that, as an average in the whole of Spain, almost one in every 10 productive units (9.2%) benefited in the decade under study. The NUTS-1 regions which most used the line of credit are Northeast (10.6%), East (10.55) and Centre (10.3%) and those which least did so are Madrid (5.8%), Northwest (8.2%) and South (8.7%). In order to deduce whether the line of credit is being used as expected according to its participation in the business structure, the relationship between the percentages representing the number of units from each region using the line of credit divided by the total number of beneficiary units in Spain, and the percentage of the productive units in this region divided by the national total can be used. Thus, a value greater than 100% shows that the NUTS-1 uses the line of credit more intensely than was initially expected and an inferior value demonstrates that the line of credit is not recurred to sufficiently within this territory.

Table 2. Intensity of the ICO-SMEs line of credit by NUTS-1 and DIRCE productive units (*), Average 1997-2006

	(a)	*(b)*	*(b/a) (%)*	*(c) (%)*	*(d) (%)*	*(d/c) (%)*
Autonomous Communities	*DIRCE*	*ICO Beneficiaries*	*Beneficiaries as per DIRCE*	*NUTS-1 as per total DIRCE*	*NUTS-1 as per total Beneficiaries ICO*	*Intensity of line of credit* Northwest
Northwest	266,755	21,816	8.2	9.7	8.7	89.0
Northeast	289,255	30,632	10.6	10.6	12.2	115.2
East	882,677	93,050	10.5	32.2	37.0	114.7
Madrid	395,096	22,806	5.8	14.4	9.1	62.8
Centre	309,412	31,837	10.3	11.3	12.7	112.0
South	594,573	51,476	8.7	21.7	20.5	94.2
Total Spain	**2,737,768**	**251,617**	**9.2**	**100**	**100**	**100**

Source: Own elaboration, ICO database. (*) The number of productive units (companies and self-employed) considered in column 'a' is the average of the figures provided by the DIRCE-INE in the period analysed.

The Northeast, East and Centre regions use the line of credit between 12% and 15% more than should correspond to them according to their business structure. Madrid, Northwest and South use credit below the level corresponding to them due to their business density. The data for the Madrid region is significant in that this region only uses 62.8% of what is expected.

Of the 477,068 operations carried out and mentioned by the 272,630 productive beneficiary units, only 83,216 beneficiaries repeated the operation, that is to say, 30.59% of the total. Therefore, each beneficiary which resorted to the financing with the ICO as intermediary and repeated (more than one operation) during the decade, did so 3.44 times on average. These two figures present a wide dispersion in accordance with the segmentation criteria.

In accordance with the territorial distribution, the East region, again, presents the highest percentage of units which repeat (32.84%), while the Northwest and Centre present the least (27.66% and 27.78%); in the first NUT mentioned, the beneficiaries which repeat do so 3.5 times and the last mentioned, 3.3 times. As well as in the East, the beneficiaries which repeat in the Northeast and Madrid also do so 3.5 times. These results appear in table 3.

As a whole, of the analysis of the beneficiaries which repeated operations during the decade, 53.4% of these formalised only two operations, 20.3% formalised three operations, 9.6% four and 16.7% five or more operations.

3.3. Average costs and amounts of financing the operations

The analysis of the average costs of financing the operations carried out through the ICO-SMEs line of credit shows that there are differences depending on the regional distribution, the legal form and the size of the productive unit.

Table 3. Number of operations by repeater beneficiary company

NUTS-1	*(a)*	*(b)*	*(a/b) %*	*(c)*	*(c/b)*	*Number of operations by repeater company*
	Number of operations by repeater company	*Repeater companies*	*Total companies*	*Percentage of repeater companies*	*Total operations*	
Northwest	6,250	22,594	27,66	37,385	1.65	3.4
Northeast	11,064	35,953	30,77	63,298	1.76	3.5
East	31,756	96,710	32,84	176,617	1.83	3.5
Madrid	72,64	23,251	31,24	41,604	1.79	3.5
Centre	10,711	38,555	27,78	63,098	1.64	3.3
South	16,167	54,993	29,40	93,263	1.70	3.4
Total Spain	**83,212**	**272,056**	**30,59**	**475,265**	**1.75**	**3.44**

Source: Own elaboration, ICO database.

NUTS-1 shows only minor explicable variations, probably due to the regional business structures and dynamics. Thus, it can be appreciated that the Northeast region generally has the least average costs, as opposed to the South, which usually has the highest (Table 4).

