SPATIAL AND ORGANIZATIONAL DYNAMICS

DISCUSSION PAPERS

Nº 1

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The Asymmetric Use of Incentives in Portugal: The Example of PRIME
O Uso Assimétrico de Incentivos em Portugal: O Exemplo do PRIME

Creativity and Problem Solving in the Development of Organizational Innovation
Criatividade e Resolução Criativa de Problemas no Desenvolvimento da Inovação Organizacional

The Concept of Agricultural District and the Question of Rural Development
O Conceito de Distrito Agrícola e a Questão do Desenvolvimento Rural

Possibilities for a Non-Quantitative-Dependent Economics:
The Plurality of Methods facing the Dominance of Econometrics
Possibilidades para uma Economia Não-Quantitativo--Dependente:
A Pluralidade dos Métodos face à Dominância da Econometria

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THE ASYMMETRIC USE OF INCENTIVES IN PORTUGAL: THE EXAMPLE OF PRIME

O USO ASSIMÉTRICO DE INCENTIVOS EM PORTUGAL: O EXEMPLO DO PRIME

Purificacíon Vicente Galindo
Teresa de Noronha Vaz
Paulo Neto

ABSTRACT

PRIME has been between 2000 and 2006 a commonly used public policy instrument. Although nationally promoted, it served the diffusion of European funds across the entrepreneurial tissue. In this paper we intend to follow the application of this instrument for a monitoring and strategic evaluation of policy support system to companies'; in particularly, the analyses at regional scale can identify some eventual hindrances to success.

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: Public Policy, Portugal PRIME Program, Cluster Analysis, Firm Support Incentive, Multivariate Analysis

RESUMO

Entre 2000 e 2006 o programa PRIME foi usado como um instrumento político público comum. Apesar de ter sido promovido a nível nacional, serviu também como difusor dos fundos europeus entre o tecido empresarial. O objectivo deste artigo é monitorizar a aplicação deste instrumento de forma a avaliar estrategicamente o sistema das políticas de apoio às empresas, focando a análise com base numa escala regional de forma a identificar alguns eventuais impedimentos para o sucesso das empresas.

Metodologicamente observámos a execução financeira de 14910 projectos com informação recolhida do portal oficial do programa PRIME em Portugal. Devido a limitações relacionadas com a informação obtida neste portal, o nosso estudo lida com um número reduzido de variáveis, sendo as seguintes: localização do projecto, ano, actividade industrial, programa financiador, NUT, distrito, investimento e incentivo. No entanto foi possível a aplicação do HOMALS, Cluster e Correspondentes Análises, permitindo conclusões sobre o nível de eficácia do PRIME, incluindo localização e nível de sectores.

Palavras-chave: Política Pública, Programa PRIME Português, Análise de *Clusters*, Incentivo de Apoio às Empresas, Análise Multivariada.

JEL Classification: O18, O38, O57, R11, R38.

1. INTRODUCTION AND THEORETICAL FRAMING

History has made from any spatial context a living organism with memory, action and reactive capacity. We could argue that there is an intelligent attitude in each territory to absorb external inputs or supports in a continuous process of change. Some call it "path dependency", others the historical context. This simple, but very complex, fact may determine the dynamics of local development. Due to this complexity, frequently, the conditions for growth are restrictive and, in spite of the multiple public policies, regions keep gapping. Most of the world regions could serve as an example, but we shall observe the particular case of Portugal. Its peripheral location in southern Europe, its distance from the dominant global trade flows, as well as its lack of strategically located mega-towns should justify a major interest in analysing how the country used the great quantity of European financial supports that resulted from its integration as a full member of the European Union, twenty years ago.

Thus, the major goal of this paper is to evaluate the level of effectiveness of those efforts made by the European Commission towards the socio-economic cohesion in Europe by using the single case-study of the application of PRIME in Portugal. 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.

Literature indicates that multiple major driving forces of economic growth have excited economists during the last fifty years. Firstly, Harrod (1939) and Domar (1946) emphasized savings, population and capital as the exogenous determinants responsible for the long-term growth of the economy. Later, Solow (1956) proved that the increases in national savings could, indeed create per capita real income but stressed that continuous growth would only be possible if technological progress would occur. Further contributions to long run growth were made by Arrow (1962) by introducing "learning-by-doing" as a determinant of technological development, Lucas (1988) by including the growth rate of human capital as a factor of technical change and long run growth, and Romer (1986 and 1990) who demonstrated the role of research training in the technological change. But, for a long time the impact of growth as motor of asymmetric or non-asymmetric development was not a source of concern. However, when further studies related to the spill-over effects resulting from growth were discussed (Marshall-Arrow-Romer model by Acs and Audretsch, 1984 and Acs, 2002) local impacts took relevance. Namely, as the output of technological innovation seems to result from knowledge inputs (technology and/or entrepreneurship) then, both, local and regional dimensions are crucial (Fagerberg, 2003, 2004). The most updated growth theories accept the importance of micro and meso-economic levels of activities if growth is supposed to stay sustainable, pulling into entrepreneurship the major drivers of growth (Sogaard, 2009).

In spite of the many authors concerned with growth, development or sustainability, the particular case of those regions tending to a permanent gap in relation to others, more favoured ones, has not attracted much attention. However, political will and democratic equity justify the fairness of symmetric development among different regions and furthering the use of equal opportunities. Therefore, we can accept that there is a global goal that surpasses the historical tendencies and challenges those regions gapping to be supported in

finding those corrected choices to push them away from a spiralled movement of atrophy. For such regions target public policy is a must.

In spite of the different directions taken by policy makers, most of the public strategies for development, and corresponding policy proposals, are based in instruments able to promote increases in private investment, employment, regional production and knowledge spillover effects. It is trusted that these combined factors may generate growth and development, if possible sustainable, in gapping regions and there is hope that Europe will find the best solution for socio-economic convergence and regional cohesion.

But cohesion has not been the sole goal of European decision makers: Lisbon Agenda, in March 2000, defined the goal of making EU the strongest and most competitive economy by 2010. So that it can be understood that the need to increase regional capacities for global competition has defined a clear European wish much further from its scientific and technological potential skills. An overwhelming goal, challenging the recent European development trends, may include a major paradox between science and technology and regional and social cohesion: In fact, the application of the R & D policy brings to Europe the preference to those regions able to produce high-tech industries; Also, as the cohesion goals have lead to a considerable aid to scientific research, the relationship between this, the resulting technological advances and the regional development for periphery are still to be launched.

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 (Vazquez-Barquero, 2002). 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 (Sierra, 1997). One of the main characteristics inherent to the territory is the proximity among socio-economic agents (Keeble, and Wilkinson (1999). 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 (Solow, 2000 and Durlauf, 2002).

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 (Vaz and Neto, 2005).

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.

The next point of this paper follows the previous arguments using the case-study of Portuguese program PRIME.

2. TOOLS FOR DEVELOPMENT IN EUROPE: THE PORTUGUESE PROGRAM PRIME

PRIME[1] - Incentives Programme for the Modernisation of Economic Activities was instituted by the Resolution of the Council of Ministers no. 101/2003, 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.

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. As showed in the summary presented on Annex 2, 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.

3. METHODOLOGY FOR DATA ANALYSIS

3.1. 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.

1 More information related to PRIME can be found in http://www.prime.min-economia.pt/presentationlayer/prime_Home_00.aspx

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, Leiria, Lisboa, Portalegre, Porto, Santarém, Setúbal, Viana do Castelo, Viseu, Vila Real), vi) CAE, vii) Investment, viii) Incentive and ix) Ratio (between Investment 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.

3.2. 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.

3.2.1. Homogeneity analysis (HOMALS)

Homogeneity Analysis is a interdependence statistical technique for graphic interpretation in several axis (Gifi, 1990). 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.

3.2.2 Cluster Analysis

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

3.2.3. Correspondence Analysis

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.

4. RESULTS

The following results are based on both univariate and multivariate analysis when adequate.

4.1 Projects typology

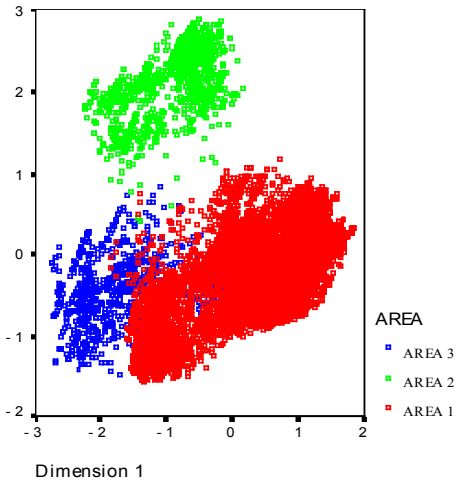
HOMALS´ solution

The HOMALS analysis selected three dimensions. The first dimension can be described as a dimension related to INVESTMENT, INCENTIVE 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. See Table 1 below. 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.

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	
DISTRICT			
,093	,043	,046	
INVEST			
,564	,157	,018	
INCENT			
,582	,081	,080	
RATIO			
,164	,373	,312	

Figure 1 - HOMALS map: two first dimensions



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.

Table 2 - Distribution of the Projects on the three clusters

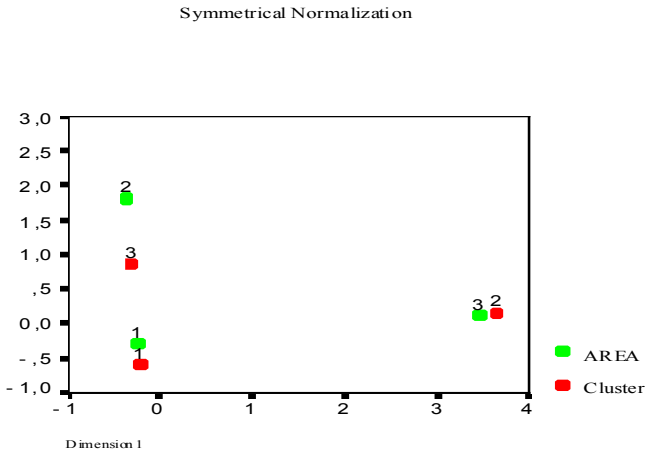
	Frequency	Percent
Cluster 1	8356	57.25
Cluster 2	900	6.03
Cluster 3	5654	37.92

Cluster from the HOMALS scores are closely related to the Areas. See Table 3 below. Most of the projects in the first cluster belong to Area 1, only 1.8% of the points belong to Area 2. Cluster 2 can be identified with Area 3 because only 10% belong to Area 1. Cluster 3 is a mixture of projects in Areas 1 and 2. More details can be seen below.

Table 3 - Characterization of the clusters using the Area of strategies action

	CLUSTER 1	**CLUSTER 2**	**CLUSTER 3**	
AREA 1				
Count	8202	90	3759	12051
% within Cluster	98,2%	10,0%	66,5%	80,8%
AREA 2				
Count			1868	1868
% within Cluster			33,0%	12,5%
AREA 3				
Count	154	810	27	991
% within Cluster	1,8%	90,0%	0,5%	6,6%
Total				
Count	8356	900	5654	14910
	100%	100%	100%	100%

Figure 2 - CA map for Cluster and Area
Model: Symmetrical normalization and distance Chi square



Correspondence Analysis for the cross-tabulation of clusters and areas, with 90% of the inertia accounted for the first two dimensions, highlights the previous conclusions in a more conclusive way. Cluster 1 can be identified with Area 1, Cluster 2 with Area 3 and Cluster 3 between Areas 1 and 2.

Table 4 - Cross Tabulation for Clusters and Regions

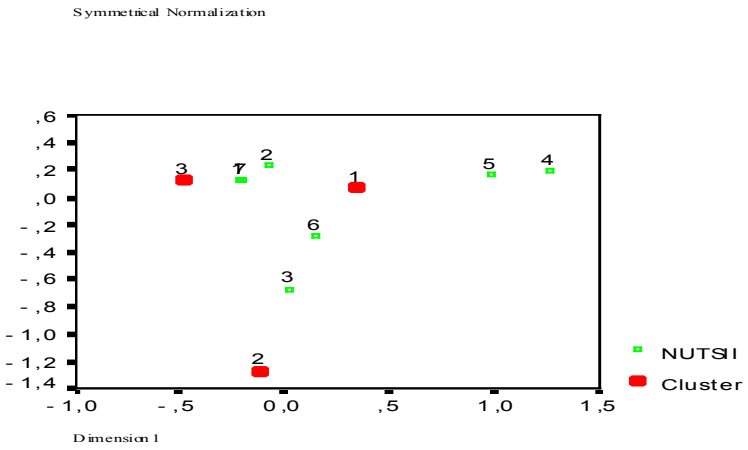
						Total
			CLUSTER 1	**CLUSTER 2**	**CLUSTER 3**	
	North	Count	3459	351	2792	6602
		% within Cluster	**41,4%**	**39,0%**	**49,4%**	44,3%
	Centre	Count	2081	163	1508	3752
		% within Cluster	**24,9%**	18,1%	**26,7%**	25,2%
	Lisbon	Count	1429	296	911	2636
		% within Cluster	17,1%	**32,9%**	16,1%	17,7%
	Alentejo	Count	729	34	147	910
		% within Cluster	8,7%	3,8%	2,6%	6,1%
	Algarve	Count	376	21	105	502
		% within Cluster	4,5%	2,3%	1,9%	**3,4%**
	Açores	Count	163	23	96	282
		% within Cluster	2,0%	2,6%	1,7%	**1,9%**
	Madeira	Count	119	12	95	226
		% within Cluster	1,4%	1,3%	1,7%	**1,5%**
Total		Count	8356	900	5654	14910
			100%	100%	100%	100%

4.2. Factor Analyses by location

CLUSTER: NUTS

The distribution of the clusters is not homogeneous among the regions ($p < 0.001$).

Figure 3 - CA map for Cluster and NUTS
Model: Symmetrical Normalization and Distance Chi square.



Cluster 1, identified with Area 1, has more projects from the Centre and North regions. More than 66% of the projects of this cluster belong to those regions. Lisbon is also important but with a lower percent. See table below. Cluster 2, identified in the previous step with Area 3 (Stimulation of the Business Environment), has a 72% of projects from the North and Lisbon. Cluster 3, identified with Area 2 (Qualification of Human Resources) has a 76% of projects from North and Central Portugal.

See more details on the Table 5, above. The correspondent CA for the cross-tabulation of clusters and regions highlights the previous conclusions.

CLUSTER: DISTRICT

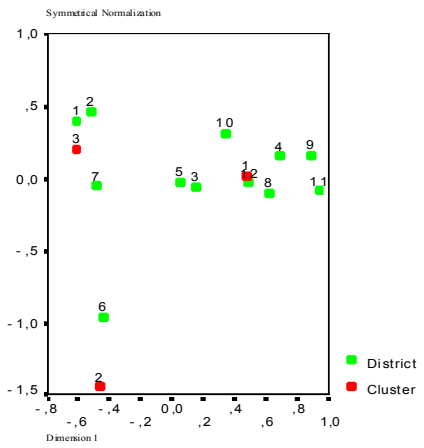
The cross-tabulation of the clusters and districts is shown in the next table. The distribution of the districts is not homogeneous among clusters ($p< 0.001$). From the table, we can state that Cluster 3 has projects from Aveiro, Braga and Porto, the Cluster 2 from Lisbon and Porto, and the Cluster 1 has a similar percentage from all the districts, see Table 5, below.

Table 5 - Distribution of frequencies for Cluster and District

DISTRICT		CLUSTER 1	CLUSTER 2	CLUSTER 3	
Aveiro	Count	633	67	864	1564
D1	% within Cluster	**7,6%**	**7,4%**	**15,3%**	10,5%
Braga	Count	736	58	913	1707
D2	% within Cluster	**8,8%**	6,4%	**16,1%**	11,4%
Coimbra	Count	401	41	229	671
D3	% within Cluster	4,8%	4,6%	4,1%	4,5%
Faro	Count	362	14	113	489
D4	% within Cluster	4,3%	1,6%	2,0%	3,3%
Leiria	Count	512	54	325	891
D5	% within Cluster	6,1%	6,0%	5,7%	6,0%
Lisboa	Count	659	237	622	1518
D6	% within Cluster	**7,9%**	**26,3%**	**11,0%**	10,2%
Porto	Count	1073	192	1203	2468
D7	% within Cluster	**12,8%**	**21,3%**	**21,3%**	16,6%
Santarém	Count	389	28	123	540
D8	% within Cluster	4,7%	3,1%	2,2%	3,6%
Viana Castelo	Count	570	16	132	718
D9	% within Cluster	6,8%	1,8%	2,3%	4,8%
Viseu	Count	436	16	217	669
D10	% within Cluster	5,2%	1,8%	3,8%	4,5%
Vila Real	Count	426	22	82	530
D11	% within Cluster	5,1%	2,4%	1,5%	3,6%
Others	Count	2159	155	831	3145
D12	% within Cluster	25,8%	17,2%	14,7%	21,1%
Total					
	Count	8356	900	5654	14910
		100%	100%	100%	100%

The CA map corroborates the previous conclusions: the majority of the points in cluster 3 is from districts D1, D2 and D7; in Cluster 2 from district D6 and Cluster 1 is on the centroid of all the rest.

Figure 4 - CA map for Cluster and District.
Model: Symmetrical Normalization and distance Chi square.



