Regional Distribution of Public Incentives for Firms Support in Portugal

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Abstract: PRIME is one of the best example support system because it has been indirectly financed by European founds while fully structured as a Portuguese policy instrument for support to the modernization of the entrepreneurial tissue. Further than the goal earlier pointed out, this paper has a dual aim: firstly, to supply an exploratory survey on the patterns of asymmetric use of the financing systems provided by the E.C. and, secondly, to emphasize the north/south endemic dichotomy existing in the country – a path dependence trend that should concern Portuguese policy makers deeper then it does. Methodologically, we have observed the financing execution of 14910 projects, collected from the official information portal of PRIME in Portugal. Due to limitations related to the information sources of the portal our study deals with a reduced number of variables: project location, year, industrial activity, financial program, NUT, district, investment and incentive. Nevertheless, the application of HOMALS, Cluster and Correspondence Analyses was possible, allowing conclusions about the level of effectiveness of PRIME across, both, location and sectors levels.

Keywords - Cluster and Correspondence Analyses, sustainability, Portugal

1. Tools for Development in Europe: the Portuguese program PRIME

Some quite generic discussions have emerged from research agendas concerned with the notion of geographical space and concluding that its development is a matter of maturity of endogenous systems [1]. The introduction of time as a major factor of the territorial dynamics stresses a whole set of new drivers into the scene of policy making. Concepts such as "learning" and "interacting", give origin to very consistent and original new approaches in which institutions, public, private or in public-private partnership became regulatory elements of individual and collective practices, the principal assets being therefore of a relational nature [2]. One of the main characteristics inherent to the territory is the proximity among socio-economic agents [3]. But, whether or not the agents are able to benefit from this attribute depends on their own technological and social capacity to interact and co-operate – the concept of social capital considered as a consistent argument to favour development [4 and 5].

Public policies should be able to provide the set of factors necessary to speed development, particularly in less favoured regions. Such regions face three types of hindrances to be surmounted: the location disadvantages, the lack of structural adjustments and need for political coherency at national, regional and sector levels [6].

Most frequently public policies for regional development, implemented to increase the competitiveness of regional skills, come across targets for technological modernization, at national level, that strongly prejudice policy results. So, how far are the outcomes from the initial targets? The exact answers serve for evaluation of policy effectiveness of regional policy and should be provided by in deep monitoring of implemented programmes. PRIME - Incentives Programme for the Modernisation of Economic Activities was instituted by the Resolution of the Council of Ministers no. 101/2003, [7] after its formal approval by the European Commission in 2003. The program integrated a set of medium term economic policy instruments for the period 2000-2006 which have been applied to different economic activity sectors in Portugal.

The instrument was developed exclusively for the Industry, Energy, Building Industry, Transport, Tourism, and Trade and Services sectors. The Programme integrated in Area 2 of the Regional Development Plan – *Adjusting the Production Profile towards the Activities of the Future*, and was designed to foster productivity and competitiveness

of Portuguese firms, thereby promoting new development capabilities under the following goals: to ensure a generally sound competition environment, which may contribute to revitalise business structure, and to steam in firms research and development on new products and processes; to simplify procedures and stimulate de-regulation; to encourage the qualification of human resources by enhancing technical and scientific training thereby fostering productivity growth, through more motivating and rewarding tasks [8]. As such, PRIME was promoted along the following priority areas of strategic actions: Area 1 – Enterprise Stimulation; Area 2 – Qualification of Human Resources; Area 3 – Stimulation of the Business Environment. The two first Areas are dedicated to a direct intervention at firm level, and the third, of a more crosscutting nature, aims at stimulating business environment.

The 29 support measures and incentives schemes at which the programme is structured are presented in the Annex 1.The financial supports corresponding to PRIME Programme were non refundable incentive types and each support measure or incentive scheme aimed to generate new economic activities and to introduce a new competitive and innovative context to the Portuguese economy. The financial support approach of this Programme also included a risk capital fund and achievement bonus incentives.

PRIME was a public policy instrument driven to the promotion of economic activity in the Portuguese territory specially focused, but not exclusively, on small and medium size enterprises. Some of Programme support measures and incentives included as beneficiaries non profit organisations, municipalities, technological schools, business associative structures and technology-based incubator centres and parks.

As it was supporting a wide range of economic activity sectors the instrument was neither sector nor regional focused. The only exceptions were the URBCOM, MINING ZONES and HISTORIC INNS incentives schemes. The program did not use, as project selection criteria, the geographical localisation of the project proponent. Just in a few cases localization was a selection criterion: NITEC, SIED, SIPIE, Vocational Training, PITER and TTQ Infrastructures.