By legal form and company size, the results are in accordance with the exposure to risk of the financial entities as regards the debtor productive units. Thus, it can be observed that, in accordance with the legal form of the beneficiaries, the average financial cost for the self-employed is the greatest (3.77%, for example, in 2006, with the average 'Euribor' at 12 months of 3.44%), while that for the public limited companies is the lowest (3.68%) and, between these figures, the cost of other forms is, generally, greater than for limited companies.

By company size, there is an evident inverse relationship where the smallest units (with less than 10 employees) pay the highest costs (3.76%) and those with less than 49 employees the least (3.67%).

Table 4. Average annual cost of the ICO-SMEs, line of credit operations by NUTS-1 (in percentages)

NUTS-1	*1997*	*1998*	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*
Northwest	6.26	5.08	2.95	4.81	5.29	4.41	3.11	2.74	2.77	3.77
Northeast	6.22	5.03	3.17	4.66	6.01	6.60	3.02	2.66	2.73	3.69
East	6.26	5.07	3.28	4.75	5.30	4.54	3.09	2.72	2.78	3.74
Madrid	6.26	5.09	3.00	4.74	5.37	4.51	3.04	2.66	2.74	3.67
Centre	6.34	5.11	3.27	4.74	5.35	4.52	3.06	2.69	2.75	3.72
South	6.35	5.14	3.21	4.91	5.29	4.56	3.12	2.78	2.81	3.77
Total Spain	**6.26**	**5.09**	**3.20**	**4.76**	**5.27**	**4.41**	**3.08**	**2.72**	**2.77**	**3.73**

Source: Own elaboration and ICO database.

The average total cost of operations fundamentally depends on the company size criteria as opposed to the other segmentation criteria used. Thus, the average volume of the financing obtained for each year of the decade studied shows a direct relationship with size. In the case of micro-companies, the average annual volume of financing for the decade amounts to 44,232 euros; the maximum was reached in 1997, with 54,942 euros, and the minimum in 2003, with 37,123 euros. In the case of small productive units, the average annual volume for the decade was 75,198 euros, the maximum was achieved in 1999, with 96,174 euros, and the minimum in 2003, with 66,044 euros. That is to say, they showed the same tendency as the micro-companies. The medium-sized units had an average volume of 145,250 euros, the maximum occurred in 1998, with 216,591 euros, and the minimum in 2003, with 116,517 euros. These financing amounts or volumes were associated to the investments made by the beneficiary units. The average investment forecast was financed through the ICO credit by 54% for the units with less than 10 employees, 53% for the small units and 39% in the case of the medium-sized companies.

By regions, the two notable Autonomous Communities in the Northeast with an average total investment greater than 200,000 euros, were the Community of Navarre (249,181) and the Basque Country (229,305), and with investments lower than 100,000 euros, two Autonomous Communities in the Centre region, Extremadura (88,977) and Castile and León (95,272), and another two from the Northwest NUTS-1, Galicia (94,941) and Cantabria (95,944).