4.3. Factor Analyses by time

CLUSTER: YEAR

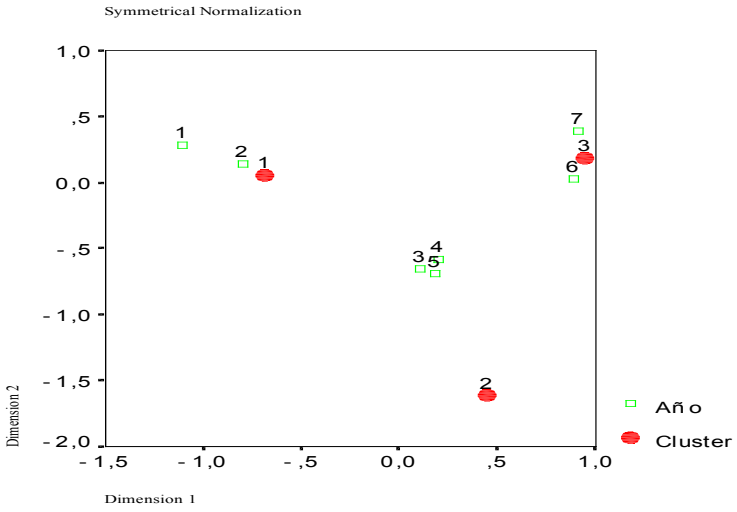
The Incentives in this study correspond to projects presented between the years 2000 and 2006. The distribution of the incentives for the different years is not homogeneous. See table and chart below.

Table 6 - Project distribution, by year.

YEAR	Frequency	Percent
2000	2181	14,6
2001	3486	23,4
2002	1934	13,0
2003	1471	9,9
2004	806	5,4
2005	929	6,2
2006	4103	27,5
N		
Total	14910	100,0

The CA for Cluster and year corroborates the conclusions (figure below). The solution accounts for the 92% of inertia. The symmetric normalization model has been chosen.

Figure 5 - First principal plane of the CA for Cluster and Year



The factorial plot shows how the first two years stimulate the projects in Cluster 1 (Area 1), while the last years stimulate the projects in Cluster 3 (area 2). The same information is more detailed on the following Table 7.

Table 7 - Distribution of frequencies for Clusters and Years.
p-value for Chi square test < 0.01

		CLUSTER 1	CLUSTER 2	CLUSTER 3	
YEAR					Total
2000	Count	2173	7	1	2181
	% within Cluster	26,0%	,8%	,0%	14,6%
2001	Count	3039	89	358	3486
	% within Cluster	36,4%	9,9%	6,3%	23,4%
2002	Count	967	246	721	1934
	% within Cluster	11,6%	27,3%	12,8%	13,0%
2003	Count	688	181	602	1471
	% within Cluster	8,2%	20,1%	10,6%	9,9%
2004	Count	379	107	320	806
	% within Cluster	4,5%	11,9%	5,7%	5,4%
2005	Count	204	76	649	929
	% within Cluster	2,4%	8,4%	11,5%	6,2%
2006	Count	906	194	3003	4103
	% within Cluster	10,8%	21,6%	53,1%	27,5%
Total					
	Count	8356	900	5654	14910
		100%	100%	100%	100%

4.4. Factor Analyses by sector

CLUSTER: EAC[2]

80% of the projects of the PRIME Program, during the 7 years studied, are concentrated in the activities shown in the next table and 50% in only 5 (EAC 51, EAC 52, EAC 55, EAC 74 y EAC 91). This is why we have considered only the 5 most representative activities for the multivariate study.

2 EAC – corresponding to the Portuguese Economic Activity Classification used in the national accounts, meaning the activity branches and sub-branches

Table 8 - Distribution of PRIME funds by activity branch (EAC)

EAC	Frequency	Percent
15		
406	2,7	Manufacture of food products and beverages
17		
411	2,7	Manufacture of textiles and textile products
26		
447	2,9	Manufacture of other non-metallic mineral products
28		
482	3,1	Manufacture of basic metals and fabricated metal products except machinery and equipment
29		
299	2,0	Manufacture of machinery and equipment
36		
300	2,0	Manufacture of furniture; other manufacturing
45		
658	4,3	Construction
50		
540	3,5	Sale, Maintenance and repair of motor Vehicles and Motorcycles retail sale of automotive fuel
51		
1031	6,7	Wholesale Trade and commission trade, except of Motor vehicles and motorcycles
52		
3481	22,7	Retails Trade, except of motor vehicles and motorcycles; repairs of personal and household goods
55		
1675	10,9	Hotel and Restaurants
72		
377	2,5	Computer activities
74		
936	6,1	Other service activities (mainly to enterprise)
75		
386	2,5	Public Administration and defence, compulsory social security
91		
832	5,4	Diverse associative activities
Total		
12261	80.10	

The next table shows the cross-tabulation of the clusters and the activities. The projects in Cluster 1 are mainly in Activity 52; projects in Cluster 2 in Activity 91. The Cluster 3 is associated to the category "Others", that includes several activities representing much lower percents than the ones that are explicitly listed in the table and have much higher frequencies. More detailed information can be shown in the following table.

Table 9 - Distribution of the different activities within the clusters
p-value for the Chi square test < 0.01

				Total
	CLUSTER 1	**CLUSTER 2**	**CLUSTER 3**	
EAC51				
Count	609		383	992
% within Cluster	7,3%		6,8%	6,7%
EAC52				
Count	3302	1	150	3453
% within Cluster	**39,5%**	,1%	2,7%	23,2%
EAC55				
Count	1380	13	275	1668
% within Cluster	16,5%	1,4%	4,9%	11,2%
EAC74				
Count	464	110	294	868
% within Cluster	5,6%	12,2%	5,2%	5,8%
EAC91				
Count	107	**549**	96	752
% within Cluster	1,3%	**61,0%**	1,7%	5,0%
EAC Others				
Count	2494	**227**	4456	7177
% within Cluster	**29,8%**	**25,2%**	**78,8%**	48,1%
Count	8356	900	5654	14910

Table 10 - Distribution of the different Systems within the clusters
p-value for the Chi square test < 0.01

		CLUSTER 1	**CLUSTER 2**	**CLUSTER 3**	Total
SYSTEM					
Form Prof	Count			1853	1853
	% within Cluster			**32,8%**	12,4%
Inf Assoc	Count		343		343
	% within Cluster		**38,1%**		2,3%
Inf TFQ	Count	6	308	21	335
	% within Cluster	,1%	**34,2%**	0,4%	2,2%
	% within Cluster	1,0%	7,1%	3,5%	2,3%
SIED	Count	80	15	276	371
	% within Cluster	1,0%	1,7%	4,9%	2,5%
SIME	Count	76		1858	1934
	% within Cluster	0,9%		**32,9%**	13,0%
SIME IN	Count	15		426	441
	% within Cluster	,2%		7,5%	3,0%
SIPIE	Count	3941	6	265	4212
	% within Cluster	**47,2%**	,7%	4,7%	28,2%
URCOM	Count	3562	76	89	3727
	% within Cluster	**42,6%**	8,4%	1,6%	25,0%
Others	Count	590	88	670	1348
	% within Cluster	7,1%	9,8%	11,9%	9,0%
Total					
	Count	8356	900	5654	14910
		100%	100%	100%	100%

4.5. Factor Analyses by support system

CLUSTER: SYSTEM

The characterization of the clusters is also very clear in this case: Cluster 1 is associated to the categories SIPIE (Incentive Scheme for Small Business Initiatives) and URCOM (Incentive Scheme for Commercial Urbanism Projects), Cluster 2 to Infrastructures and Associative Infrastructures (Support to the Existing Associative Infrastructures) and Cluster 3 to SIME (Incentive Scheme for Business Modernisation). See details in the above Table 10.

4.6. Cross Effects

CLUSTER: INVESTMENT AND INCENTIVE

The next two tables contain the cross-tabulation of the clusters with the Investment and the Incentive. Both numerical variables have been coded into four categories using the percentiles 25, 50 and 75 as cut points. It can be deduced from the tables that the patterns are very similar for both variables: Cluster 1 is associated to investments/incentives evenly distributed among the first three categories. The projects in Cluster 2 receive higher incentives in categories 3 and 4 but with higher frequencies in category 4. Cluster 3 is characterized by the higher investments/incentives.

Table 11 - Distribution of frequencies according to Investment and Incentive

		CLUSTER 1	CLUSTER 2	CLUSTER 3	
INVESTMENT					
Invt1	Count	2856	14	931	3801
	% within Cluster	34,2%	1,6%	16,5%	25,5%
Invt2	Count	2655	62	1067	3784
	% within Cluster	31,8%	6,9%	18,9%	25,4%
Invt3	Count	2668	254	834	3756
	% within Cluster	31,9%	28,2%	14,8%	25,2%
Invt4	Count	177	570	2822	3569
	% within Cluster	2,1%	63,3%	49,9%	23,9%
Total	Count	8356	900	5654	14910
		100%	100%	100%	100%
INCENTIVE					
Inct1	Count	2872	14	910	3796
	% within Cluster	34,4%	1,6%	16,1%	25,5%
Inct2	Count	2623	41	1124	3788
	% within Cluster	31,4%	4,6%	19,9%	25,4%
Inct3	Count	2679	218	865	3762
	% within Cluster	32,1%	24,2%	15,3%	25,2%
Inct4	Count	182	627	2755	3564
Total	% within Cluster	2,2%	69,7%	48,7%	23,9%
	Count	8356	900	5654	14910
		100%	100%	100%	100%

CLUSTER: INVESTMENT, INCENTIVE AND RATIO

In order to better understand how successfully the programmes have developed, we applied CA to an investment – incentive ratio.

Table 12 - Descriptive Statistics

CLUSTER 1	N	Minimum	Maximum	Mean	Std. Deviation
INVEST					
8356	1926,13	22774084,46	130239,70	444696,46	
INCENTIVE					
8356	674,15	4429168,41	54946,80	157597,12	
RATIO					
8356	0,01	1	0,43	0,11	
Valid N					
8356					
CLUSTER 2	N	Minimum	Maximum	Mean	Std. Deviation
INVEST					
900	11237,56	11879900,50	771208,30	1323334,91	
INCENTIVE					
900	4569,17	10401377,00	467527,60	958458,03	
RATIO					
900	0,10	1	0,560214	0,17	
Valid N					
900					
CLUSTER 3	N	Minimum	Maximum	Mean	Std. Deviation
INVEST					
5654	1566,24	750000000,00	2602544,23	17669066,22	
INCENTIVE					
5654	1174,68	60535273,56	605513,54	2486228,94	
RATIO					
5654	0,01	1	0,42	0,20	
Valid N					
5654					

Illustrated by Table 12, we can find that the first cluster, associated previously to Area 1 (Enterprise Stimulation), contains 8539 projects that received a mean incentive of 54946.8€ with a mean investment of 130279.7€. The distribution of the projects within this cluster is highly heterogeneous for both the incentive and the investment, as can be deduced from the high standard deviation. The smallest incentive is 1926.13€ and the highest 4429168€. The minimum ratio was 1%, the maximum was 100% and the mean value is 43%. The second cluster, associated previously to Area 3 (Stimulation of Business Environment), contains 900 projects that receive a mean incentive of 467527.6€ with a mean investment of 771208.3€. The distribution of incentives and investments within cluster 2 is also highly heterogeneous. The minimum incentive is 11237.56€ and the maximum incentive is 771208.30. The average ratio was 56% and the values range between 10% and 100%. The third cluster, associated previously to Areas 1 (Qualification of Human Resources) and 2 (Enterprise Stimulation), contains 5645 enterprises that received a mean incentive of 605513.54€ with an average investment of 2602544.23€. As for the previous clusters, incentive and investment values are highly heterogeneous, the incentive values range between 1174.68 and 60535273€. The average ratio was 42% and the values range from 1% to 100%.

4.7 Cluster typology

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 13.

Table 13 - Cluster Typology

	CLUSTER 1	CLUSTER 2	CLUSTER 3
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
INVESTMENT	Inv1, Inv2, Inv3	Inv3, Inv4	Inv4
INCENTIVE	Inc1, Inc2, Inc3	Inc3, Inc4	Inc4
RATIO	Rt 2, Rt 3	Rt 4	Rt 1, Rt 4

5. 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. Rather then starting by shaping human resources and strengthening firm environment followed by firm financing activities, as suggested by the theory of endogenous growth, PRIME used the support system exactly on the inverse order. 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 of analysed 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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ANNEX 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 Research and Technological Development 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 - International 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 Property
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 the Modernisation and Development of Energy Infrastrutures
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

ANNEX 2

PRIME BENEFICIARIES, GEOGRAPHICAL APPROACH AND INCENTIVE NATURE

SUPPORT MEASURES AND INCENTIVE SCHEMES	BENEFICIARIES	NATURE OF THE INCENTIVE	ACTIVITY SECTORS	GEOGRAPHICAL APPROACH
AREA 1 - Enterprise Stimulation				
DEMTEC	Enterprises and NOG 1)	Non refundable incentive	I, BI, C, E, Tr, T, S	No
EXECUTIVES	Small and Medium Enterprises	Non refundable incentive	I, C, T, S	No
IDEIA	Consortia of Enterprises and NTSS	Refundable & Non refundable incentive	I, E, BI, C, T, S	No
MAPE	2)	Refundable & Non refundable incentive	I	No
NEST	3) & 4)	Non refundable incentive	I, E, BI, Tr, C, T, S	No
NITEC	Enterprises	Non refundable incentive	I, E, BI, T, C, S	Yes
SICE	Entreprises cooperation networks	Refundable incentive	I, BI, C, T, S	No
SIED	Micro and SMEnterprises	Non refundable incentive	I, BI, C, T, Tr, S	Yes
INOV-JOVEM	young executives	Non refundable incentive	I, BI, C, E, Tr, T, S	No
SIME	Enterprises	Refundable incentive	I, BI, C, T, Tr, S	No
SIME INTERNATIONAL	Micro and SMEnterprises	Non refundable incentive	I, BI, C, T, Tr, S	No
SIME R&TD	Enterprises	Refundable & Non refundable incentive	I, BI, C, T, Tr, S	No
SIPIE	Micro and SMEnterprises	Non refundable incentive	I, B, C, T, Tr, S	Yes
SIUPI	5)	Non refundable incentive	I, BI, E, C, PI, T, S	No
SIVETUR	Enterprises	Refundable & Non refundable incentive	T	No
URBCOM	6)	Non refundable incentive	C, T, S	No
AREA 2 - Qualification of Human Resources				
TECHNOLOGICAL SCHOOLS	Technological schools	Non refundable incentive	I, BI, C, E, T, S	No
VOCATIONAL TRAINING	7)	Non refundable incentive	I, BI, C, E, Tr, T, S	Yes
AREA 3 - Stimulation of the Business Environment				
ASSOCIATIVE INFRASTRUCTURES	8)	Non refundable incentive	I, BI, C, E, Tr, T, S	No
BUSINESS PARTNERSHIPS	9)	Non refundable incentive	I, BI, C, E, Tr, T, S	No
ENERGY INFRASTRUCTURES	10)	Non refundable incentive	E	No
FSCR	Micro and SMEnterprises	Non refundable incentive	I, BI, C, E, T, Tr, S	No
GUARANTEE MECHANISMS	11)	Non refundable incentive	I,BI, C, E, T, Tr, S	No
HISTORIC INNS	Enatur - Pousadas de Portugal	Non refundable incentive	T	No
INTERNATIONALISATION	12)	Non refundable incentive	I, BI, C, E, T, Tr, S	No
MINING ZONES	13)	Non refundable incentive	I	No
PITER	14)	Refundable & Non refundable incentive	T	Yes
TOURISM INFRASTRUCTURE	Institutional training bodies	Non refundable incentive	T	No
TTQ INFRASTRUCTURES	15)	Non refundable incentive	_	Yes

1) - Non Profit Organisation from the National Scientific and Technological System - NTSS (projects in EAC- Economic Activities Classification - 40)

2) - Firms, municipalities, business and labour associations, schools, health and social bodies, civil protection entities

3) - Persons intending to promote the establishment of new enterprises and recently established technology support enterprises with no significant activities

4) - Enterprises, inventors, independent designers, entrepreneurs at pre-entrepreneur stage and institutions developing research stages

5) - Micro and SMEnterprises, commerce associative structures, municipalities and co-ordinating and supervising units

6) - Enterprises and actors from the business environment and technological schools

7) - National, regional and sector business associative structures classified under EAC (Economic Activities Classification) 91110, federations or confederations of associative structures and regional and local tourism offices

8) - Public organisations and non-profit making private organisations

9) - All concessionaires enterprises of transport and supply of electric power and gas, as well as other enterprises operating those services under public services licensees

10) - Enterprises specialised in the development of SMEs oriented financial innovation, public administration bodies, entities from the National Scientific Technological System, or other representative entities intervening in the development of specific areas of economic activity

11) - Bodies and entities of the public administration, national, regional and sector business associative structures classified under EAC (Economic Activities Classification) 91110, federations or confederations of associative structures

12) - Enterprises holding the concession for the rehabilitation works in abandoned mines and bodies from the Ministry of Economy and Innovation

13) - All entities, irrespective of their nature and juridical statute, and namely enterprises, municipal counties, tourism regions and other local or regional tourism bodies

14) - Technology centres, technology transfer centres, technology-based incubator centres and parks, technological schools and interfacing public entities

I - Industry, E - Energy, BI - Building Industry, C - Commerce, Tr - Transport, PI - Pharmaceutical Industry, T - Tourism, S - Services

ANNEX 3

	Variables	Categories	Number	Labels
AREAS OF STRATEGIC ACTION	AREA	Enterprise Stimulation Enterprise Stimulation Qualification of Human Resources Stimulation of the Business Environment	3	EIXO1 EIXO2 EIXO3
Locational Factors	NUTSII	North Centre Lisbon Alentejo Algarve Açores Madeira	7	North Centre Lisbon Alentejo Algarve Açores Madeira
	DISTRICT	Aveiro Braga Coimbra Faro Leiria Lisbon Porto Santarém Viana do Castelo Viseu Vila Real Others		D1 D2 D3 D4 D5 D6 D7 D8 D9 D10 D11 D12
Temporal Factor	YEAR	2000 2001 2002 2003 2004 2005 2006		2000 2001 2002 2003 2004 2005 2006
Support System	SISTEMCORT	Professional Formation **S**upport to the Existing Associative Infrastructures **S**upport Measure to the Setting-up of New **T**echnological Infrastructures and to the Existing Technological, Training and **Q**ualitative Infrastructures Support Measure for the Maximisation of Energy Potential and for **S**treamline Consumption **S**upport Measure for the Maximisation of Energy Potential and for Streamline **C**onsumption **I**ncentive Scheme for Digital Economy **I**ncentive Scheme for Business Modernisation **I**ncentive Scheme for the Modernisation of the Economy – International Development **I**ncentive Scheme for Small Business Initiatives **I**ncentive Scheme for Commercial Urbanism Projects Others		Form Prof Inf Assoc Inf TFQ MAPE SIED SIME SIME INTERNT SIPIE URBCOM Others
Financial System	INVESTMENT	INVESTMENT < 25 Percentil (P25) P25= INVESTMENT< P50 P50= INVESTMENT< P75 P INVESTMENT≥ P75		Inv 1 Inv 2 Inv 3 Inv 4
	INCENTIVE	INCENTIVE < 25 Percentil P25= INCENTIVE < P50 P50= INCENTIVE < P75 INCENTIVE ≥ P75		Inc 1, Inc 2 Inc 3, Inc 4
	RATIO	RATIO < 25 Percentil P25= RATIO < P50 P50= RATIO < P75 RATIO ≥ P75		Rt 1 Rt 2 Rt 3 Rt 4

CREATIVITY AND PROBLEM SOLVING IN THE DEVELOPMENT OF ORGANIZATIONAL INNOVATION

CRIATIVIDADE E RESOLUÇÃO CRIATIVA DE PROBLEMAS NO DESENVOLVIMENTO DA INOVAÇÃO ORGANIZACIONAL

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ABSTRACT

This research focuses on creativity and innovation management in organizations. We present a model of intervention that aims at establishing a culture of organizational innovation through the internal development of individual and team creativity focusing on problem solving. The model relies on management's commitment and in the organization's talented people (creative leaders and employees) as a result of their ability in defining a better organization. The design follows Min Basadur's problem solving approach consisting of *problem finding, fact finding, problem definition, solution finding and decision implementation.* These steps are carried out using specific techniques and procedures that will link creative people and management in order to initiate the process until problems are defined. For each defined problem, project teams will develop possible solutions and implement these decisions. Thus, a system of transformation of the individual and team creativity into organizational innovation can be established.