2. Methodology for data analysis

2.1. Sampling and choice of variables

Our initial database contained 15307 records reported to 2007 data set. After a filter application based on NUTII clear identification the final database contains 14910 enterprises that received incentives during the period 2000-2006.

Following variables have been defined as active variables: i) Date, ii) Support, iii) Area of strategic action (EIXO), iv) Region (Nuts II) (North, Centre, Lisbon, Alentejo, Algarve, Açores and Madeira), v) District (Aveiro, Baja, Braga, Bragança, Castelo Branco, Coimbra, Évora, Faro, Guarda, Leirea, Lisboa, Portalegre, Porto, Santarém, Setúbal, Viana do Castelo, Viseu, Vila Real), vi) CAE, vii) Investment, viii) Incentive and ix) Ratio (between Invesment and Incentive).

The categorical variables have been recoded to be suitable for the different statistical analyses. The date has been recoded to have the information per year and the variable CAE to capture the information of the first two digits.

Because more than the 50% of the incentives are directed to a few activity branches and in order to simplify the graphical and analytical interpretation of the results, our study is limited to the more frequent categories, grouping the rest under the label “Other”.The variable Support has been recoded keeping the categories that contain more than 2% of the enterprises and grouping the rest as “other”. For the districts we have kept those that have more than 5% of the Projects.

Investment, Incentive and Ratio were considered as numerical variables, but taking into account the high dispersion, we have categorized them for some statistical analysis using the quartiles of its frequency distribution. See details in Annex 3.

2.2. Statistical methods

For each categorical variable the frequency distribution and an associated chart have been calculated. The association between each pair of categorical variables is tested using the chi-squared test. The association is considered statistically significant when the p-value is lower than 0.05. For each quantitative variable the mean, standard deviation, median and inter-quartile range are calculated. The last two statistics are usually preferred when a high dispersion is present in the data. To compare the means the independent-samples t test has been used and to compare medians the Mann-Whitney test.

Homogeneity Analysis is a interdependence statistical technique for graphic interpretation in several axis. It converts categorical data into a graphical display by simultaneously quantifying the categorical variables and the projects; it captures the complex relations between both sets. We use HOMALS because the variables can have non-linear relations and because it

is possible to find relations between categories, not only between variables. A three- dimensional Homals solution was computed for the set of nine variables (Year, Area, Nut, District, System, CAE, Investment, Incentive and Ratio) and 14910 projects, using SPSS.15. The Projects scores and category quantifications are mapped into the same (two or three dimensional) plot.

We have used the numerical scores obtained from HOMALS, to create a K-means cluster analysis with the different projects.

In a third step, Correspondence Analysis is used to describe the relationships between the three clusters and each nominal variable, representing both in a low-dimensional space, showing the relationships between the categories for each variable and the different clusters.

For each variable, the distance between two category points in the plot reflects the similarity between the categories profiles, with categories sharing similar profiles plotted close to each other. The relationship between the variables can be described projecting category points for one of the variables onto the vector from the origin to a category point for the other variable.

3. Results

3.1 Projects typology

The HOMALS analysis selected three dimensions. The first dimension can be described as a dimension related to INVESTIMENT, INCENTICV and SUPPORTS. The second dimension was strongly dominated by AREA and the third dimension is related to EAC and SUPPORT, being these variables the most important in the analysis (Table 1).

HOMALS solution results in a scatter plot with a point representing each project. Setting the markers by Area clearly identifies three groups, each one related to an Area: the red one with the Area 1; the green one related to Area 2 and the cluster 3, in blue, related to Area 1 and Area 3.

A k-means cluster analysis with the Project scores of the first three HOMALS dimensions was performed. We selected K= 3 clusters taking into account the HOMALS map shown above. Table 2 shows project agglomeration into the three clusters.

3.2. Cluster TIPOLOGY

To better summarise the results from the application of Factor Analyses, a cluster typology has been developed for which it is possible to clearly understand how the different support types have been used by sectors, by years and by location. This cluster typology is reported in Table 3.