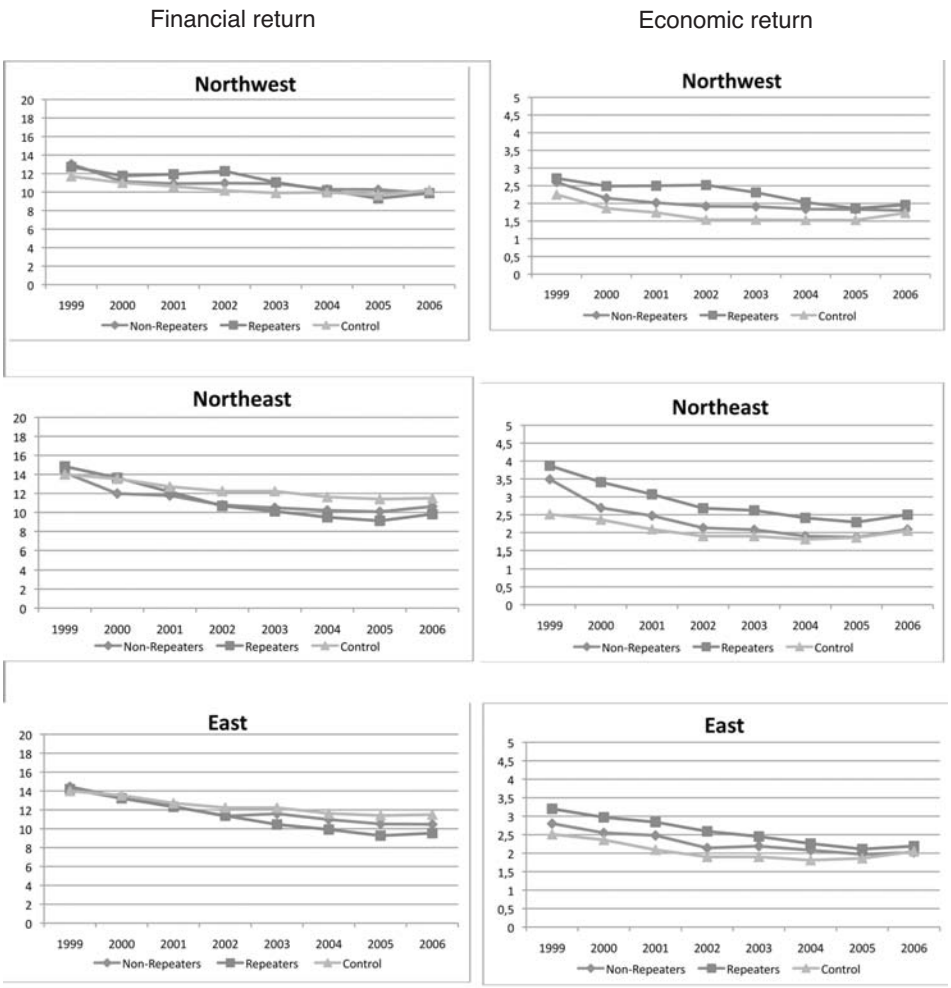
4. Analysis of the efficiency of the companies benefiting from the ICO-SMEs line of credit, 1999-2006

This section analyses the behaviour and results of the companies which received financing for investment from the entrepreneurial ICO-SMEs line of credit in the period from 1999 to 2006. The regional analysis aspect that is selected depends on the NUTS-1 region within which they are located. In addition, the paper differentiates between the units which resorted only one or more times to a line of credit (in the figures, these are referred to as 'non repeaters' or 'repeaters', respectively) and establishes a control group made up of companies which did not receive financing from the ICO, thus, three groups of comparison are established. The indicators of efficiency studied are those stated above. The analysis of the comparisons between the groups is made based on the graphic representation of these indicators of efficiency and is confirmed statistically.

As regards all the regions, the **economic return** of the companies which used ICO financing is greater than those offered by the specific control group. With the exception of the Madrid region, which does not show any differences, the companies which resorted several times to the line of credit have higher values in this indicator than those which did so only once. As regards **financial return**, the differences between the groups are not significant in the first part of the period under study and its values are heterogeneous as per the regions. In the second half of the period, in general, the values of the ratio by regions diverge in the three comparison groups: except

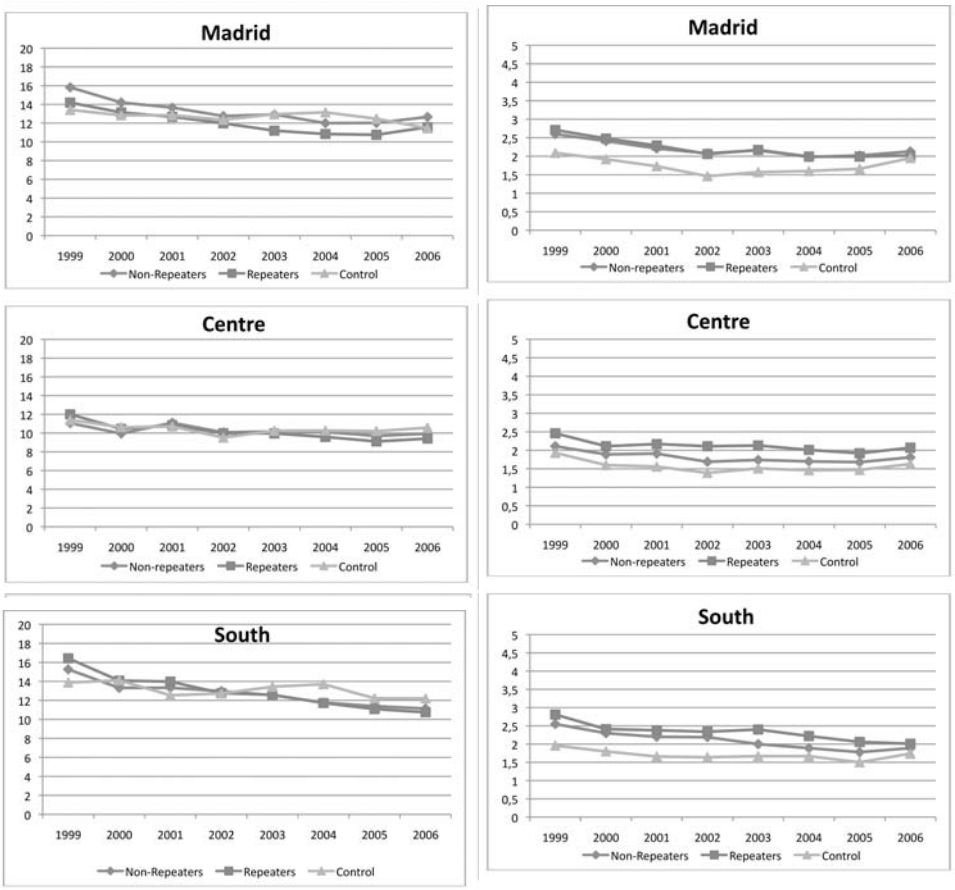
in the Northwest region, where there are no differences, the beneficiary companies tend to be located below the control group, and the values of those which repeat operations are below those of the companies which only resort to this financing once (Figure 2).