Keywords: Organizational creativity, Organizational innovation, Creative problem solving, Kelly's Grid.

RESUMO

A presente investigação debruça-se sobre a gestão da inovação e criatividade nas organizações. Apresenta-se um modelo de intervenção que procura estabelecer uma cultura de inovação organizacional através do desenvolvimento interno da criatividade individual e das equipas envolvidas na resolução criativa de problemas. O modelo baseia-se no compromisso da Administração e nos talentos da organização (líderes e colaboradores criativos) e na sua capacidade de definir uma organização melhor. O desenho da investigação assenta na abordagem de resolução criativa de problemas de Min Basadur, que consiste em *encontrar o problema*, *encontrar os factos*, *definir o problema*, *encontrar as soluções* e *implementar a decisão*. Estes passos são percorridos através da utilização de técnicas e procedimentos específicos que fomentam a interacção entre as pessoas criativas e os gestores de modo a iniciar um processo que permita a identificação dos problemas. Para cada problema definido, uma equipa de projecto irá desenvolver as soluções possíveis a implementar. Espera conseguir-se um sistema de transformação da criatividade individual e das equipas em inovação organizacional.

Palavras chave: Criatividade organizacional, Inovação organizacional, Resolução criativa de problemas, Grades de Kelly.

JEL Classification: M54

1. INNOVATION DEFINED

Innovation within the framework of a knowledge-based economy goes far beyond the linear or chain linkage models that have long been used in innovation theory to explain innovation processes in high-tech industries (Strambach, 2002). Innovation is to be understood as the result of cumulative dynamic interaction and learning processes involving many stakeholders. Here innovation is seen as a social, spatially embedded, interactive learning process that cannot be understood independently of its institutional and cultural context (Cooke Heidenreich, & Braczyk, 2004; Lundvall, 1992). Since Roberts' (1999) definition [of innovation] maintains that an innovation can only be seen as innovation if it is has implementation and commercial value, it is important to measure the impact of innovation. Ravichandran (2000: 263) believes that measuring the impact of innovation activities will depend on (1) the typology, (2) the degree of departure from the preceding product, service or process, (3) the extent of usefulness of the innovation and, (4) the volume of profitability generated.

Strambach (2002) suggests that the interdisciplinary view of innovation systems is concerned with understanding the general context of the generation, diffusion, adaptation and evaluation of new knowledge which determines innovativeness. It follows that the focus is on non-technical forms of innovation as defined above. Common characteristics of the different approaches to innovation identified by Edquist (1997) include (1) innovation and learning at the centre, (2) a holistic and evolutionary perspective, and (3) an emphasis on the role of institutions. The increasing interdependence of technological and organisational change is a significant feature of systems of innovation, which means that technological innovation and organisational innovation have become increasingly important. These are combined with more diverse knowledge requirements which include not only technical know-how, but also economic, organisational, and sociological knowledge and competencies. The second reason for the increased interest in non-technical innovations is associated with the connection between the organisational innovation and the corresponding learning capacity. The acceleration of change that is part of the globalization process means that organisational learning processes are more and more important for creating and maintaining competitiveness.

Ultimately, whether innovation is successfully diffused, requires some absorptive capacity on the part of the target audience. Cohen & Levinthal (1990: 128) define absorptive capacity as '… the ability of a firm to recognise the value of new, external information, assimilate it and apply it to commercial ends.' The diffusion of the innovation is normally dependent upon the specific innovation typology, the innovation champions, the time element to successful diffusion and the absorptive capacity of the adopters. Schnepp, Bhambri, & Von Glinow (1999) define technology transfer as a process whereby the knowledge is passed from one entity to another. This process involves the dissemination of documentation describing the technology, the training (called software) to transmit the knowledge and the transfer of the equipment, components or raw materials (called hardware). Gee (2006) maintains that technology transfer is the application of technology to a new use or a new user. Thus, technology transfer links the existing technology base and the innovation process in order to increase productivity.

In organizational innovation, the unit for innovation is the organization itself (Wolfe, 1994). Although the outcome of the innovation may be process, product or service, the innovation needs to be undertaken through the creative inputs of the individuals and/or the management. We will suggest a project approach.

2. CREATIVITY AND ORGANIZATIONAL INNOVATION

As Huhtala & Parzefall (2007) mention, "to remain competitive in the global market, organizations must continuously develop innovative and high quality products and services, and renew their way of operating" (p. 299), and they also maintain that companies increasingly rely on employees continuous ability to innovate. Also, even though innovation may take place by adopting or developing an existing product or service, through investments on R&D or in technology acquisition, only by developing and sustaining a creative workforce, the organization will succeed in maintaining the necessary potential to overcome difficult problems and situations that cannot be solved only through investments (Cebon, Newton & Noble, 1999).

This potential is both the ability to retain creative managers and employees (McAdam, 2006) and to provide an environment where each one will feel free and willing to contribute to organizational success. Aspects like raising job complexity, employee empowerment and time demands, together with low organizational controls (decision making, information flow and reward systems), are said to raise employee creativity (Adams, 2006), but more elements are necessary in order to make people willing and able to contribute to organizational success, like supportive leadership, knowledge acquisition, and team work procedures favouring creativity (Unsworth, 2005). Creative people, either managers or employees, are committed to their work and organization, and so they may bring in important issues, provided that top management values their work and ideas. In fact, according to a Gallup Management Journal (GMJ) survey (Hartel, Schmidt & Keyes, 2003), engaged employees are more likely to "think outside of the box" and produce creative ideas than disengaged people; they also are more receptive to new ideas. The research concludes that engaged people tend to find and suggest new ways to improve their work and business processes, which may lead to the assumption that the more creative people have a deeper understanding of the organizational processes, being in a privileged position to identify, define and find the relevant organizational problems

All this can be achieved, up to a certain extent, by raising the importance of creativity in the organization and by providing a system through which individual potentialities may be channelized into profitable innovation. Freedom to create, content and process skills to be able to create, and a supportive human environment (peers and team leader), seem then to constitute the secret to success. Nevertheless, the issues surrounding the potential of an organization to innovate, although subjected to interesting empirical research, as the ones reported by McLean (2005) and Puccio *et al.* (2006), are still in its beginning, thus providing one of the major challenges, which is to define criteria to evaluate the impact of organizational innovation on process and product innovation and, of course, in the final success of the organization (Wolfe, 1994).

3. CREATIVITY AND INNOVATION DEFINED

Even though authors like Stein (1994) describe creativity as a *process that results in novelty which is accepted as useful, tenable, or satisfying by a significant group of others at some point in time*, and innovation as *the intentional introduction and application within a role, group or organization of ideas, processes, products or procedures, new to the relevant unit of adoption, designed to significantly benefit the individual, the group, organization or wider society*, it remains difficult to separate the idea from its implementation, especially when we move from the individual level to team and organizational levels. In fact, while innovation concerns the processes of implementation, relying mainly on organizational communication and power, in the domains of production,

adoption, implementation, diffusion, or commercialisation of creations (Spence, 1994), creativity remains exclusive to the relation established between the creator and his product, where nor even originality and usefulness are important, but only the "trying to do better", connected to cognitive and emotional processes taking place at the individual level.

If we relate creativity to problem definition, and innovation to decision implementation, this last step requires a series of problem definitions, in order to carry out a decision or an idea, thereby making it difficult to separate these concepts at an organizational level. In fact, when we move from the individual level to the team and organizational levels, creativity and innovation become more and more difficult to separate, so that we must agree with Basadur (1997), when he says there is no difference between organizational creativity and innovation. Therefore, the moment we move to other levels besides the individual, we will use these terms (creativity and innovation) as synonyms, in order to simplify the discussion, and we refer to organizational creativity, in the intervention model depicted in Figure 1, as a *system devoted to enhance creativity in organizations,* thus using the definition proposed by Basadur.

As to the several approaches to identify types of innovation, either by separating the adoption of products and processes from its development (Cebon, Newton & Noble, 1999) or, in a more classical way, product and process innovation (Adams, 2006), authors agree that innovativeness, or organizational innovation, represents a third important type of innovation, which represents the potential of the workforce to promote changes in the benefit of the organization.

4. MODELS OF INTERVENTION

Intervention strategies following initial definition of the desired outcomes usually begin with the assessment of the current situation, using surveys and interviews to evaluate the organizational climate (McLean, 2005; D'Amato & Burke, 2008). Even though authors recognize that a *formal approach* with the administration is necessary in order to investigate the problems the organization faces, others stress the importance of the understanding of how it works from the point of view of its employees (the *informal approach*). As it is not feasible to ask each individual, this can be made by identifying the implicit theories (ideas and concepts) people use to describe the organization (*fact finding*). In fact, most research in an organizational context has to deal with people who often speak in one way, but act differently. As Argyris (1999) declared, *espoused theories* (*i.e.*, values and objectives that people declare as guiding their behaviour) differ from *theories in use* (the latter which really guide behaviour). Using Kelly's repertory grid method to design a questionnaire it becomes easier to use theories in use and overcome the espoused ones.

In his theory of personal constructs, Kelly stated that people anticipate events and that their behaviour is thus guided by this interpretation. Kelly's method allows people to vocalize their perceptions (sometimes in a way they have never verbalized before). Through a structured interview, this method allows us to design a creative leadership questionnaire, from the participant's viewpoint, thus reducing the observer's bias. Using an organizationally adapted questionnaire, it becomes possible to spot weak and strong points in the organization, assessing the organizational climate through the assessment of the creative management level, and creative climate, existent in each organizational unit.

Creative leaders, preferably designated by their teams, from whom much of the innovation is dependent, can also be interviewed and their perceptual maps identified in order to have a deeper approach to the problems identified by the administration. Perceptual maps can be obtained through content analysis of the responses, which are then subjected

to correspondence factor analysis, as explained by Sousa & Monteiro (2005). Here, the innovative leaders are not the ones who have good or creative ideas, but those who develop the co-workers creativity and ability to innovate, in a definition quite consistent with Basadur's creative leadership conception.

Several training systems in creative team work are available since Alex Osborn introduced the brainstorming method to produce ideas. Sidney Parnes and Ruth Noller, for example, worked on CPS – Creative Problem Solving – a method that has been subjected to investigation by researchers like Isaksen, Dorval, & Treffinger (2000) and, especially, Min Basadur, in its applications in companies, consultancy and education, as reported by Puccio, *et al.* (2006). Of the other methods, the more well known are *Synectics*, *TRIZ*, and DE Bono's *Six Thinking Hats*. As these methods do not possess the scientific background that CPS does, and their complexity requires external consultancy, they were not considered in this project, as it is intended to be entirely carried out by the organization's personnel, without the need for external consultancy.

From the Creative Problem Solving (CPS) approach, Min Basadur proposed a more elaborated model, he called *Simplex*. Basadur' Simplex model is a cyclic process, in three distinct phases and eight steps, which was chosen as the working tool for the second level of this model. According to Puccio *et al.* (2006) research, the impact of CPS in the workplace can take place in three areas: on the individual's attitudes; on the individual's behaviour and; on its effects on groups. For example, in the study run by Basadur and Hausdorf, they concluded that CPS procedures only produced changes in behaviour when attitudes towards divergent thinking had been changed into a positive way; also, CPS training improved the fluency in producing solutions to problems. As to groups, CPS training improved work group climate, communication, interpersonal relations and problem solving outcomes. Finally, Puccio *et al.* (2006) report several studies concerned with CPS impact on organizational effectiveness revealed aspects like cost reduction, high revenue solutions, or a culture that inspired innovative design concepts.

5. CREATIVE PROBLEM SOLVING USING BASADUR'S *SIMPLEX* MODEL

From the Creative Problem Solving (CPS) approach, Basadur (1997, 1999, 2000) proposed a new model, the Simplex model. Basadur's Simplex is a cyclic process in three distinct phases and eight steps. In each step there is a moment for active divergence, when individuals or groups produce as many ideas or options they can find, in a supporting climate in which judgment is deferred to allow the perception of new relationships between facts. During the divergence moments everyone must make extended efforts to avoid stopping too early, before all possible options have been produced. During active convergence, the participants will select one or more options to carry on to the next step. One last skill will allow the process to go on systematically through its eight steps and three phases: it's called vertical deferral of judgment. This skill helps the participants to distinguish between unclear situations and well defined problems, and between defining a problem and solving a problem.

First phase – Problem definition

The following steps are involved:

1. *Problem finding*

This step consists in identifying problems and opportunities for change or improvement within or outside the organization. In the first moment of active divergence, judgment

deferral is required and sustained until the participants feel they cannot collect more relevant problems or changes opportunities. It is then time for active converge, selecting the problems that will deserve further exploration.

2. *Fact finding*

Begins with a divergence moment, when the group defers judgment in order to gather as many information as possible on the selected problem, always accepting all the data that is produced. When there is a perception that all useful or possible facts have been collected, the group can converge and select a few facts that are considered to deserve further expansion.

3. *Problem definition*

In this step the group will reformulate the facts selected into creative opportunities or challenges. Then the more promising problem will be selected to carry on to the next step. For Basadur *et al.* (1994) this is a crucial step and skilled participants will really help the process by asking the right questions that will be answered further on. In this step they elaborate maps reframing the problems using the question "How might we…", considered the most important question in the Simplex process. Another question will help to deepen the problem: "What is blocking…", "What is stopping.." or "why". The challenge mapping process helps to see the hierarchy or problems and the relations between them, clarifying the big picture.

Second phase – Problem solving

The following steps are involved:

4. *Generating potential solutions*

This step requires the participants to actively create as many potential solutions as possible to solve the selected problems or challenges. Divergence moment allows creating the most radical and apparently impossible solutions. In the convergence moment, some of them will be selected for evaluation.

5. *Evaluating potential solutions*

Here it is required to generate as many criteria as possible to help evaluating the potential of each solution that has been developed in the previous step. Having established the criteria, participants will evaluate the potential solutions against each criterion and decide which should be implemented.

Third phase – Solution implementation

The following steps are involved:

6. *Action planning*

Divergence skills are required to generate a number of specific actions that may help the implementation of solutions generated previously. Then convergence skills will allow selecting the most adequate actions.

7. *Gaining acceptance*

This step aims at overcoming resistance to change and involve people needed in the process to assure its feasibility. This is directed essentially to people who did not participate in the earlier steps, but whose commitment is indispensable to bring the project to success.

8. Taking action

Taking action is not the final step of the model, assumed as a circular process. As Basadur (2000) mentions, the organizational level is a continuous flow of products, services and processes that foster a better interaction with the environment. In this step, participants may find reasons not to fully implement the project, as a result of fear of failure and of resistance to change. To undermine these problems the author adopts Lakein (1973) techniques that advise to start with simple, specific and realistic actions, to address the fear of unknown by analyzing what could happen and then generating ideas to cope with fear of failure, trying to turn it into advantages.

6. PROPOSED MODEL OF ORGANIZATIONAL INNOVATION USING CREATIVE PROBLEM SOLVING

The proposed model (Figure 1) follows common research in intervention strategies (initial definition of the desired improvement, assessment of the current situation, training in the work methodology, execution of the necessary procedures and decisions, and measuring its results for organizational efficiency and effectiveness), as reported by McLean (2005), and relies on: *management's commitment to innovation*; the *organization's talented people* and their ability in defining a better organization together with the administration (Hartel *et al.*, 1999); *balancing the formal and the informal organization,* so that change becomes accepted throughout the whole environment, as in the explanation of Stacey (1989); and the use of a *team work technique (CPS – Creative Problem Solving)* that provides the transformation of individual creativity into profitable innovation (Basadur, 1997).