Table 1. Discrimination measures per variable and per dimension

	Dim1	Dim2	Dim3
YEAR			
	,402	,425	,275	
CAE			
	,483	,004	**,509**	
AREA			
	,335	**,723**	,393	
SUPPORT			
	,760	**,868**	**,733**	
NUTSII			
	,029	,024	,050	
DISTRIT			
	,093	,043	,046	
INVEST			
	,564	,157	,018	
INCENT			
	,582	,081	,080	
RATIO			
	,164	,373	,312	

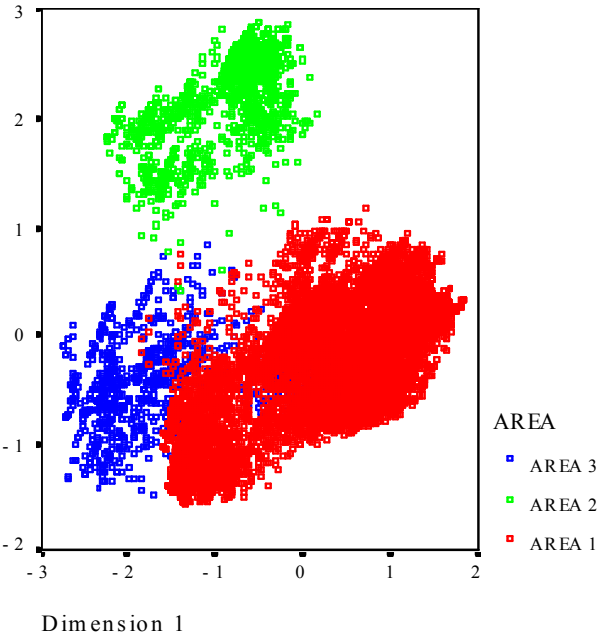

Figure 1- HOMALS map: two first dimensions

Table 2. Distribution of the Projects on the three clusters

	Frequency	Percent
Cluster 1	8356	57.25
Cluster 2	900	6.03
Cluster 3	5654	37.92

Table 3. Cluster Typology

	CLUSTER1	CLUSTER 2	CLUSTER3
AREA	**AREA 1** Support to firm stimulation	**AREA 3** Stimulation of Business Environment	**AREA 2** Human Resources Qualification
YEAR	2000, 2001	2002, 2003, 2004	2005, 2006
EAC	EAC 52 Retail (Excepting motor vehicles and motorcycles) Repair of household goods Others EAC	EAC 91 Diverse associative activities	EAC others
SYSTEM	SIPIE, URCOM	INFRAEST ASSOC INFRAEST TFQ	FORM PROF SIME
NUT	NORTH	NORTH LISBON	NORTH CENTER LISBON
DISTRICT	D1, D2,D3,D4,D5, D8, D9, D10, D11	D6. D7 Lisbon and Porto	D1, D2, D7 Aveiro, Braga Porto
INVESTIMENT	Inv1, Inv2, Inv3	Inv3, Inv4	Inv4
INCENTICV	Inc1, Inc2, Inc3	Inc3, Inc4	Inc4
RATIO	Rt 2, Rt 3	Rt 4	Rt 1, Rt 4

4. Concluding remarks

From the presented results several conclusions can be pointed out. The first one is related to the asymmetric use of the incentives: The use of PRIME (as a public policy instrument for indirect distribution of European funds upon the entrepreneurial tissue), generated a clear geographic concentration of financial help in the northern part of the country. This region accumulated 41.4 per cent of the supports for firm stimulation, 39.0 per cent for stimulation of business environment and 49.4 per cent for human resources qualification. Certainly, the fact that other regions like Algarve, Azores and Madeira could only profit from this program in insignificant amounts (respectively 3.4, 1.9 and 1.5 per cent from the total available funds) is of great concern, suggesting the following question: Is there no entrepreneurial activity in such regions? Or, rather, location determined less use of supports by the existing companies? Is it possible that they could have been unable to follow the requirements for PRIME program calls?

Further observation of results shows that, by district, the concentration of PRIME supports goes clearly to Porto, a metropolitan area that absorbed respectively 12.8, 21.3 and 21.3 per cent of total available amounts. More surprising is the fact that Lisbon, the Portuguese capital, received 26.3 per cent help for stimulation of business environment, mainly driven for associative initiatives and other, not classified categories in the CAE (Classification of Economic Activities). If Lisbon, as cosmopolitan area, needs such a huge support how to classify than those conditions of less favoured Portuguese regions?