Figure 2. Evolution of indicators of profitability of the companies beneficiaries of the ICO-SMEs line of credit, by NUTS-1 regions (in percentages)



Source: Own elaboration, ICO and SABI databases.

Figure 2. *Cont.*

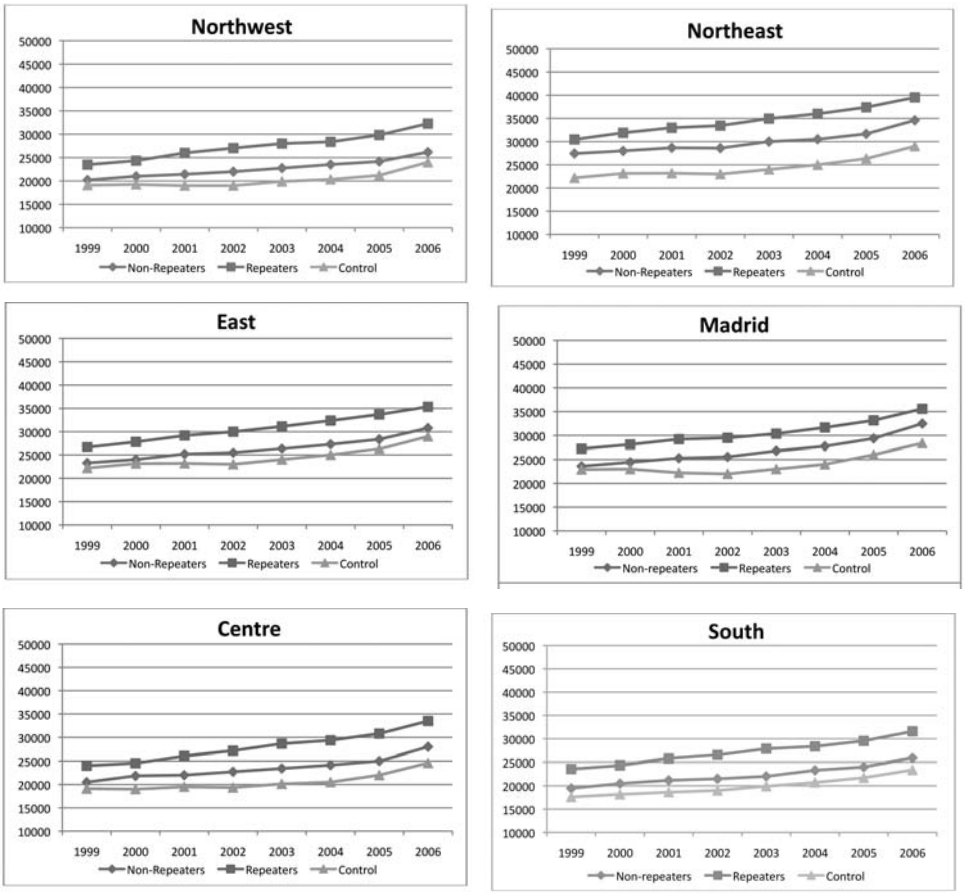


Source: Own elaboration, ICO and SABI databases.

Within the growing tendency concerning **productivity** (Figure 3) for the three groups and six regions, the companies which repeat operations with the line of credit generally present greater annual increases, which entails that the differences with the other two comparison groups tend to grow.