As can be seen in the figure, the 4th step consists of *managers and creative people teaming up*, where talented employees are identified and integrated into development teams together with other technicians in order to contribute to the project development. These teams receive creative problem solving training and list organizational problems from which management will select those that deserve to be subjected to the 'idea finding' step, until a decision is made and implemented in the last step (called *project implementation).* Creative people, either managers or employees, are committed to their work and organization, and so they may bring in important issues, provided that top management values their work and ideas. In fact, according to a Gallup Management Journal (GMJ) survey (Hartel *et al.*, 2003) , engaged employees are more likely to "think outside of the box" and produce creative ideas than disengaged people; they also are more receptive to new ideas. The research concludes that engaged people tend to find and suggest new ways to improve their work and business processes, which may lead to the assumption that the more creative people have a deeper understanding of the organizational processes, being in a privileged position to identify, define and find the relevant organizational problems

Other central aspects of organizational innovation (*management control measures, knowledge management, organizational communication and culture, and employee commitment*) will be addressed in this cycle, for instance the outcomes of the change process that will establish (if successful), a different culture in the organization, allowing for a shared thinking process that will facilitate knowledge management and the fit between the organization and its changing environment (Basadur & Gelade, 2006).

If successful, the model will allow for the creation of a culture of innovation within the organization, committing more and more of its constituents, as more development projects become profitable innovations (Basadur & Paton, 1993; Isaksen *et al.*, 2000).

The research project focuses on creativity and innovation management in organizations and aim at testing a model of participatory action research. The model pictures an

intervention to develop the potential of the organization to innovate, through the internal support of individual and team creativity. The model is designed so that the research can be tailored to the specific organization and the intervention used to its full power by the members of the organization, without the need for external consultancy. It was designed to work with small and medium sized organizations, public or private, but it may be adapted to micro organizations, provided that they gather into a network around the same project, thus building a team wide enough to run extensive work upon a problem.

After an initial organizational investigation of all information and the problems the organization faces (*problem finding*) using interviews with management (the *formal approach*), an understanding of how it works from the point of view of its employees (the *informal approach*) is required. As it is not feasible to ask each individual, this can be made by identifying the implicit theories (ideas and concepts) people use to describe the organization (*fact finding*). In fact, most research in an organizational context has to deal with people who often speak in one way, but act differently. As Argyris (1999) reports, *espoused theories* (*i.e.*, values and objectives that people declare as guiding their behaviour) differ from *theories in use* (the latter which really guide behaviour). Using Kelly's repertory grid method (Kelly, 1963) to design a questionnaire it becomes easier to use theories and overcome the espoused ones.

In his theory of personal constructs, Kelly (1963) stated that people anticipate events and that their behaviour is thus guided by this interpretation. Kelly's method allows people to vocalize their perceptions (sometimes in a way they have never verbalized before). Through a structured interview, this method allows us to design a questionnaire from the participant's viewpoint, thus reducing the observer's bias.

Using an organizationally adapted questionnaire, it becomes possible to spot weak and strong points in the organization. Although the questionnaire can address any organizational climate issue, it is preferable to ask people to describe their line managers in order to identify creative leaders and their teams. Nevertheless, other types of climate questionnaires (D'Amato & Burke, 2008) can be used and variables analysed, if some type of organizational evaluation has already been made.

Creative leaders, preferably designated by their teams, are interviewed and their perceptual maps identified in order to have a first approach to *problem identification*. Perceptual maps can be obtained through content analysis of the responses and then using factor analysis to categorise these (Sousa & Monteiro, 2005). Here, the innovative leaders are not the ones who have good or creative ideas, but those who develop the co-workers creativity and ability to innovate, in a definition quite consistent with Basadur's (2004) creative leadership conception. An innovative manager permanently seeks the continuous quality improvement and gets the co-workers to invest in the constant enhancement of the performance, which is the essence of innovation.

Two levels are considered in the model: the overall, designated CPS1 – *Outer Level*; and the problem-specific one – CPS2 – *Inner Level.* As this last one can be repeated indefinitely for each project that comes out, an "i" was added (CPS2i).

The Outer Level (CPS1) includes four main steps:

Step I – Problem Finding

Is aimed at identifying the existent problems in the organization. The first action consists in a pre-consulting with the administration, aiming at gaining its involvement, so that the main problems may be identified. Next comes the organizational diagnosis, using a creative leadership questionnaire (Monteiro, 2008), based on Kelly's Grids approach and the organizational climate assessment (Sousa & Andrade, 2007), in order to assess the existent management support to a creative climate in each organizational unit; this diagnosis

can be repeated after the intervention has completed its first project implementation, to measure the changes that may have taken place. The next action is interviewing creative managers and drawing their perceptual maps, to provide the administration with a deeper understanding of the identified problems. Finally, the designation of a first creative team (managers and employees), to initiate the CPS procedures.

Step II – Problem Solving

Is the implementation of the CPS methodology with the creative team. It consists of an initial action of training in CPS procedures, followed by the necessary work sessions, from problem identification until the definition of an action plan, within the framework defined by the administration.

Step III – Solution Implementation

Is the application of the action plan, made by other people than the CPS team, to produce a specific innovation project (process or product oriented). In this stage more personnel is included into the process, giving way to the training of further teams in CPS, in order to develop and maintain innovation sub-projects.

Step IV – Model Evaluation

Solution implementation will proceed with the development of management control measures, to evaluate the implications of each innovation project in the company's performance. Organizational culture and employee commitment towards innovation will be subjected to pre and post-assessment, using the organizational climate survey and the creative leaders' questionnaire. Also, the improvement in organizational communication and knowledge will be appreciated by qualitative evaluation, interviewing the same leaders that were interviewed in the first step, after a defined period of project development.

The Inner Level (CPS2i) includes two steps:

Step I – CPS Procedures

Following Min Basadur's problem solving approach (Basadur, 1997): These consist of three distinct phases – *problem definition, problem solving and solution implementation*, and eight actions: *problem finding, fact finding, problem definition, solution finding, solution evaluation, action planning, gaining acceptance and taking action.*

Step II – Project Implementation

The project team will implement the innovation plan drawn out of the decision chosen together with the administration, thus providing opportunities to establish further project teams. This way, a system of transformation of the individual and team creativity into organizational innovation can be established.

Expected results for each company are: an increase in employee commitment (Hartel *et al.*, 2003), as more and more people become involved in development projects; a systematization of explicit knowledge (Borghini, 2005), necessary to carry out CPS decisions; an improvement of formal and informal communication channels (Moss & Ritossa, 2007), due to the involvement of the whole organization in carrying the projects through; the use of management control measures (Adams, 2006), to evaluate the impacts of the innovation projects into the final results of the organization and, finally, the movement towards a culture of innovation, provided by increasing levels of creative leadership skills (Xu & Rickards, 2007), as the practice of project implementation values aspects like delegation, employee empowerment, trust and support to creative work.

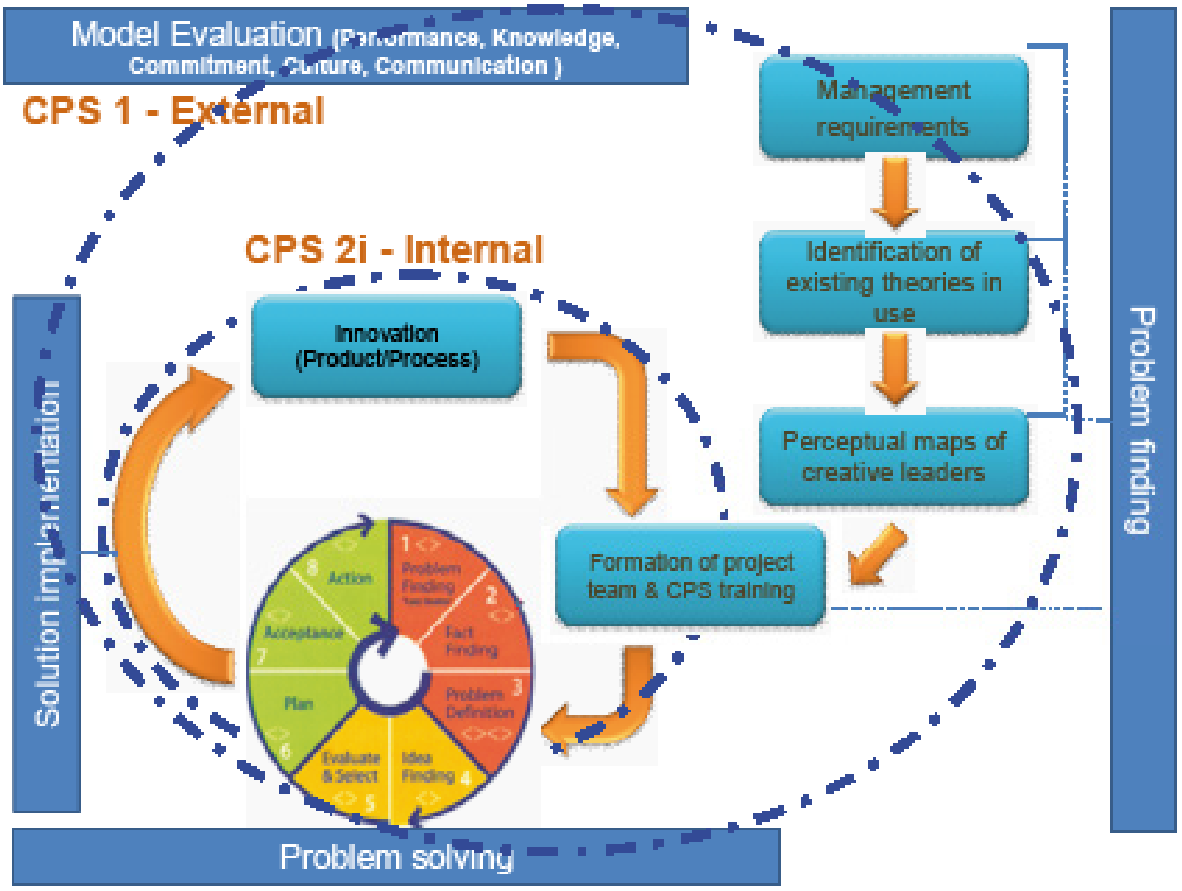

Figure 1. Proposed model of organizational innovation

7. CONCLUSION

This model of organizational creativity has proved to give useful contributions to organizational innovation, in the steps before solution implementation, due to the research and applications made (Sousa & Monteiro, 2005; Sousa, 2007). As the creative problem solving tools have already demonstrated their usefulness in finding solutions and helping organizations to improve, what remains to be proved is the value of selecting and organizing creative people in an organization, by giving them time, space, knowledge and the opportunity to team up and direct their individual creativity to the organizational problems. The process of developing organizational innovation and creativity is complex and non-linear with ups and downs, which can only give rise to a culture of innovation with the management's total commitment. Future research will allow for testing of the model, in its wide complexity, and will provide new insights into the process of organizational creativity and innovation.

The use of management control measures, as described by Adams (2006), in order to evaluate the impacts of the innovation projects into the final results of the organization, provides the necessary frames of reference to evaluate the progress of other organizational variables. First, as Hartel *et al.* (2003) explain, an increase in employee commitment, as more and more people become trained in CPS procedures and involved in innovation projects. Then, a systematization of explicit knowledge (Borghini, 2005), derived from the team work necessary to carry out CPS decisions. Also, the improvement of formal and informal communication channels (Moss & Ritossa, 2007), due to the involvement of the whole organization in carrying the projects through; and, finally, the movement towards a culture

of innovation, through creative leadership level improvement, described by Xu & Rickards (2007), as the practice of project implementation values aspects like delegation, employee empowerment, trust and support to creative work.

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THE CONCEPT OF AGRICULTURAL DISTRICT AND THE QUESTION OF RURAL DEVELOPMENT

O CONCEITO DE DISTRITO AGRÍCOLA E A QUESTÃO DO DESENVOLVIMENTO RURAL

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ABSTRACT

The issue of rural development may be considered a crucial theme regarding the development of European Union economy. Rural regions account for the big majority of European Union territory having an unquestionable importance in terms of employment, population as well as regarding their contribution to gross economic value added. Apparently there is a lack of an effective theoretical framework concerning the issue of development for rural regions. Our opinion is based on the fact that all empirical analysis regarding rural regions development seems to put these regions in a secondary peripheral way in terms of development.

Based on a broad view of determinant factors for development, using different bodies of knowledge in economics and management theory (like corporate strategy, entrepreneurship, regional and innovation development theories, economics of territory and network theory and partnerships), and inspired in the industrial district theory, this paper attempts to present the concept of agricultural district applied to a specific Portuguese rural region: the Douro. On our view, this new concept will help development politicians to conceive better policies for the taking off of rural regions and so, to oppose to what appears to be a bad destiny fatality for rural and agricultural regions.

Keywords: New Economic Geography; Agricultural District; Innovation Policies; Regional Development; Networks and Partnerships.

RESUMO

O desenvolvimento rural pode ser considerado como um tema crucial para o desenvolvimento da economia da União Europeia. As regiões rurais constituem a maioria do território europeu tendo uma importância inquestionável em termos de emprego, população assim como ao nível da sua contribuição para a riqueza gerada. Constata-se a falta de um quadro teórico inerente à questão do desenvolvimento das regiões rurais. A nossa opinião é baseada no facto da análise empírica do desenvolvimento rural colocar estas regiões num papel secundário e periférico em termos de desenvolvimento. Este discussion-paper pretende apresentar o conceito de distrito agrícola aplicado a uma região rural específica em Portugal: o Douro. Este trabalho é baseado numa visão alargada dos factores determinantes do desenvolvimento, tira partido de diferentes áreas do conhecimento na ciência económica e na gestão (tais como gestão estratégica, empreendedorismo, teorias do desenvolvimento regional e da inovação, teoria das redes e abordagem das parcerias) e inspira-se na teoria do distrito industrial. Na nossa perspectiva, este novo conceito de distrito agrícola permite apoiar os decisores políticos na concepção de melhores políticas de desenvolvimento para o arranque das regiões rurais, como o objectivo de contrariar o que parece ser uma fatalidade para este tipo de regiões.

Palavras-chave: Nova Geografia Económica; Distrito Agrícola; Políticas de Inovação; Desenvolvimento Regional; Redes e Parcerias.

JEL Classification: O12

1. THE AGRICULTURAL DISTRICT CONCEPT

1.1 The Need for a New Economic Framework of Analysis for Regional Rural Development

Rural regions represent around 91% of the territory of EU-27 and about 80% of the Portuguese territory, contributing with around 43% of economic gross value added among all of EU economic activities. In these regions lives about 50% of EU population an aspect that makes theses territories crucial in terms of employment generated. Moreover, about 55% of overall employment of EU-27 is based in rural regions.

Paradigmatically, however, one may see a general tendency to a decrease in terms of weight of these territories, either regarding income, population, gross value added, wellbeing, or development in general terms.

Having this in mind we may ask if – as it seems to be for example, the immediate conclusions of New Economic Geography theory – rural regions or, at least, the more agricultural dependent regions, are condemned inevitably to be backward in terms of development. The problem underlying this assumption is that, if this kind of vicious spiral of underdevelopment is still to maintain in these regions, one may expect a kind of "extinction" of the rural and agricultural world in EU, taking into consideration the action arising from the appliance of the principle of rational expectations to the people who are living there.

From our point of view this will pose several very important problems for the EU region as a all, both in demographic as well as in economic terms, and also in strategic terms, having in mind the possible problems of energy and food dependence that may result from this apparent inevitability and at the same time the incredible population pressure that we will assist in the urban areas.

Most of the economic theories are built upon the observed reality. So, we may say that they are dependent from the reality that their authors can observe. At the same time, since economic theories are crucial for the setup of economic policies, they will contribute to shape the observed reality. In this sense they could be considered (at least partially) responsible for the observed pathway of economic development. This type of circular causation may produce some theoretical traps that economists should avoid.

Considering that economics is a social rather than an exact science, by principle one must reject any dogmatic position coming up from any theory within this field of knowledge, especially considering this need to avoid the referred theoretical trap. Moreover, it will be wise to expect that economic agents living in rural and agricultural regions, more than just leaving those regions in search of better conditions for living, will try to battle against the above mentioned tendency for the decline of their world.

However one may say that, today, the existent economic framework will not be favorable to such type of actions, especially if they are directed to the maintenance of the rural and agricultural activities of territories.

To solve this difficult puzzle, we understand that there is room to search for the adequate economic theoretical framework that may help politicians to conceive adequate policies, ones that could break with this path of underdevelopment for rural and agricultural regions.

Paradigmatically however, accompanying the trend of the development of society, we may observe that the rural world is being positioned in the last place of priorities, and this is diminishing the demand by politicians for the issue of rural (and agricultural) policies, making these themes less fashionable to the eyes of researchers. As a consequence we are assisting to less theoretical production regarding these themes, in spite of the apparent dilemma involved – and the inherent challenge involved on it – thus reinforcing the process of decline of the rural world through the incapacity to conceive adequate economic policies to be applied on those regions.

In this sense we may affirm that the problem of the rural world is due more to the inexistence of an adequate economic framework rather than the availability of resources to be applied on those territories.

In summary, notwithstanding the apparent challenge for economic researchers posed by the development of the rural and agricultural world, we see that the "power of demand" is making that the big majority of main economic theories that are available in the literature and that are present in international conferences is dedicated much more to the problems associated with the manufacturing or the services sector, than to agriculture or primary sector activities. For this we may conclude that there is a clear need to develop an adequate theoretical framework that could help the believers in the rural world to produce efficient policies that could be able to break with such an apparent destiny reserved to these territories.

1.2 The Characteristics of an Agricultural District

There is no doubt that there are intrinsic characteristic of the sectors and industries that potentiate or hinder the development of regions. However, to assume that the underlying conditions of economic sectors or industries are paramount in terms of development is to consider that the conditions associated with the capacities of economic actors, the role of institutions, or the importance of the economic policy for development are minor aspects in this sense.

Putting sectors' characteristics above actors' actions as drivers of regional development, from our point of view, could be a critical mistake.