From the perspective of the sectors, there are difficulties to analyse a significant part of supports' destiny. Indeed, 48.1 per cent of the financed amounts were canalized to sectors, not specified by the CEA. As far as the remaining is concerned, the associative sector as well as commercial and trade activities had also good shares in the use of PRIME. The activities for which funds have been mostly used are related to: infrastructure building (for associations) and commercial urbanism, and small business initiatives – not specified, but for improvement of business environment in general. A main question to this issue is: how did PRIME support the industrial and agricultural activities, and by means of which effects for the local, regional or national consumption trends?

A time-series observation can also be quite helpful for a better perception on how PRIME acted to promote activities in general. Our analyses points out the following: Those supports for Area 1, centred in firm stimulation, were attributed at the very start of the program - year 2000 and for a two years period. From 2002 to 2004, the stimulation of business environment was promoted, without integrated re-qualification of human resources; indeed, help for such projects arrived much later as it was the last PRIME target, due in 2005 and 2006. How is it possible to expect that companies can be duly stimulated by a support system without the convenient adequacy of their human resources at the very beginning?

In fact, PRIME system started up with a restricted investment in the area of enterprise stimulation (8539 projects with a average investment of 130279.7€). It was followed by few, but expensive, business environment actions mainly related to building of commercial infrastructures - about 900 projects were associated, now with a much higher average investment, 771208.3€. Finally, in the last execution period, a great amount was allocated to human resources qualification. In this case, 5645 projects have received an average investment of 2602544.23€; and despite these large amounts, the southern part of the country stayed almost away from any action. As proved in this paper, the total amount investments were primarily absorbed to speed the growth process of companies located in the northern and central regions of the country. In such regions, and because investments were concentrating mainly in few commercial activities, the system probably served also to aggravate the Portuguese trade balance. Still, some few indirect positive effects for the primary and secondary sectors should be expected – such results are now very difficult to evaluate in a struggle against the strong international financial crises. Doubtless, PRIME served to accentuated asymmetries in Portugal. This could be avoidable if policy makers were able to anticipate such a risk and advance an exercise on crossed public policies. Thus, many efforts done by regional policy makers were

reduced to ineffectiveness due to a different prioritization established by the Portuguese national innovation policy – whatever it might have been.

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Anex 1. PRIME Support Measures and Incentives Schemes

AREA 1 - Enterprise Stimulation
DEMTEC – Incentive Scheme for the Implementation of Pilot Project Related to Technologically Inovative Products, Processes and Systems
EXECUTIVES – Executives Programme
IDEIA – Support to Business Applied Research and Development
MAPE – Support Measure for the Maximisation of Energy Potential and for Streamline Consumption
NEST – New Enterprises Based on Technological Support
NITEC – Incentive Scheme for the Establishment of RTD Clusters within Business Sector
SICE – Incentive Scheme for Business Co-operation
SIED – Incentive Scheme for Digital Economy
INOV-JOVEM – Young Executives for Innovation in SME's
SIME – Incentive Scheme for Business Modernisation
SIME INTERNATIONAL – Incentive Scheme for the Modernisation of the Economy – Int. Development
SIME R&TD – Incentive Scheme for Business Modernisation - Research and Technological Development
SIPIE – Incentive Scheme for Small Business Initiatives
SIUPI – Incentive Scheme for the Use of Industrial Proprety
SIVETUR – Incentive Scheme for Tourism Products with a Strategic Dimension
URBCOM – Incentive Scheme for Commercial Urbanism Projects
AREA 2 - Qualification of Human Resources
TECHNOLOGICAL SCHOOLS – Supporting Technological Training
VOCATIONAL TRAINING – Fostering Investments in Human Resources
AREA 3 - Stimulation of the Business Environment
ASSOCIATIVE INFRASTRUCTURES – Support to the Existing Associative Infrastructures
BUSINESS PARTNERSHIPS – Supporting Business Partnerships
ENERGY INFRASTRUCTURES – Support Measure for Modernisation and Development of Energy Infr.
FSCR – Risk Capital Syndication Fund
GUARANTEE MECHANISMS – Establishment and Strengthening Guarantee Mechanisms
HISTORIC INNS – Support to the Use and Valorisation of the Natural Heritage
INTERNATIONALISATION – Support to the Internationalisation of the Economy
MINING ZONES – Support to the Requalification of Mining Zones
PITER – Support to Integrated Tourism Programmes with Strategic Nature and Regional Basis
TOURISM INFRASTRUCTURES – Support to Tourism Infrastructures
TTQ INFRASTRUCTURES – Support Measure to the Setting-up of New Technological Infrastructures and to the Existing Technological, Training and Quality Infrastructures