Finally, the **EBITDA over total assets and over turnover ratios** (Figure 4), which reveal a decreasing tendency in the first and a flat tendency in the second in all the regions during the period, shows that the repeater companies of the line of credit generate more liquid funds per unit invested in assets or obtained as turnover than those which resorted to the lines of credit only on one occasion and, these, in turn, obtained significantly better performances than those of the control group.

Figure 3. Evolution of indicators of productivity of the companies benefiting from the ICO-SMEs line of credit, by NUTS-1 regions (in euros)



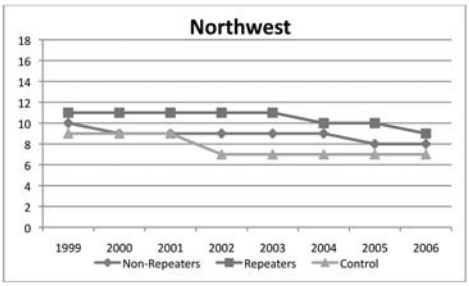
Source: Own elaboration, ICO and SABI databases.

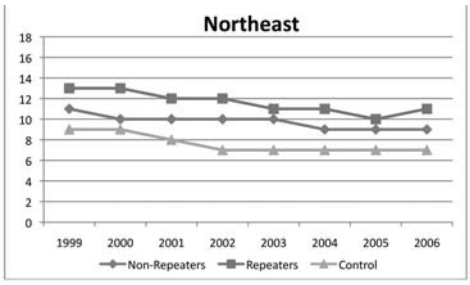
Furthermore, the separate studies of the companies which used the line of credit on one occasion and those —with greater entrepreneurial drive— which resorted to the line of credit on more than one occasion reinforces what was observed (Figure 5). It should be pointed out that the repeater companies of the Northeast region achieve the greatest economic return, productivity and EBITDA ratios values as regards total assets and turnover, and these are significantly distant from the rest of the regions in the first two indicators. Also it should be mentioned that the repeaters of the South region are significant due to the higher financial return achieved.

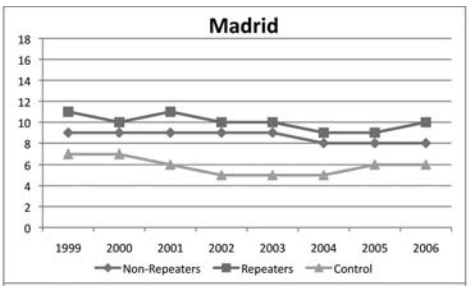
The Northeast region traditionally stands out due to its economic and business dynamism as having the greatest business rate and, together with the regions of Madrid and the East, encompasses the entrepreneurial base with the greatest creative and innovative capacity (García-Tabuenca, Crespo-Espert and Cuadrado-Roura, 2007).

Figure 4. Evolution of EBITDA indicators of the companies benefiting from the ICO-SMEs line of credit, by NUTS-1 regions (in percentages)