We understand that the capacity to understand reality of territories, to conceive and implement adequate regional policies that promote long term growth are crucial themes for development of less favored regions, and it can represent a kind of "accidental change" that can oppose to some tendencies for path dependence that otherwise will hinder the development of agricultural regions.

Moreover, in our analysis we assume the principle that long term growth is something that goes ahead the ordinary business (Rodrik, 2003) as it seems to be the case about the principles associated with present economic theories regarding rural regions' development.

We believe that the development of the social capital level, comprising the qualification of economic agents and institutions, as well as their capacity to interact, are the crucial themes in terms of the development of regions, regardless of the underlying economic sector of activity that could be dominant in any territory. The human resources capabilities as well as the synergies that they are able to produce as a result of their interactions within the region are the most essential aspects regarding the development of rural regions.

Besides households, most of the times the human resources of the territory are organized within corporate structures – more or less developed – that show a significant importance for

the development of those territories. So, it is essential to understand the role of enterprises and the impact of their strategies for development.

As it is the case for regional innovation, generally speaking we believe that rural and agricultural development is the result of the interaction between the regional and local development conditions, the technological learning and the entrepreneurial strategy of firms within a region, and the institutional proximity (Vaz and Cesário, 2008).

In this sense, it is also important to have in mind that the impact of each individual firm strategy for the development and growth of the region where it is located is dependent from the capacity of the region to promote regional synergies. This in turn is dependent from the capacity of firms to establish strong local networks as well as the capacity for local governments to put in place politics that enhance individual efforts of firms and bring resources available at a supra-regional level to the region, and to leverage regional efforts for development.

An adequate framework to help the conception of policies and the effective development of the rural and agricultural world, more than just translating and formulating concepts, should show the capacity to contribute to a better comprehension of the rural development factors. At the same time, such concept must try to integrate the knowledge already created in different fields of economics, and specially regarding development economics, within a theoretical framework that could help the setup and implementation of rural development policies.

Institutions are considered another important factor for development. So, we must consider the role played by institutions, comprising both the quality of formal and informal socio-political arrangements, and ranging from the legal system to the broader political institutions. For some authors institutions represent even the most critical determinant of economic performance playing *"a major role in promoting or hindering economic performance"* (Rodrik, 2003: 5) and contributing for the form and evolution of economic landscape (Martin, 2003).

At the same time it is known that local institutions creation and development must be seen as the result of the joint actions of different agents co-existing within a specific territory. The dynamics of these institutions is affected by the synergy effects that arise from the network effects. Institutions are also influenced by existing institutions in the surrounding regions.

When talking about regional (and consequently rural or agricultural) development, it is still important to consider the role of social (and civil) capital as well as the importance of regional/rural policies for development.

There is the notion that in the agricultural dependent territories it is usual to observe weaker levels of social capital, considered in terms of social relations and social networks (Fukuyama, 2001), which is something that may reduce the chance to capitalize the role played by institutions and policies, and diminishes any impact of economic agents' actions.

In order to aggregate all aspects referred above, and to consider a territorialized notion of development, in our analysis we adopt the idea of territory as a place of organization and arrangement of economic, social, cultural and political actors that, through the relationships that are established among them, are able to localize a certain type of competences which, by itself, will allow a certain durable growth in that territory (Quevit and Van Doren, 2000). This notion of territory is, in our view, complimented with Maillat's (1998) vision, highlighting a shift from the notion of territory as a medium of passive and static resources, to the notion of a territory that creates strategic and specific resources. The onus is then putted in regional policy that must adapt to these new dynamics. One of the impacts of this change in politics is that development will start to be a question that increasingly will move from a distribution to a resource–creation policy.

Geography should be considered as a part of the territory and, if we consider the territorialized perspective that is present in agriculture, we should also consider that, besides shaping (in part) the existent institutions, geography will play a major role in determining income, based on the existence of natural-resource endowments (specially regarding the availability of soil, sun/climate and water). However, in our vision we agree with Rodrik's idea that "*geography is not the destiny*" (Rodrik, 2003: 12).

In Industrial Districts' theory, development processes are a direct consequence of the systemic, multi-functional and inter-organizational component of territories. Regional development in this sense is not so dependent from the underlying economic sectors that operate in each territory.

In economics, the best systemic theory that, from our point of view, could approach to this broad vision of development is the theory of the Marshallian industrial districts (Marshall, 1920). However this is a concept that we consider to be very dependent form, and adapted to the characteristics underlying the functioning of the manufacture or even the services sector and that transpose the socio-economic characteristics of the territories where these type of activities take place. For this reason, we understand that it is not very adequate to deal with the specificities involved in the primary sector activities and the type of socio-economic conditions that we may observe in rural societies.

To answer to these differences, we have developed the concept of "agricultural district". By agricultural district we mean a rural area or region centered on the production of goods from the primary sector and specialized mainly in a few agricultural products. The agricultural district may be characterized by the following main aspects:

1. A territory mainly dependent from the primary sector's activity, usually agrarian dependent, which develops one main industry in this sector of activity. To illustrate this concept, if we take into consideration, for instance, the case of the Douro region, we can observe that there is a prominence of the wine industry within the region, in spite of we may also observe a very important weight of other agricultural industries like, for example, the olive oil or even the emergence of a service sector related with the agricultural sector like, for instance, the tourism (being it rural tourism, wine tourism or tourism that explores mainly the characteristics of the landscape shaped by cultural traditions or the proper rural activities).
2. The agricultural district is characterized not just by the dominance of the agricultural production, but also by the small scale of the majority of the agents operating in this sector of activity. In this sense, an agricultural district is a territory characterized by the existence of a big number of small to medium sized companies, mainly working without any formal links between them, and where tradition and trust are sometimes more important than any formal links;
3. Moreover, the agricultural district is a territory where we may observe a specialization of economic agents in different stages of the value chain process, a situation that originates a clear division of labour. This division of labour is, sometimes, the result of a determined process of development in time within the region, and not something that was formally decided or encountered. In this sense, we may say that division of labour in agricultural districts territory is based on tradition and culture more than on market demand;
4. In agricultural districts is usual to observe some kind of barriers to entry, mainly originated from the scarcity of productive land and the consequent dependence that this situation originates from the capacity of production. These barriers may increased by punctual situations – like, for instance, droughts, heavy rains, floods, or plagues – associated with the traditional risk operation of primary sector's activities. One way to diminish these risks used by many agricultural producers is through the acquisition

of productive land. Commercialization companies usually try to diminish these risks through multi-annual contractualization of production.

5. In agricultural districts we may observe the existence of institutions closely related but not directly involved in agricultural activities, whose main functions are to dynamize the main productive, commercialization and innovation activities related with main agriculture productions. Within these actors there are regional institutions (like universities, R&D centres, regional corporate associations composed by companies within different stages of production, cooperatives, regional governmental departments), as well as nation-based institutions (like central agencies for external trade and investment promotion, national universities and their research centres, chambers of commerce, etc.)
6. Agricultural activities developed in agricultural districts are usually supported by a myriad of suppliers either of regional, national or international origin, but where the local assumes a very important weight in the process, especially when we talk about small scale productions. Within these suppliers we must consider labour force, which is mainly part-time or seasonally hired, but assume a very important role in terms of knowledge transmission over companies and over time. Labour force is essential in terms of productive know how as well as culture and tradition transmission over time, in these regions.

In summary in an agricultural district we will see an agglomeration of small and medium sized organizations (both corporate and farmhouses), working in the same industry within the primary sector, in spite they might be, and usually are, involved in different stages of the value chain, a situation that represents a determined specialization pattern that characterizes the productive system of an agricultural territory.

It is arguable to say that an agricultural district may be considered as a representation of an entrepreneurial model of development for a specific region, whose main activities are dependent from the agricultural sector. In this regard, management capacity represents a crucial issue for regional catching up, since it is through the capacity to absorb ideas coming from the R&D system, to exchange them between companies, to transform them into real innovative products and services and to take advantage of these processes through the implementation of effective corporate strategies that render money to companies, that the innovation system promote regional development and aid the catching up of the backward regions, especially those peripheral (Porfírio, 2005) like it usually happens with rural regions.

As an entrepreneurial model, and besides the crucial importance of people and institutions that characterize any region in analysis, it will be crucial to understand and model enterprise networks representing the links of co-operation and partnership between firms. The enterprises act in a social and economic context that favors proximity to benefit from external, information and transaction economies. It is also important to consider that enterprise networks, which benefit from these types of economies, are different according to historic origin, geographic base or connection type. It is these different type of networks that produce different organizational forms of relations between actors which, due to its different duration and openness (know-how diversity, plural specialization), will develop individual and collective learning processes that results in a synergetic creative set. This kind of networks will also generate a non-linear and complex connection of specific competencies and of knowledge enrichment.

Regarding rural regions development, we support that a new economic concept like the Agriculture District idea (Porfirio *et al*, 2008) could be better suitable for the conception and implementation of rural development policies. This new concept should help us to better understand the dynamics that we can observe among enterprises and the socio-economic environment that they face and where they work, in the primary sector. If it is the case, the

Agricultural District concept will also help us on a better conception of rural development policies and so, to a better perspective for the future of the rural world.

By doing this in a certain scale and within a certain timeframe, we are, at the end, going against a certain pre-determined economic tendency for a vicious cycle of underdevelopment and we will be able to promote the resurgence of new centres, mainly based on the primary sector.

1.3 Agricultural District *versus* Industrial District

The concept of agricultural district, from our point of view, may help us to better understand the peculiar dynamics that exist in rural/agricultural regions and so may contribute to the breakdown of an apparent determinism concerning rural development capabilities. As already referred, our concept departs from the traditional idea of Industrial District (Marshall, 1920) linking different other concepts like entrepreneurship; regional and innovation development theories; economics of the territory; networks and partnerships. Moreover, it puts a special emphasis on the issue of Corporate Strategy as a catalyser for the conversion of rural/agricultural regions and so, for the development of the rural world.

Our concept assumes the growing importance of territorial dimension in economics, following the principles generated by marshallian industrial district's researchers. After World War II, the Alfred Marshall's concept was recovered by Italian economists that focused on certain forms of territory production organization which showed autonomous development capacities (the so-called «Third Italy»).

The industrial district can be defined by a social-territory entity characterized by the active presence of a community of individuals and a large number of small- and medium-sized firms in a certain historic and geographic space. District firms produce goods in the same sector both for internal consumption and mainly for exportation which benefit from localized accumulation of skills inherent to local resident workers.

District firms assure products and services necessary to specific product realization. Enterprises are specialized in different production stages and coordinated by entrepreneurs who create products of the same gamma. In this system financial support is provided either by local banks or/and local firms. Individual links are also important. They share the same value system, know-how and social norms perpetuated by families and local institutions. Marshall refers to «industrial atmosphere» to characterize this social-economic context on the basis of confidence.

Through exchanges of information and the use of particular schooling systems, workers develop collective processes of learning-by-doing which permit to improve their productivity. Workers interact together through several social processes (e.g. informal discussion within the firm; inter-firm mobility of skilled workers) encouraging a frequent inter-communication of ideas (Soubeyran and Thisse 1999).

In this way, at the basis of early economic development of industrial districts one can find a set of specific social-cultural craftsmanship and knowledge. But *"afterwards the firm industrialization and specialization generate the development of learning processes based on the knowledge codification and on a stronger inter-relation among the district forms, so that a social-cultural and craftsmanship knowledge is replaced by a more relational one"* (Albino 1999: 57).

One may question the need for the development of such a new concept like the agricultural district, since we already have the "older" industrial district concept.

The reasons for this need may be found in two interrelated issues: a) the intrinsic characteristics of rural/agricultural regions; and b) the intrinsic differentiation characteristics of agriculture compared to other sectors of activity. All these are aspects that must be integrated in the so-called "new paradigm of the rural world" (OECD, 2006).

According to OECD, the new rural paradigm is centered in the search for the competitiveness of the rural areas, based on the valuation of local assets and the sustainable exploitation of unused resources. This should be made through investments in various sectors of rural economy (like rural tourism or secondary and tertiary activities linked with, but not exclusively in, the primary sector) and may involve actors in different levels of the territory (local, regional, national, and even supranational).

This is in close contrast with the old rural paradigm where the main objective was the equalization of farm income and the competitiveness of farms, based mainly in agriculture and through subsidies exploitation used by national governments and farmers.

This new vision for rural development brings to the analysis the differences of agricultural activities compared with other sectors of activity, like the manufacturing sector that is in the essence of industrial districts. However, in spite of the inherent differences between these two paradigms, from our point of view there is something that seems to maintain between the old and the new: the idea that for an agricultural dependent region to develop, there is no need that it enters definitely in any international market's food value chain to obtain success. The path of development still is a choice of the region since the territorialized principles associated with agriculture surmount any characteristic related with mere localization or location of economic activity (Storper, 1997).

First of all, agriculture may not be an activity so dependent from external markets and trade when compared to manufacture or the services sector. In general one may observe an important weight of domestic and local market sales regarding agricultural productions, when compared to what happens in other sectors of activity. This was especially true in the "old paradigm" of rural development. Within the ideas of the new rural paradigm, one may observe a growing importance of agriculture integrated in agribusiness value chains as a result of the integration backward, to primary product handling, of food processing firms. This is a very important issue regarding the idea of agriculture for development, since it presents direct reflexes in terms of growth rates of activity, income and innovation capabilities for economic agents and territories dependent from the primary sector activities.

Considering the growth rates usually associated with agriculture productivity and market sales, it is possible to see that usually, agricultural activities grow at lower levels when compared to manufacturing or services sector. Productivity in agriculture is always very dependent from variables that are not very easy to control, which means that agricultural activities usually involve more risk than the other sectors of activity in general. Moreover, in spite of the important developments in the field of biotechnology, we are aware that agriculture will always be an activity very dependent from the availability of very limited resources like soil or water or, as Marx defended: "*agriculture is a unique branch of industry in that it is constrained by natural processes which act to limit the productivity of labor and restrict capital investment*" (Page, 2003: 245). It is also important to consider that the land-based character of farm production naturally will pose several constraints to industrialization.

Moreover, there is the question of innovation. In agriculture districts innovation is based almost exclusively in the production process and usually appears as small incremental improvements in products and services arising from local production systems and not as a result of any formal dynamic system of innovation based on R&D institutions or labs dedicated to the regional productions. In the innovation field, it is also important to refer that, taking into consideration the small size of production units it is very difficult also to assist to innovations coming up from any individual R&D activities from any particular company or farmhouse (Santos, 2005: 288) or even disruptive innovations.

That is to say that the characteristics of innovation, in agricultural districts, are mostly due to "learning by doing", "learning by using" or even imitation processes, than due to formal institutional processes, which is something easier to understand if we take into

consideration that market pressures to innovate in farming production systems is coming more from legislation concerning safety and quality rules (many times imposed by agri-business customers or food consumers) than from consumer markets' demand.

In summary, the capacity to develop in agricultural districts is strongly dependent from the externality effects that arise from proximity, and that is mostly concerned with resource capabilities evidenced by each particular territory.

Regarding the characteristics that differentiate rural from industrial, service-based or urban territories, it is also important to consider the quest for tradition and culture.

Farming can be seen as a critical intersection between nature and society (Page, 2003: 245). This turns agriculture an activity much more dependent on tradition and culture than any other sector of activity. Rural societies are usually more closed and less dependent from international dynamics than any other type of societies of the developed world. This is a feature that tends to create stronger links between people within the region and increases the effects of their relationships promoting or hindering synergies in the region. Moreover, relationships between economic agents in agricultural districts are more based in culture, tradition, and historical evolution and not so much in formal processes or originated by market pressures.

This scenario might be changing nowadays mostly due to the influence of big companies operating in agro-food business and also due to the growing feeling that farmers must be more keen to market demand if they want to be competitive and obtain success in their business life. However this is a characteristic that still needs to be considered a very important aspect regarding the development capacity of these territories.

Finally, we must consider that the capacities for reconversion of territorial production, as well as development patterns, are very different when we compare agriculture to the other sectors of activity.

Considering that soil is a limited and fixed resource, and that land markets are very dependent from localized social conditions, it will be prudent to admit that farmers cannot easily and quickly adjust their investments in land (Page, 2003: 245) in order to adapt supply to demand. However, one may observe a consistent "refashioning of nature", with the use of new technologies that represent an important leap forward in the capacity to manipulate nature for commercial gain in agriculture.

These movements contributed to surmount some locational constraints in agriculture overcoming, at the same time, some limitations posed by nature (like soil availability or climate conditions) thus making possible the creation of new agricultural systems. Notwithstanding, it is important to notice that any development process implies changes over resources, over labor as well as over technological practices, and this represent a process that takes its time, since it involves changing culturally constructed meanings and identities (ibidem). And we must be aware that, like geography and institutions, all these are aspects that change slowly or hardly over time (Rodrik, 2003) which mean that any policies adopted in any new theoretical framework for the development of the rural world, should take its time to produce the desired effects.

2. THE CONCEPTION AND IMPLEMENTATION OF REGIONAL AND INNOVATION POLICIES

Following this succinct exposition of the Agricultural District framework and what could be called the "new rural paradigm" in the first section, it is necessary to clarify the issues related to regional policy and innovation policy. We will first review the literature on some

fundamental issues and sum up the basic dimensions that are relevant to regional policy before analysing this policy proper.

In order to grasp better the complexities of regional development of today, some time has to be dedicated to rethinking concepts, theories, policies and results (achievements, failures and impacts) as we have done so in the introduction and previous part and will continue in the present one and the next and last section on the Upper Douro. It is important to avoid conceptual fads and trendy labels and stick to the explanatory power of concepts and theories and the evidence from data.

If we take a moment to look back at the regional policies from the 1960s and the present decade, we notice, among other aspects, the prominent role taken by innovation and not just the transfer of technology and big projects as the driving forces behind regional policies and development (Janne 1968, Perroux 1950, Perroux 1964, 1983) but also much related with knowledge and tacit knowledge, social networks, partnerships and local cultures (Fuchs and Shapira 2005). As we will show, our reflection has tried to integrate concepts such as innovation, regional systems of innovation, knowledge, learning regions and heterogeneous agents, to name just a few we make use of.

Before getting into the prominent matter of regional policy, it is necessary to summarize a number of interrelated issues in order to discuss coherently the policy formulation and implementation and, afterwards, some concrete development measures.

First, in the present paper, the regional system of innovation has to be considered in its broad sense, as highlighted by Freeman (1982, 1987, 2002), rather that its narrow one (institutions directly involved in the fostering of innovation activities, such as public labs and universities) because the former allows us to take into account the diversity of regional and local actors, their interrelations and the difficulties related to the implementation of policies throughout heterogeneous geographical areas. This broad conception of innovation dynamics permits the identification of networks and structures that shape local life and regional economic activities (MacKinnon, Cumbers and Chapman 2002). It is related to the literature on regional systems of innovation and their focus on the knowledge dynamics (Cooke 2001, Cooke, Uranga and Etxebarria 1998, Cooke, Uranga and Etxebarria 1997, Freeman 2002, Moulaert and Sekia 2003).

Second, as a corollary to the broad definition of regional systems of innovation, a central element is the interaction between social and economic actors in these regions; this is the network aspect of the regional dynamics. According to Chris Freeman, a (regional, we would add) system of innovation can be considered as a *"network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies"* (Freeman 1987: 1). Evidently, the word technology has to be broadly construed in order to include the artifacts and the tacit knowledge of using techniques, including the immaterial techniques.

Third, at this point, it is crucial for designing successful innovation and development policies to note that regional and local actors are highly heterogeneous in terms of size (see the next section), knowledge base, history (path dependence of capabilities) and activities (economic sector, social activities). The heterogeneity is ontological in the sense of defining the being and becoming of social actors in a specific territory. Social and economic interactions are in fact occurring between individuals essentially different one from another and this difference is at the center of the mechanisms of exchange and interaction. This is where we find notions such as knowledge economy, skills and competences that enter the picture.

Anyone consulting recent issues of journals in regional science or technological change and innovation studies (e.g., *Regional Studies*, I*ndustrial and Corporate Change*, *Cambridge Journal of Economics*) can see that the arguments on the various strands of economic policy, namely

regional policy and innovation policy, have shifted towards the notions of the knowledge economy, different types of innovations and a more dynamic view of the process of policy–making (Amin and Wilkinson 1999, Antonelli 1999, Cohendet, *et al.* 1999, Lawson 1999, Maskell and Malmberg 1999, Moulaert and Nussbaumer 2005, Moulaert and Sekia 2003, Tödtling and Trippl 2005). This change is substantial, not only at the level of the theories and conceptual framework as highlighted in the previous section, but also for the very design of specific policies. That last point is the subject of this section, but before getting straight to that matter, we will wrap up the critical theoretical elements that are needed for a correct appraisal of the challenges of economic policies.

There is a vast literature on learning regions and regional innovation systems and a much wider literature on regional economic development that has gained momentum in recent years and have renewed the theoretical concepts used for economic analysis and policy formulation (Cooke 2001, Cooke, Roper and Wylie 2003, Cooke, Uranga and Extebarria 1998, Cooke, Uranga and Etxebarria 1997, Fritsch and Stephan 2005, Leydesdorff and Fritsch 2006, Leydesdorff and Meyer 2006). However, there is still a tremendous effort to be made for creating more coherent or integrated theoretical constructs of regional development (Moulaert and Sekia 2003). Moreover, the analysis of regional policies and the evaluation of their implementation is lacking in terms of the integration of new theoretical development, namely: learning, innovation systems, entrepreneurship, management and strategic capabilities of people and organizations, globalization, territorial dynamics, evolutionary economic policies and trust and social interaction (Morgan 1997, Moulaert and Sekia 2003).

Our task here is not to offer a survey of these developments. In the previous section, we have given an overview of some of the main theoretical concepts that are needed for studying a wide array of regions and in particular those regions that aggregate numerous obstacles to development, usually, but not exclusively, based on agricultural production. In the present section, we will reintegrate the theoretical concepts for two reasons: first, for criticizing the existing policy practices and policy justifications and formulations and, second, for designing the building blocks of a more successful regional policy, especially with regard to problematic regions such as the Upper Douro, characterized by dependence on a sole product as main export (wine), the lack of dynamic medium sized towns and proactive connections toward outside markets, regions and cities.

Two of the main issues with economic policy (either regional or national actions) are its practical relevance (impact) and its dynamic character (i.e., the socio–economic reality is changing so does the policy–making and the administration that implement it). In the latter case, more often than not, there are maladjustments between the issues at hand (the concrete problems to solve) and the capacity of the administration and formal institutions that are taking or implementing measures. This is clearly the case in the Upper Douro region.

It is important to have a regional policy that focuses practical problems and advances concrete measures (proposed solutions) that can be appraised in one way or another. Too often, policies, unfortunately, are definitely not regional policies; they are formulated at the national level (or even the regional level) but are too vague and do not answer properly concrete regional problems whose solution could contribute to the emergence of new dynamics in the region under consideration.

The criticism made by Simões Lopes in the late 1970s and reiterated all along the 1980s and 1990s is still valid today: there is no true regional policy in Portugal (Lopes 2001). For the Upper Douro the conclusion is even worse, as we will get back to it in the next section.

Again, coming back to old debates on economic development, not just within the national border but in the wider European context, regional policy is lacking a *long–term view* and an integration of various sectoral policies into some coherent whole with more

efficient effects at the local level. And no matter how different regional economic policies can be designed today, as characterized by some authors quite recently (Morgan 1997), the long–term perspective and the integration are problems that remain. Accordingly, this point is shared by some authors in the case of Portugal (Lopes 2001).

A key factor explaining the lethargy of regional development policy in Portugal and in the Douro, in particular, is the path dependent character of their design and implementation. We will focus now on the *path dependence* of policy design. The notion of path dependence in policy design and policy making is not different from the one found in the economic literature on innovation and technological change (Arthur 1989, 1994, David 1985, David 1986, 1989, 1992, 1994, 2001) or the study of economic theory and the economic profession (Garrouste and Ioannides 2001, Hodgson 1997b, Hodgson 1999, Hodgson 2004).

Concretely, policy formulation is conditioned by past decisions and new ideas such as evolutionary processes enter slowly in the set of ideas that are dominating the references and justifications traditionally used in the design of policy measure. Very often, the rhetoric is integrating the new concepts, but too often on a very superficial scale, while the old dominating ideas are still there. This is exactly the case with the absence of regional policy in Portugal. In economic terms, changing policy guidelines has high costs, not just for the regional constituencies but also at the national level.

Maillat (1998: 3) highlighted *"a shift from the notion of territory as a medium of passive and static resources to that of a territory that creates strategic and specific resources. The onus was now on regional policy to adapt. […] they increasingly moved from a distribution to a resource–creation policy."* This point can be extended to recognize that regional policy in Portugal has to back up the creation of incentives for investments, foster inter-institutional cooperation and decentralization, and it is *"precisely in these areas that Portugal lacks the necessary tools"* (Noronha Vaz 2004: 223).

If we look at the successive types of regional policies, using the typology by Maillat, we can identify in the Portuguese regional policy a dominance of distributive policies rather than those that require participations of local actors (Maillat 1998, Morgan 1997). But what is more preoccupying is the static conception of policymaking and its vagueness, its lack of integration and its lack of regional focus. We will pass now to the consideration of the regional development policy for the Upper Douro region as a way of illustrating the issues hitherto highlighted.

3. SOCIAL AND ECONOMIC CHARACTERIZATION AND IMPLEMENTATION OF REGIONAL POLICY: THE CASE OF THE UPPER DOURO REGION

The wine district of the Upper Douro, now celebrating just over 250 years of turbulent existence since its creation in September 1756 under the rule of the Marquis of Pombal, is a typical problem of development in the interior of Portugal. The population is stagnating; the local production is almost exclusively based on wine production and derivatives (liquors, brandy, etc.), a sector considered in crisis in Europe; the regions is distant from the main urban area of Northern Portugal, Porto, and without any administrative and political unity that could channel both economic policies for the regions and voice changes in national policies focusing measures adequate for the region. In addition to the quasi-monoculture of wine and grapes derivatives, the land property is fragmented into many small producers and very few big producers, the latter generally associated with the Port wine trade and working with higher value added products. The problem is not new, but the relative position of the Upper Douro in Northern Portugal today is worse than it was in say 1740, 1800 or 1910, especially if we compare this region with the Porto city area which benefited greatly through

the history from the wine trade, namely the exports to the United Kingdom and Northern Europe.

The historical legacy for the region is very important. All through the generations from 1756 to now, the central state has played a critical role in the region, mainly through the regulation of the wine production and the implementations of agricultural policies. The attempts to reconvert the excessive or outdated wine production into wheat, tobacco or olive oil failed in the last two centuries in spite of few localized situations of success in these domains. In terms of innovation, initiatives are also very dependent from the State initiative, especially if we look into the wine industry, starting from the beginning of the twentieth century, with the creation of the so-called Experimental Agricultural Stations by 1908.

In the Upper Douro, the dominant production sector is winemaking and vine culture. Therefore, as a first approximation, the sectoral and local systems overlap. However, this cannot be interpreted as a neglect of the importance of spatial configuration. Quite the contrary, this double identity of the Upper Douro turns it a difficult problem to solve but at the same time shows that economic policies did not consider regional policy perspective seriously. One might say that the only true sectoral policy for the region is the agricultural policy.

Agricultural policy serves around 39.000 vine growers, wine makers and merchants dedicated to the wine business. Around 30.000 vine growers are small producers, with less than 1 ha of land each. Of these, around 78% have less than 0,5 ha. On the other side, there are around 600 vine growers with more than 10 ha each. Of these we can count around 40 big groups (like Symmington, Sogrape, GranCruz, Taylors and others), which account for around 10% of total area of production. Besides these, there are about 60/70 big bottlers and producers of wine, with around 4% of total area, and a few big families that own around 5 or 6 ha of land each and that normally sell their grapes to the big groups. In terms of small producers, about 3.000 just produce grapes and sell them to the big groups, and the rest, responsible for about 50% of the wine production, sell it to the cooperative sector present in the region or has its own little farm (*quinta*) producing their own wine.

The production *filière* in the case of the Upper Douro is articulated around three activities: the first one is the work in the vineyards and the treatment of the vine and its grapes; the second one is the winemaker process proper, from vintage time (grape harvest) to the fermentation of the must; and, finally, the conservation, ageing and selling of the wine. The first activity is historically typical of the Upper Douro production system. The vineyards are, however, dispersed among many small-scale producers that are technologically and commercially lagging behind, while the big producers are well connected to the wine merchants established in Vila Nova de Gaia. The second activity, traditionally a typical activity of winemaking in the region, has been dominated by the trading firms, the Port shippers that influenced greatly the evolution of the local wines, namely the Port wine. The third activity, today, with about 98 percent of the Port wine, is located in Vila Nova de Gaia and Porto. While some shipping firms invested heavily in the Douro (such as the group Symmington) the local impact is limited to some big properties and to the strengthening of the relationship between those *quintas* of the merchants and the small and medium–sized producers.

While in France, Champagne, the institutional interaction are old, in the Upper Douro, the model of intervention is dominated by the role of the central state, namely the ministry of agriculture, that regulated the production and trade in the 18th and 20th centuries and did not favored the emergence of local dynamics such as "true" associations of producers. Once more, the historical legacy is very relevant. The cooperative wineries (*adegas cooperativas*), with the exception of one that was created in 1993, were all established in the 1960s in the

period of dictatorship and with a regulation of the sector that was controlled by the central government and the shipping firms. In the 1920s and early 1930s, an important regional movement, the *paladinos do Douro*, tried to orientate the agricultural policy and the state policies in favor of the Upper Douro winemakers, but did not succeed to create dynamics that survived (Jacquinet 2006, Sequeira 2000). Part of their action was defensive, against the import of wine spirit from the South of Portugal (the area just North of Lisbon) or the adulterated wines from Spain or the spirit coming not from grapes but from cereals. Their legacy is too thin today, partly because of the social renewal that occurs as time goes by, but also because of the impediments related to the dictatorship.

Apparently this lack of association dynamics is still pervasive today. In the public policies for the Upper Douro have not build new and sustainable practices of cooperation, association and exchange of information, techniques and knowledge. Even the project for the Upper Douro as patrimony of Humanity has been base mostly on building and material elements, while the social and immaterial elements, including the social interactions, have been neglected.

This lack of association in general terms - also related with a weak entrepreneurship, a poor management capacity, a lack of market orientation and a weak level of training of the human resources of the region - is also the cause for the inexistence or dispersion of innovation institutions, specially those related with the wine industry. In terms of the formal education and research system, the region has one University (*Universidade de Trás-os-Montes*) and one Polytechnic Institute (the *Instituto Superior Politécnico de Bragança*). From the sector itself, we may find the CEVD – *Centro de Experimentação de Vinhos do Douro* and some institutions hired by the IVDP – *Instituto dos Vinhos do Douro e Porto* (both belonging to the research system of the Portuguese Ministry of Agriculture). There is also a private institution, named ADVID – *Associação para o Desenvolvimento da Vitivinicultura Duriense*. Apparently there is a weak research association coming from the sector itself and there is a lack of long term and sustainable links and respective results between main actors from the wine sector and these research institutions that mainly work on their own, without a true market orientation.

From a conceptual point of view, we can also state that Regional policy for the Upper Douro region is mostly inexistent in spite of the millions Euro spent in the last years in the region, mainly coming from Agricultural Programs. And, when this Policy exists, we might say that it is usually outdated, based on an old view of social interaction and territories as passive landscape. We can also observe the relative success of the initiatives in tourism for developing the region with new activities, but, here again, a true and integrated regional policy is absent. The actions taken support mainly infrastructure while the issue of the flow of tourists in Portugal – mainly between Lisbon, on the one hand, and Porto–Coimbra and Évora and Algarve, on the other hand – is neglected. The neglect of social interaction in the development of tourism is also important and there is no regional policy measure that seems convincing, with the exception maybe of the wine routes (*Rota do vinho*).

In the Upper Douro region, recent policies with a regional incidence, namely, the agricultural policy in rural areas, have done little beyond the infrastructure policy and the reinforcement of some local institutions (like the IVDP, the Port wine institute). In terms of the main Agricultural Programs that can be applied to the Douro Region (Agro, Agris, Ruris, Vitis and some Special Zone Plans), only the Agro Program considers two measures dedicated to innovation. Essentially these programs work as income transfer and distribution to/into the region to support losses from special conditions of production. These programs are the direct result of the application of Common Agricultural Policy measures, being all of them, with the exception of Agris, regionalized policies defined on a national basis. In the special case of Agris - the only Portuguese' Agricultural Program conceived exclusively for

each region, from the Third Community Support Framework - it is a Program divided by NUTSII regions that includes measures specially dedicated to the North of Portugal. This Program contemplates measures dedicated to some special cases of Douro. We may also find two other measures coming from Ruris' Program, dedicated exclusively to the Douro Region in this philosophy of income support and transfer (e.g., the Special Plan for the Upper Douro wine District and the income support for the vineries in Douro mountains).

4. CONCLUSIONS

We depart from the principle that there is a lack within economic theory regarding the comprehension of the mechanisms of development of rural regions. Paradigmatically, we understand that there is no question regarding the importance of rural regions for the EU economy, both in terms of income and strategically. So, it is clear for us that the issue of rural development may be considered a crucial theme regarding the development of EU and it is also a very important subject for economic theory in general and particularly, for regional development theory.

The basis for our analysis, regarding the issue of development for the rural regions should be the main theoretical body of regional development theory which is a topic closely related with two intertwined issues: i) the key variables related with change; and ii) the capacity of governments and local authorities to conceive and implement more effective regional development policies.

Concerning the key variables related with change, one should consider that the actions of economic agents of a certain region will produce results in terms of economic development that could be limited, or otherwise enhanced, by the regional environment where they are taken and that is also a result of regional development policies directed towards each specific territory.

Besides policy issues, if we want to study the real conditions that affect regional development, we must also analyze regional dynamics, which is also that should take into consideration the endogenous characteristics of local actors, the diversity of problems that characterize each region, as well as some determinism that could arise from the phenomenon of culture and historical path dependence. All these are aspects that reflect the real essence of regions.

However these variables usually can only be analyzed integrated within an aggregated and generic set of measures, and they often do not find the adequate economic theoretical framework to be fully applied and tested by regional policies.

Our investigation was illustrated by an attempt to apply a new concept to the Portuguese rural Douro Region, viewed as an atypical territory in economic development terms, since it is a development problem that challenges the traditional canons of economic theory, usually more centered in urban or industrial regions.

To be effective, regional development and innovation policies, applied to this as well as any other similar rural regions, must take into consideration the diversity of cases and to adapt themselves to the specific conditions of the territories where they will be applied.

By making an analogy with the traditional economic concept of industrial districts, and adapting this concept to the peculiar conditions of agriculture activities as well as the region in study, our paper develops the eclectics concept of Agricultural District, trying to characterize theoretically the Douro Region within this framework of analysis. By doing this we are searching for the necessary theoretical framework that may help economists to conceive regional rural development policies more effective and truly dedicated to the specificities of agricultural regions similar to the one in analysis.

Moreover, it is very important to consider that our job should be considered a work in progress and that the concept of agricultural district must be considered as a dynamic rather than a static entrepreneurial model of development for the rural/agricultural regions. To be effective in their end of helping the use of better policies and to obtain better synergies for financial resources allocated to these policies, this is a concept that must adapt to the specificities of different rural territories, that may differ due to different cultures – and so, different production systems and value chains – as well as the different type of actors involved in the socio-economic structure of rural territories.