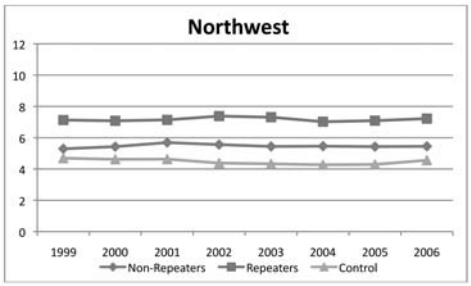
EBITDA over Total Assets

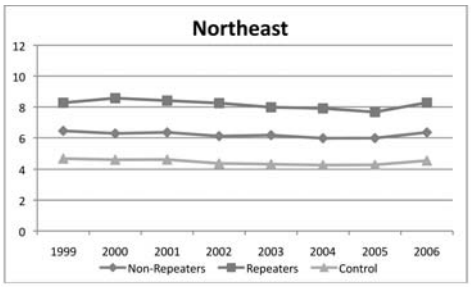


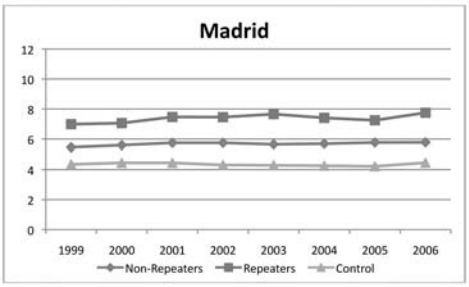




EBITDA over Turnover

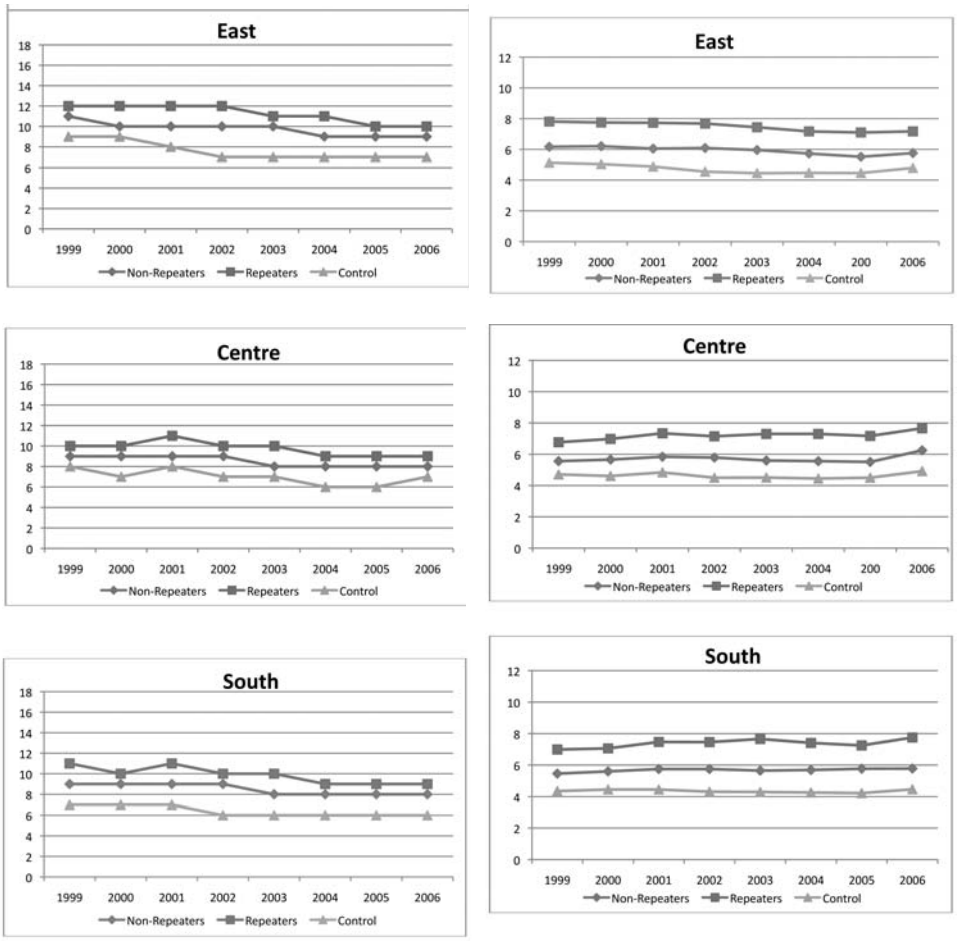






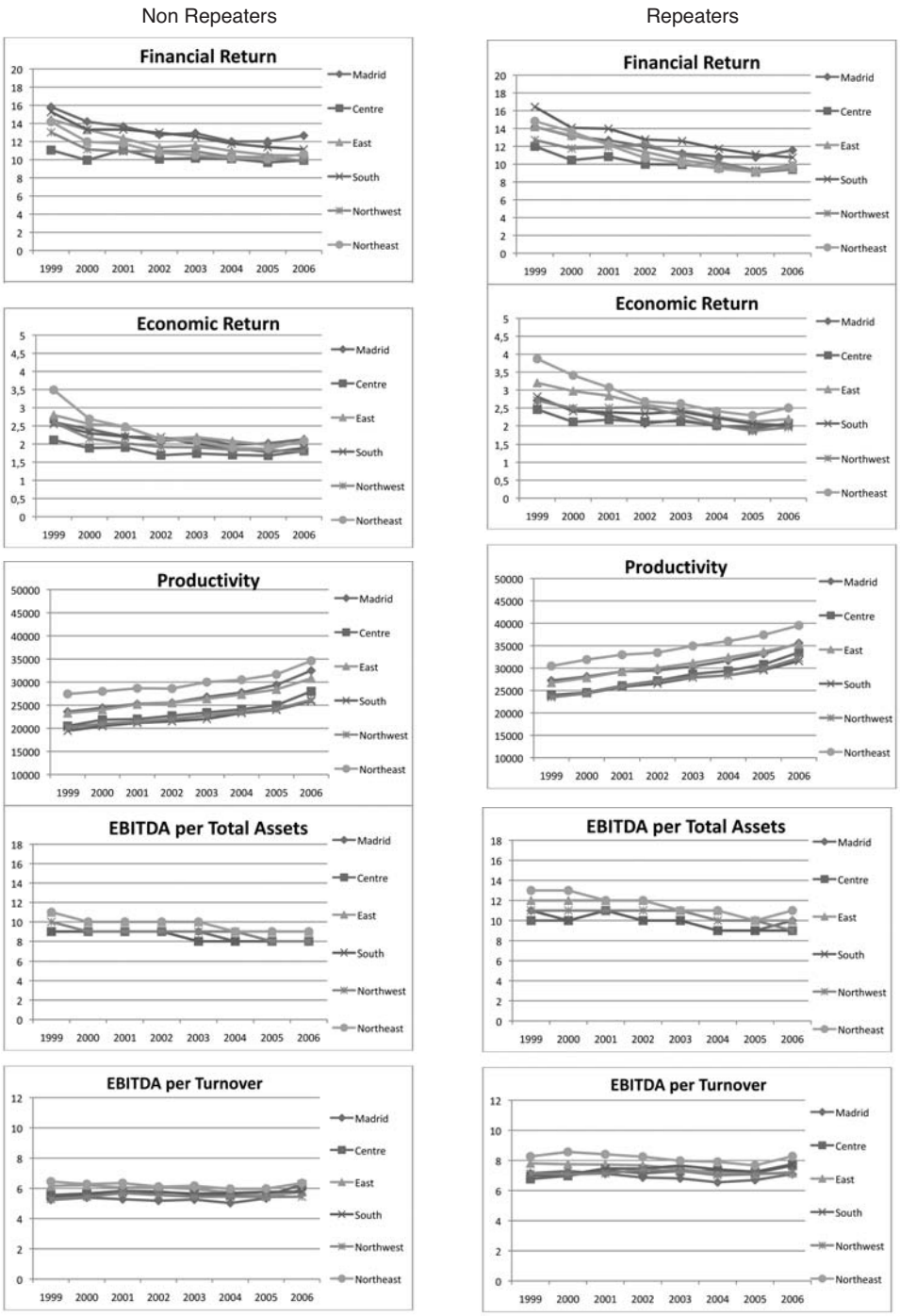
Source: Own elaboration, ICO and SABI databases.

Figure 4. *Cont.*



Source: Own elaboration, ICO and SABI databases.

Figure 5. Evolution of indicators of the beneficiary companies, depending on whether they have resorted to a line of credit one or more times, by NUTS-1 regions (in percentages)



Source: Own elaboration, ICO and SABI databases.

In conclusion, from the figure analysis in all the regions, the values shown by the indicators of **economic return, productivity and EBITDA ratios** over total assets or over turnover of the repeater beneficiary companies are greater than those of the non repeaters and, the values of these are greater than the non beneficiaries. **Financial return,** regardless of the use of the line of credit or the intensity of use, of the companies located in the regions is similar. However, in recent years, this indicator tends to be located slightly below that demonstrated by the non-beneficiary companies regarding the greater intensity of the use of the line of credit.

These results are confirmed statistically for all the regions in the indicators where the differences arise, except for the financial return, through the non-parametric test of Kruskal Wallis, as shown in Table 5.

Table 5. Kruskal-Wallis statistical test of the differences between the study groups: repeater and non repeater beneficiaries and control group, by NUTS-1

NUTS-1	*Economic Return*		*Financial Return*		*Productivity*		*EBITDAS*	
	Chi-squared	Sig	Chi-squared	Sig	Chi-squared	Sig	Chi-squared	Sig
Northwest	188.615	0.000	0.504	0.777	875.485	0.000	580.404	0.000
Northeast	425.442	0.000	10.226	0.006	2680.795	0.000	1058.398	0.000
East	257.137	0.000	84.279	0.000	939.97	0.000	1063.981	0.000
Centre	205.47	0.000	15.209	0.000	1092.689	0.000	578.268	0.000
Madrid	185.559	0.000	30.599	0.000	505.488	0.000	725.147	0.000
South	145.245	0.000	18.219	0.000	844.469	0.000	538.355	0.000

Level of freedom: 2 in all the analyses
Level of significance for the acceptance of differences: < 0.10.
Source: Own elaboration.