We consider to have advanced in part for a better knowledge of the dynamics that characterize rural and agricultural regions and by doing this we believe that we gave a step forward, not just in helping a better conception of rural development policies but also, to a better future for these regions proving that rural should not necessary means less developed.

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POSSIBILIDADES PARA UMA ECONOMIA NÃO-QUANTITATIVO--DEPENDENTE: A PLURALIDADE DOS MÉTODOS FACE À DOMINÂNCIA DA ECONOMETRIA

POSSIBILITIES FOR A NON-QUANTITATIVE-DEPENDENT ECONOMICS: THE PLURALITY OF METHODS FACING THE DOMINANCE OF ECONOMETRICS

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RESUMO

A Economia vive um momento em que o paradigma dominante, baseado nas ideias neoclássicas e de escolha racional, parece muito limitado para compreender a complexidade da realidade. Os economistas e a Economia estão a ser severamente criticados pelo uso exagerado do formalismo matemático. É importante destacar que hoje, do ponto de vista do *mainstream* disciplinar não existe outra Economia, enquanto campo científico, sem ser aquela que desenvolve modelos com uma forte ênfase em análises quantitativas para compreender os mecanismos económicos. Somando a este debate teórico emerge uma questão prática: a Economia é a ciência acusada de apoiar e de legitimar políticas de liberalização dos mercados que conduziram à actual crise global, em particular, a desregulação dos mercados financeiros. Actualmente a econometria, vista como dominante em termos de aplicabilidade, precisão e eficiência, é usada extensivamente deixando a outros métodos um contributo marginal. Mas as críticas à econometria estão a tornar-se extremamente ruidosas e consistentes. Os econometristas comportam-se como se as suas técnicas fossem universais quando, de facto, não o são. Se métodos alternativos forem aceites, podem ser largamente eliminadas as restrições e distância à realidade da econometria. O presente artigo debate os caminhos para uma Economia Satisfatória, onde o pluralismo teórico e metodológico entre nas ideias do *mainstream*. A construção histórica da econometria enquanto principal método na ciência económica é apresentada e as limitações e possibilidades da ferramenta são exploradas. Finalmente a necessidade de pluralismo é sublinhado. Este pluralismo é especialmente importante quando as técnicas são muito distintas e partem de diferentes ângulos sobre um problema de investigação complexo. A mesa do economista aplicado deve estar preparada para beneficiar das complementaridades de diferentes métodos.

Palavras-chave: Economia, Metodologia, Pluralismo, Econometria, Ortodoxia

ABSTRACT

Economics lives a moment where the dominant paradigm, based in neoclassical and rational choice ideas, seems very limited to comprehend the complexity of the reality. Economists and Economics are being severely criticized by their exaggerated use of mathematical formalization. It is important to stress that today, on the mainstream point of view, there is no other Economics (as a scientific field) unless the one which develops models with a strong emphasis on quantitative analysis to understand the economic mechanisms. Summing to this more theoretical debate a central practical question emerges: Economics is the science that is today being accused of supporting and legitimating free-market policies that have conducted to current global crisis, in particular with the deregulation of financial markets.

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Today econometrics, seen as dominant in terms of applicability, accuracy and efficiency, is widely used – other methods have been reduced to marginal contributions. But criticisms to econometrics are becoming extremely loud and consistent. Econometricians behave as if their techniques were universal when in fact they are not. If alternative methods are accepted, one can largely eliminate the restrictions and distance to the reality of econometrics. The current article debates the pathways for a Satisfactory Economics in a context where theoretical and methodological pluralism is entering even in mainstream ideas. It is presented the historical construction of econometrics as the main method in Economics and the limitations and possibilities of this tool are explored. Finally the need of pluralism is underlined. It is especially important when the techniques are very different and address different angles to a complex research problem. The working table of the applied economist should be prepared to benefit from all the complementarities of the various methods.

Keywords: Economics, Methodology, Pluralism, Econometrics, Orthodoxy

Classificação JEL: A12; B23; B41.

1. INTRODUÇÃO: É IMPORTANTE DISCUTIR A ECONOMETRIA?

> *"Econometric estimates should be taken with a pinch of salt, with the awareness that in several domains econometrics is of very limited use. Econometrics will always have a place in applied economics but it will be a more modest role than now when it is assumed in many schools that a thesis without advanced econometrics is not a thesis in Economics."*
>
> Peter Swann, 2006

Os economistas e a Economia têm sido amplamente criticados pela sua utilização excessiva da formalização matemática, desde o cálculo diferencial, passando pela investigação operacional e chegando à econometria (Hodgson, 2007; Dow, 2005; Chick 1998).

Actualmente, há que reconhecer que na visão ortodoxa, não existe outra Economia (enquanto área científica) sem ser aquela que desenvolve modelos de explicação económica com uma robusta abordagem quantitativa. A Economia enquanto ciência deve tentar repensar a sua capacidade em aceitar teorias e metodologias diversas sem considerar que abdica da sua objectividade científica. Adicionado a este debate teórico surge o momento actual, onde a Economia tem sido a ciência acusada de apoiar, suportar e legitimar as políticas liberais que conduziram às sucessivas crises, em particular devido ao domínio de um *mainstream* disciplinar que exalta a capacidade do mercado enquanto principal instituição do económico.

Esta é uma discussão antiga para redefinir a ciência económica mas que assume nova importância devido à crise financeira. Tem sido alvo de atenção renovada de revistas de referência como the Cambridge Journal of Economics, o Journal of Economic Methodology e mesmo na American Economic Review. Actualmente é cada vez mais evidente que a econometria, a ferramenta económica mais sublimada pela ortodoxia da disciplina, é sozinha, sem uma interpretação robusta, um instrumento fraco, principalmente se utilizada de forma despropositada (por exemplo, com dados pouco sólidos, com variáveis que não expressam os fenómenos que queremos alcançar, com modelos mal especificados, com inferência exagerada para a capacidade do modelo). Discutir a econometria não é duvidar da sua valia, da sua

utilidade ou da sua robustez. É principalmente por achar que a econometria é útil em muitos casos, que este artigo tenta compreender os seus limites, de forma a estar alerta e capaz de suprimir as suas falhas. O texto que se segue tenta ser uma defesa da econometria. Partindo da construção histórica tenta-se perceber como a econometria se afirmou enquanto técnica dominante na ciência económica. Seguidamente debatem-se aos pressupostos centrais da econometria mas também as suas forças. No final é introduzida a importância do pluralismo metodológico para analisar a complexidade do económico e diversificar abordagens metodológicas compatíveis com a cada vez maior aceitação de pressupostos heterodoxos na teoria *mainstream* para que se comece a estruturar uma Economia Satisfatória, capaz de explicar de forma relevante e precisa toda a complexidade do que é o económico.

2. ECONOMETRIA: UM POUCO DE HISTÓRIA

A revolução neoclássica procurava pensar a ordem social como mecânica, e ao contrário dos clássicos como Smith, Ricardo ou Marx que viam a Economia como ciência historicizada da relação social da produção e repartição do valor. Estes novos economistas, como Jevons, Edgeworth, Menger, Walras, Pareto, entre outros, esvaziaram a disciplina de conteúdos sociais com a "rigorização" através da quantificação e matematização. Vale e pena referir, como destacam Nelson e Nelson (2002) que a Economia antes da teoria neoclássica se afirmar como ortodoxia era eminentemente evolucionista e institucionalista. Adam Smith e Karl Marx discutiram temas que largamente excediam o escopo limitado do que hoje tenta ser explicado por teorias onde impera a racionalidade do *homo economicus*. A origem do valor, um problema em aberto na segunda metade do século XIX, foi superado com a revolução marginalista e a ideia de uma utilidade subjectiva, que cada agente sendo racional, tenta maximizar. Esses pensadores assumiam a primeira lei da termodinâmica como padrão matemático unificador: a maximização lagrangeana podia ser aplicada a um conjunto de átomos (os agentes), o individualismo metodológico no seu extremo, dando relevância ao conceito de equilíbrio, o ponto onde a dinâmica se colapsa (Louçã, 2003). A esta noção os economistas adicionavam, uma componente normativa, a ideia que este equilíbrio era o óptimo social, a situação onde os agentes atomizados movidos pelo seu egoísmo maximizavam a sua utilidade e desta forma a do colectivo que se resumia à agregação individual.

Quando a Física desenvolveu a segunda lei da termodinâmica, que resulta na noção da entropia (e não do equilíbrio como principal força do universo) e com a introdução do princípio da incerteza de Heisenberg os economistas mantiveram as suas convicções, não seguindo as mudanças nas ciências que inicialmente os inspiraram[1].

Vale a pena referir, que nesta altura, esta corrente neoclássica não conseguia vencer as suas oponentes: a escola histórica alemã, o institucionalismo americano e a tradição de Cambridge (de Alfred Marshall) mantinham uma forte adesão e robustez.

A mudança aconteceu com uma segunda geração de economistas. A sua motivação era combater os efeitos da recessão da Grande Crise de 1929 através de políticas voluntaristas, enfim actuar na realidade social. Provinham de áreas como a Matemática ou a Física. O seu programa centrava-se na econometria, um programa não neoclássico, na medida em que

1 A termodinâmica é baseada em leis estabelecidas experimentalmente (adaptado da entrada sobre Termodinâmica na Wikipédia http://pt.wikipedia.org/wiki/Termodin%C3%A2mica):
i) a Lei Zero da Termodinâmica determina que, quando dois corpos têm igualdade de temperatura com um terceiro corpo, eles têm igualdade de temperatura entre si. Esta lei é a base para a medição de temperatura.
ii) a Primeira Lei da Termodinâmica fornece o aspecto quantitativo de processos de conversão de energia. É o princípio da conservação da energia e da conservação da massa, agora familiar, : "A energia do Universo é constante".
iii) a Segunda Lei da Termodinâmica determina o aspecto qualitativo de processos em sistemas físicos, isto é, os processos ocorrem numa certa direcção mas não podem ocorrer na direcção oposta. Enunciada por Clausius da seguinte maneira: "A entropia do Universo tende a um máximo".
iv) a Terceira Lei da Termodinâmica estabelece um ponto de referência absoluto para a determinação da entropia, representado pelo estado derradeiro de ordem molecular máxima e mínima energia. Enunciada como "A entropia de uma substância cristalina pura na temperatura zero absoluto é zero". É extremamente útil na análise termodinâmica das reacções químicas, como por exemplo, a combustão.

supunha uma regulação e intervenção do Estado nas actividades privadas, abandonando a concepção de mão invisível. O programa centrava-se na refundação da Economia para o conhecimento rigoroso (e quantificado). Exemplos centrais destes pensadores são Tinbergen, Marshak, Lange, Koopmans, Neyman, Meade e principalmente Ragnar Frisch, o fundador da Econometric Society cujo lema era *"science is measurement"*. Estes nomes são particularmente proeminentes se os ligarmos à distinção Nobel (Neves, 1998). A Economia era vista como um instrumento de política contra o desemprego, geradora de conhecimento descritivo e normativo. As ferramentas teóricas anteriores da escola neoclássica estavam ultrapassadas e não tinham possibilitado evitar e combater os problemas da crise (Louçã, 2003: 597).

Existia nesta altura um muito importante debate teórico sobre a relevância da econometria. Por exemplo, Tinbergen criticou severamente *Business Cycles* de Schumpeter porque o livro era alheio à econometria, as variáveis relevantes eram os choques e não o mecanismo (Freeman e Louçã, 2004). Keynes em 1939, para criticar os excessos de Tinbergen, introduzia a metáfora da econometria enquanto alquimia [como referido por Swann (2006)]. Esta comparação englobava três vertentes distintas: i) o facto da econometria querer fazer uma transmutação de dados económicos reais (metais comuns) em parâmetros (ouro puro), ii) a econometria ser um elixir que aparentemente trazia honra, respeito e uma longa vida (académica) ao seu utilizador e, iii) o facto da econometria ser vista como um *alkahest* – um solvente universal que permite diluir (decompor) tudo.

Após a Segunda Grande Guerra, o objectivo da econometria passou a ser a criação de um modelo que permitisse através de um conjunto de equações estruturais substituir o mercado nas suas afectações. Para afirmar esta nova teoria económica era necessário utilizar um quadro referencial partilhado e disponível. O paradigma neoclássico estava disponível e permitia simultaneamente o rigor formal e a capacidade de cálculo das políticas (mesmo que tal tivesse como base as noções de equilíbrio e de agente atomizado). A utilização dos pressupostos deste referencial adicionada da transferência do centro da investigação econométrica da Europa para os EUA, aproximou a econometria mais de objectivos ligados ao mercado (Freeman e Louçã, 2004). Houve uma absorção pelo paradigma dominante da Economia Neoclássica dos instrumentos econométricos. Deste modo, a partir dos anos 50-60, com a síntese neoclássica (a compatibilização da microeconomia com a macroeconomia, o advento da IS-LM, a Curva de Phillips e a avaliação de políticas com base em modelos) fizeram os métodos econométricos prosperar. No final dos anos sessenta já Ragnar Frisch, o pai da econometria, era um céptico crítico do modo de como esta era utilizada.

As discussões em torno da ascensão e queda do monetarismo (cuja figura central Friedman defendia manter a estabilidade de uma economia capitalista através de instrumentos monetários, pelo controle do volume de moeda disponível), a crítica de Lucas (a ideia que os agentes antecipam as medidas de política económica e tomam decisões que neutralizam o seu efeito) levaram a um revigoramento e ao regresso ao modelo de equilíbrio geral criando os alicerces uma Economia (ao nível da investigação mas também transposta para o ensino) abstracta, alheada da realidade e da complexidade, das redes, das relações humanas e descontextualizada territorialmente e temporalmente. Novos desenvolvimentos têm-se mantido fora do *core* da disciplina, ou seja, a introdução da dinâmica temporal (evolucionismo) ou territorial (ciência regional) têm sido objectos de fronteira largamente desprezados pelos economistas da ortodoxia da disciplina.

Várias posições críticas a esta postura da Economia enquanto ciência são conhecidas. Vale a pena relembrar, a título de exemplo, o discurso de aceitação da distinção Nobel de Trygve Haavelmo (1997: 15) onde este eminente econometrista da segunda metade do século XX referia que as teorias económicas não eram suficientemente boas principalmente por começarem sempre de um inadequado individualismo metodológico. Ao começar a estudar o comportamento dos indivíduos sob determinadas condições de escolha, o modelo

de sociedade era criado a partir de um processo de agregação que parecia ser um princípio errado. Começar pela sociedade existente, o seu conjunto de regras e regulações, era segundo Haavelmo, mais adequado para compreender os resultados económicos. Esta tensão entre o individualismo e colectivismo metodológico é um dos grandes hiatos entre a Economia e outras ciências sociais, mas que hoje parece, depois de bastante debatida, ultrapassada com a introdução da noção de causalidade descendente reconstrutiva por Hodgson (2002), compatível com outras propostas, por exemplo nos debates da agência-estrutura de Lawson (2005, 2003).

3. O QUE É E PARA QUE SERVE A ECONOMETRIA?

Talvez seja útil tentar perceber o que é a econometria numa aproximação despretensiosa. A econometria é uma disciplina que resulta da incorporação de conhecimentos de vários ramos da Economia, da Estatística e da Matemática. Literalmente econometria significa *"medir a Economia"*. É utilizada em vários campos da Economia Aplicada para testar teorias económicas, informar os decisores políticos e até prever comportamentos futuros. Os modelos econométricos podem ser suportados por teorias económicas formais mas outras vezes opta-se por inserir várias variáveis e procurar enquadrar as que são mais relevantes para a relação em análise. Actualmente a utilização de modelos econométricas transcende o estudo da ciência económica. É utilizada, por exemplo, na Meteorologia, na Genómica, na Biologia, na Ecologia, na Ciência Politica e até (cada vez mais) na Sociologia[2]!

O objectivo da análise econométrica é a estimação de parâmetros das relações entre variáveis dependentes e independentes articulando dados empíricos (não experimentais ou observáveis), testando hipóteses sobre esses parâmetros, os valores e os sinais, a validade de teorias económicas e efeitos possíveis em políticas públicas. A econometria procura ajudar a estabelecer regularidades no económico (a visão do estabelecimento de leis gerais deve ser totalmente recusada enquanto meta da econometria) uma vez que tal finalidade parece desadequada face às características do económico onde leis "naturais" nas ciências sociais não resistem à agência humana. A análise econométrica auxilia na identificação de variáveis relevantes em determinado processo, na comensurabilidade dos efeitos (multiplicadores) e na tentativa de previsão de comportamentos e tendências.

A natureza dos dados condiciona largamente o tipo de análise que se pode efectuar. Um conjunto de dados contendo observações de múltiplos fenómenos observados num único momento do tempo é chamado de corte seccional (*cross-sectional*). Em dados de corte seccional, os valores dos dados têm importância mas a sua ordenação não. Se o conjunto de dados contém observações de um único objecto observado no tempo repetidamente é chamado série temporal (*time series*). Em dados de séries temporais, quer os valores quer a sua ordenação têm importância. Um conjunto de dados contendo observações de múltiplos fenómenos ao longo do tempo é chamado de dados de painel (*panel data*). Enquanto as séries temporais e o corte seccional são unidimensionais, os dados de painel são bidimensionais. Os dados de painel, por vezes chamados de dados longitudinais ou séries temporais de corte seccional, são conjuntos de dados com múltiplos casos (pessoas, empresas, países, etc.) observados em dois ou mais períodos. Existem dois tipos de informação que as técnicas de regressão para dados de painel são adequadas a analisar: i) as diferenças entre os vários indivíduos; e, ii) as mudanças de comportamento ao longo do tempo.

2 Na European Sociological Association Conference (ESA, 2009) eram muitas as comunicações que importavam a modelação microeconométrica para explicar determinantes no comportamento dos indivíduos utilizando implicitamente noções da teoria da escolha racional e de ceteris paribus que tantas vezes são criticadas pelos sociólogos. Por vezes os modelos apresentavam graves problemas que até um aluno de econometria inicial conseguia detectar, como baixíssimos coeficientes de determinação entre 0,1 a 0,2.