5. Summary and conclusions

In the area regarding the evaluation of public policies in support of financing entrepreneurial activity there is a lack of empirical studies in order to contrast the reasoning behind these. This study addresses this objective and contributes evidence to verify that the financial support provided by the ICO-SMEs line has a relevant effect on the efficiency and performance of the receiving companies.

The objective of the ICO-SMEs line of credit is to provide financial support for the investment assumed by the SMEs applying for the credit. That is to say, to facilitate long-term financing for the investment of important agents generating employment and social and economic cohesion in Spain. This investment may be assigned to the renovation of the productive structure of the company or the increase of this structure for expansion.

During the period, the ICO-SMEs line of credit financed almost half a million investment operations (477,078) with 272,630 beneficiaries, amounting to almost 30,000 million euros. The volume of operations in which the ICO acted as intermediary increased at an average annual rate of 20%. Almost one of every 10 active Spa-

nish companies (self-employed and companies) were beneficiaries of the line of credit on one or several occasions. Three of every 10 companies carried out more than one operation: those which repeated, on average, did so 3.44 times. The average amount of the financing obtained through the bank intermediation was 61,851 euros per operation or 108,231 euros per company, at an average cost adjusted to the interbank interest rate.

In small companies and micro-companies, the line of credit has contributed to the financing of more than half of their investments, and, as regards the medium-sized companies, almost 40%. The cost of financing has a slight inverse relation with the size of the company and with the legal form (self-employed and micro-companies are those with the highest costs, and public limited companies and medium-sized companies are those with the lowest costs).

The paper puts forward fundamental reasons which show adequate compliance with the objectives laid down by the State and the acceptance of the line of credit by the entrepreneurs during the period under study. Some of the reasons for this are: 1) the high number of operations and the substantial annual growth rate, 2) the large number of beneficiary companies, 3) the significant percentage of Spanish companies which have benefited from these lines of credit, 4) the considerable proportion of companies which repeat the operation, and 5) principally, the acceptance of the characteristics of the costs (financial and transaction) of practically half the investments made.

The results of the efficiency analysis has contributed evidence of this adaptation to public objectives and business acceptance. In fact, the companies which resorted to the line of credit, as a consequence of their decisions and management present better performances than those which decided not to use these. Although the existence of causality cannot be demonstrated, it is likely that the ICO financing has been one of the factors which contributed to the efficiency achieved. In this sense, if the objective was to confirm causality between the support received and the effects on the companies, we should correct the problem of non-random selection of the sample (due to the selection of the beneficiaries by the financial intermediaries) by using the la *Heckman correction* methodology (Heckman, 1979), which reduces the problem of endogeneity.

These results show that the beneficiary companies achieve greater values in the economic efficiency indicators contemplated (economic return and productivity), as well as the financial efficiency indicators (EBITDA over total assets or over turnover), with regard to those results obtained by the companies which did not resort to the line of credit. The more intensely the beneficiary companies used the line of credit during the period studied, the greater the differences.

Only the financial return indicator shows lower values in the beneficiaries, which, within an entrepreneurial strategy, may be explained by the need that a company has to increase its sources of financing when the renovation of the components of its productive structure is addressed or when it contends with a stage of expansion or growth (precisely the objective of the line of credit). This increase of resources through debt or the increase in equity entails the need to take on greater financial costs and expenses, which affects the surplus owned. These results of the indicators are

particularly explicit in micro-companies, which are the most numerous beneficiaries of the line of credit, as in the Spanish business structure.

From the regional focus provided by the study, the differences between regions are scarcely significant as each of the six Spanish NUTS-1 provide the results explained. Only the beneficiary companies of the Northeast region stand out, as they show better values in the indicators studied. This region is the one which, in relative terms, used the line of credit most (15% above the representation of its business sector in the national structure), where the costs of financing the line of credit was lowest in most of the years in the period, and where the two Autonomous Communities (Navarre and the Basque Country) with the highest average investment financed per beneficiary company are found. The Northeast region has a strong business dynamism. Its companies, together with the East and Madrid regions, are those which reach the greatest values of financial, return and productivity, and is characterised by having the greatest rate of entrepreneurship and with an entrepreneurial base with a substantial creative and innovative capacity. The characteristics of the business network of the region seems to reinforce the disposition of companies and entrepreneurs to use the ICO line of credit and this benefit the performance of the companies.

In short, in order to encourage entrepreneurial activity, regarding the initiatives which instigate the business ventures and those which are more consolidated, greater access to long-term resources which can be provided by the public administrations becomes a valuable instrument of economic policy. This leads to economic growth and employment and has an impact on entrepreneurial performance depending on the regional dynamics.

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