Tentar responder a uma pergunta do económico com base num modelo econométrico poderia ter como passos genéricos os seguintes:

1. Formulação do problema (as perguntas de partida, o que se quer afinal saber).
2. Recolha de informação (fontes primárias ou secundárias) e transformação dos dados (e.g., agregação) e problemas (*missing data*).
3. Escolha do modelo econométrico (*cross-section*, *time-series*, *dados de painel*).
4. Análise empírica (estimação de parâmetros), diagnóstico (qualidade geral do modelo, coeficiente de determinação (R-quadrado), especificação do modelo, linearidade nas relações entre variáveis, normalidade dos resíduos; auto-correlacção, heteroscedasticidade, estacionaridade), análise dos multiplicadores.
5. Modificações ao modelo (com base nos testes efectuados propor mudanças de forma a robustecer o modelo).
6. Responder à pergunta inicial com base na interpretação do modelo.

Este processo é assolado por dois problemas colossais.

O primeiro é o desinteresse de muitos econometristas e economistas aplicados pelas seis fases do processo. Na verdade a atenção está eminentemente focada no ponto quarto e cinco. As análises econométricas muitas vezes não precisam o que querem discutir nem respondem às perguntas após a modelação estar concluída. Assume-se que o modelo explica-se a si próprio.

O segundo é que comummente a modelação de determinado processo é efectuada do particular para o geral, ou seja, uma abordagem *Theory-First*, na qual o investigador constrói um modelo com poucos parâmetros, e aplica-lhe uma bateria de testes de diagnóstico. De acordo com os resultados destes testes ele decide acrescentar novas variáveis explicativas, até ter um modelo que considere adequado. Esta aproximação à modelação é muito criticada porque os investigadores acabam por mostrar somente aqueles modelos que lhes parecem aceitáveis do ponto de vista teórico e estatístico, omitindo os resultados intermédios. Desta forma um conjunto de dados pode ser manipulado repetidamente até que um modelo é estimado de acordo com os pensamentos *a priori* do investigador. Pessoas diferentes com os mesmos dados podem terminar com modelos completamente diferentes. Começar com uma teoria e insistir que a realidade se deve comportar desse modo é possível mas completamente errado. O investigador pode "torturar" os dados até ao limite. No final os dados confessam sempre o que o investigador quiser ouvir.

A construção de um modelo econométrico deve basear-se na modelação do geral para o particular, ou seja uma abordagem *Reality-First*. A selecção dos dados deve ser baseada em relações económicas alargadas sem as restringir a uma direcção pré-especificada. Esta abordagem defende a utilização estrita dos princípios econométricos e estatísticos como critério para a selecção de um bom modelo. Fica assim facilitada a descoberta de novas relações e a validação de teorias anteriormente propostas. A modelação do geral para o particular baseia-se na estimação de um modelo sobre-parametrizado que englobe o processo gerador de dados, e que permita passo a passo ir eliminando as variáveis irrelevantes. A subjectividade da análise é muito menor e os resultados alcançados são criados sem influências dos entendimentos *a priori* do investigador sobre qual a forma final que o modelo irá tomar. Este método tem dois pressupostos essenciais, a simplificação, ou seja, eliminar variáveis não significativas criando um modelo mais reduzido e avaliação, o modelo final deverá ser sujeito a uma bateria de testes que confirme a sua correcta especificação e adequabilidade. Colander et al. (2009) e Juselius (2009) asseguram que este tipo de abordagem mantém-se largamente ajustado para contribuir para a explicação da complexidade no económico principalmente num contexto de crise económica e de crise paradigmática na Economia como o que se vive actualmente. Estes autores destacam como determinados modelos econométricos, como os modelos cointegrados VAR (Vector Autoregressive) são capazes de detectar padrões por detrás dos dados empíricos e ser um ponto de partida para uma abordagem que comece no que

acontece no mundo real. Estes modelos permitem também corrigir a não-estacionaridade na modelação económica, um problema comum e amplamente ignorado pelos investigadores, como refere Juselius, que está na origem da criação de regressões espúrias e introduz grandes dúvidas na utilização de assumpções como o *ceteris paribus* ou na modelação baseada em pressupostos de expectativas racionais.

Quadro 1 - Princípios e Corolários na Modelação Econométrica

Princípio	Corolário
Coerência dos dados	São os dados que determinam a estrutura dos modelos
Parcimónia	Especificações simples são preferíveis a complexas
Encompassing	O modelo ser capaz de explicar os resultados de outros modelos rivais
Consistência com a teoria económica	Modelos que invertam regularidades anteriormente estudadas merecem um segundo olhar atento
Consistência dos parâmetros	Os parâmetros devem manter-se adequados ao longo do tempo e entre indivíduos

Fonte: Elaboração Própria

O bom senso sugere em relação ao uso da econometria cinco princípios (quadro 1) que ilustram muito do que resulta de uma abordagem baseada na realidade:

- os dados ocupam um lugar central na criação do modelo que tenta compreender determinado processo;
- um modelo curto é preferível a um modelo mais complexo (de acordo com a existência de racionalidade limitada);
- um modelo para ser melhor que outro deve também conseguir explicar todos os resultados que o modelo alternativo tem; e,
- devem existir consistências inter-temporais e inter-unidades analíticas de modo a não surgirem casos completamente contraditórios.

Depois de introduzidos alguns dos princípios basilares da análise econométrica a próxima secção discute algumas limitações e críticas à econometria e apresenta a forma de superação desses limites.

4. LIMITES E CRÍTICAS À ECONOMETRIA: COLOCANDO A ECONOMETRIA NO SEU LUGAR

Hoje a Economia (Aplicada) é dominada pela econometria. Os métodos alternativos foram sendo menosprezados uma vez que existe a visão da econometria como dominante em termos de aplicabilidade, rigor, eficiência e precisão.

Swann (2006) apresenta as quatro principais razões para considerar a dominância de uma única técnica como um aspecto negativo para a Economia:

1. Não são os economistas que detêm o monopólio do conhecimento económico – os actores (*vernacular economics*) e outras áreas científicas também apresentam contributos válidos.

2. A econometria é necessária mas não suficiente para perceber o económico – existem fenómenos económicos que pela sua natureza, por exemplo, o tipo de informação não quantitativa, não podem ser analisados por este instrumento.
3. A excessiva especialização não promove o diálogo e pode não ser útil em termos de avanço científico – as áreas de fronteira são normalmente mais susceptíveis de mudanças e de fertilização cruzada quando comparadas com o *core* de determinada disciplina.
4. A econometria não é adequada para todas as actividades de investigação – é necessário ter vários tipos de taco para diferentes tacadas.

A Economia para ser aplicada deve ser aplicada no sentido (mais comum) em que é baseada em dados reais e no sentido em que é utilizada por outros. Esta última questão introduz a questão dos dados. A econometria baseia-se em dados de fontes diversas recolhidos na maior parte das vezes por não economistas com quadros mentais distintos. Se a análise económica for iluminada por dados reais então será útil a mais pessoas e deste modo mais pessoas vão estar estimuladas a recolher dados que possam ser relevantes em termos económicos e, deste modo, mais e melhor análises poderão ser feitas – é um círculo virtuoso muitas vezes quebrado.

Sintetizam-se seguidamente várias críticas que têm sido dirigidas à econometria:

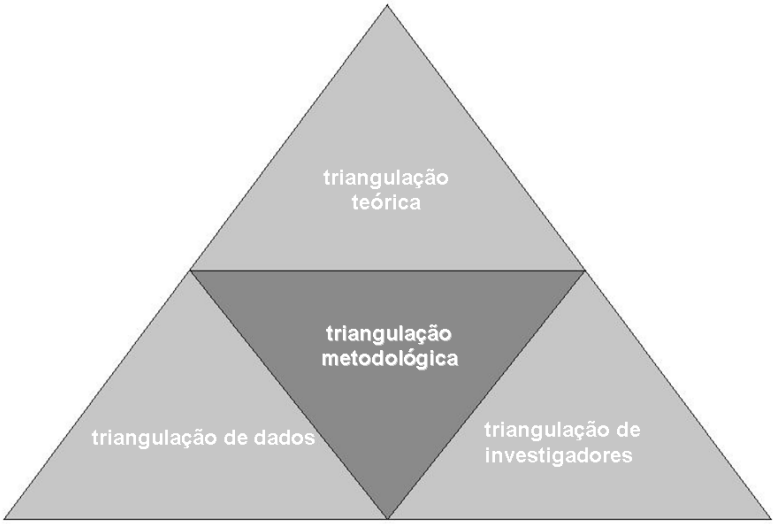
- A Economia não é uma ciência natural – por isso não pode estudar o seu objecto da mesma forma que a Física, abstraindo-se da agência humana;
- A econometria é uma ferramenta com falhas – apesar de estas estarem a ser constantemente ultrapassadas pelos novos desenvolvimentos teóricos a prática comum ignora ainda muitas destas limitações;
- A econometria tem um domínio restrito – não é uma ferramenta universal e não deve ser utilizada em todos os tipos de problemas, principalmente aqueles cujas dimensões analíticas são difíceis de expressar em variáveis que a ferramenta possa trabalhar;
- A econometria perdeu a noção do método científico – ao enfatizar a matemática e ao esquecer-se da importância da recolha de dados. Trata-se, no máximo, de uma revolução metodológica e não substantiva como defendiam os primeiros econometristas;
- A econometria origina uma incapacidade treinada – está a estimular a produção de determinadas competências nos investigadores e nos estudantes que ficam tecnicamente capazes mas com pouca competência de entender a realidade económica e atrofiados na capacidade de julgamento e de intuição;
- Promoção do isolamento da Economia – ao potenciar uma excessiva divisão do trabalho que a afasta do conhecimento gerado pela *vernacular economics* e outros cientistas sociais;
- Existência de rendimentos decrescentes à escala – se o custo de fazer regressões é muito baixo e de utilizar outros métodos é mais elevado, é normal que comecemos a fazer cada vez mais regressões que custam pouco mas que também valem pouco;
- Inquietação generalizada – mesmo sem saber bem porquê a econometria desenvolve desconforto junto dos especialistas e dos não especialistas.

Estas críticas podem ser respondidas mas nem todas de forma satisfatória. A maioria dos econometristas consegue dar resposta robusta a muitas destas dúvidas afirmando que o método que foi utilizado não foi o mais adequado, a ferramenta é boa, o utilizador é que não sabe trabalhar com ela. Existem no entanto evidências que a utilização da econometria é um campo fértil para enganos e desenganos. A questão é se será mais do que outras componentes científicas. Ziliak e McCloskey (2004) analisando duas décadas de publicação econométrica na American Economic Review sublinham que parte substancial dos estudos apresentados não cumpriam pressupostos fundamentais da econometria, não discutiam os resultados e não diferenciavam a significância estatística de significância económica.

Para colocar a econometria no seu lugar temos então de aceitar que a econometria tem um lugar que é dela. No entanto, as críticas à econometria são consistentes porque os seus defensores comportam-se demasiadas vezes como se as suas técnicas fossem universais quando

de facto não o são. Se aceitarmos também métodos mais qualitativos provindos de outras ciências (como os estudos de caso) e o conhecimento informal da *vernacular economics* (o senso comum, a intuição, a introspecção ou a metáfora) podemos suprimir largamente as restrições e a distância da econometria à realidade. No entanto, se usarmos métodos complementares para ocuparmos as falhas deixadas pelas técnicas econométricas, estas limitações dificilmente serão muito relevantes (Swann, *ibidem*: 44). Swann introduz uma metáfora interessante, a econometria como triangulação, de medir as localizações de objectos muito distantes com o mínimo de deslocação (os princípios da trigonometria introduzidos por Frisius em 1533). A triangulação foi um método na época muito aplaudido cujas limitações são hoje evidentes, requer grande precisão nas medições, em particular, quando a base do triângulo, o ponto de partida, está muito distante do objecto. Esta triangulação sugere outra triangulação (figura 1), defendida pelo autor, a necessidade de utilizar vários instrumentos, métodos e teorias para encontrar resultados mais robustos ou paradoxos.

Figura 1: Tipos de Triangulação



Fonte: Elaboração Própria

Existem vários tipos de triangulação: i) a triangulação de dados, envolvendo tempo, espaço e as pessoas: ii) a triangulação de investigadores, que consiste na utilização de vários, e não um único observador, iii) a triangulação teórica, que consiste em utilizar mais de um esquema teórico na interpretação do fenómeno e, finalmente iv) a triangulação metodológica, que envolve mais do que um método.

Sheila Dow (2007) defende a pluralidade teórica e metodológica, introduzindo uma visão cínica sobre a Economia quando demasiado centrada no formalismo matemático e na abstinência da ideologia. Dow mostra evidências do pluralismo na Economia. As noções de racionalidade e incerteza tornam-se mais complexas o que permite pensar a Economia enquanto sistema aberto no qual é impossível basear os modelos em mecanismos causais absolutos uma vez que analisa a acção humana com toda a imprevisibilidade que lhe está subjacente. As novas metodologias devem reflectir o modo como a construção da realidade é efectuada pelo investigador. Para a autora a Economia actual tem permanecido por demasiadas vezes ligada a um carácter demasiado tecnocrático, onde uma abordagem monista levou a que os economistas nem necessitem justificar os métodos que utilizam, um desapego pela justificação metodológica em época de domínio da ortodoxia. O formalismo matemático tem sido muitas vezes o traço identitário do que é a Economia mas tem sido

igualmente introdutor de uma abordagem única. Sheila Dow sugere que analisar a Economia à luz de conceitos introduzidos pelos Estudos Sociais da Ciência pode ser relevante para introduzir a questão da reflexividade na própria disciplina económica. O pluralismo que vai emergindo na Economia permite uma diversidade de ideias que consolida o seu próprio edifício científico. Tal como a diversidade genética reforça um organismo vivo protegendo de ameaças exteriores a variedade teórica e metodológica permite responder de forma mais satisfatória para compreender os fenómenos económicos. Apesar de Sheila Dow defender o pluralismo, não acredita que vale tudo e sugere muito cuidado com o *anytthing goes*. A fertilização cruzada é um aspecto positivo para robustecer uma ciência mas é necessária ainda maior atenção ao rigor e à imprecisão (que podem surgir neste contexto com significados distintos).

Victoria Chick (1998) apresenta dois argumentos muito importantes a favor da pluralidade dos métodos. O primeiro é que o formalismo existente é demasiado confiante nos seus métodos, que não são tão robustos nem independentes do utilizador como os seus defensores advogam. O segundo é que os métodos formais não são precisos. A imprecisão que os métodos mais formais parecem eliminar apenas acontece na teoria, porque o objecto, o económico, continua tão vago e complexo como com qualquer outro método. Os métodos são largamente dependentes de escolhas *a priori* do investigador. Por exemplo, a utilização comum de análises estáticas elimina completamente a noção de evolução e de mudança, enquanto as análises de séries temporais acabam por focar esse caso em estudo como um sistema fechado e independente. A noção de que existem desequilíbrios permanentes, que os sistemas estão em evolução constante, limita grandemente o sucesso dos quadros referenciais dominantes. Para resolver esta contradição Chick defende a abertura dos sistemas. Os sistemas abertos têm dependências da trajectória, são não-ergódicos e podem não exibir nem regularidades nem equilíbrios. Neves (2007) propõe uma ideia complementar de pluralismo na Economia que promova a discussão e a permeabilidade com outras disciplinas científicas e com a sua envolvente, enfim um sistema aberto que permite a absorção de novas ideias e conhecimento através de uma série de barreiras semipermeáveis.

Prigogine e Stengers (1984)[3] citados por Chick mostram como estes problemas relacionados com uma visão estreita de objectividade já foram tidos em conta nas ciências consideradas mais duras e que tanto serviram de inspiração à Economia:

> *"Both at the macroscopic and microscopic levels, the natural sciences have […] rid themselves of a conception of objective reality that implied that novelty and diversity had to be denied in the name of immutable universal laws. They have rid themselves of a fascination with a rationality taken as closed and a knowledge seen as nearly achieved. They are now open to the unexpected, which they no longer define as the result of imperfect knowledge or insufficient control."*

A investigação económica deve ter em conta duas noções centrais: a exploração e a composição. A exploração refere-se a entrar em domínios desconhecidos e desconfortáveis mas que permitem o entendimento mais profundo do económico. Essa exploração deve acontecer utilizando um conjunto alargado de instrumentos e abordagens que permita responder à diversidade de dimensões e objectos, a composição. Esta multiplicidade de aproximações garante uma dissociação, o pensamento em vários planos, muitas vezes na génese do pensamento criativo e de avanços teóricos e metodológicos. Onde a econometria falha o economista aplicado deve ter instrumentos alternativos que permitam alcançar resultados úteis e explicações satisfatórias da realidade, mesmo que resultem inicialmente em paradoxos. A pluralidade é especialmente interessante quando as técnicas são muito distintas, compensando-se em forças e fraquezas; por exemplo, a econometria é forte onde os estudos de caso fracassam e vice-versa. Mesmo as previsões, um dos elementos mais criticados

3 Prigogine, I and Stengers, I., (1984) Order Out of Chaos: Man's New Dialogue with Nature, London, Heinemann

pelos opositores da econometria, se bem feitas, são muito importantes na análise económica. No curto prazo as previsões econométricas são normalmente precisas. A grande dificuldade é perceber os momentos de viragem conjuntural. Neste caso é particularmente útil para ajudar as empresas na sua planificação. No longo prazo, os problemas das previsões são de natureza diferente, é possível prever que algo vai acontecer, por exemplo, a acumulação sistemática de défices externos sem investimentos na melhoria competitiva irá provocar uma crise, mas a dificuldade é saber quando, qual o momento preciso. De qualquer modo, estas previsões de longo prazo ajudam-nos a preparar para riscos que vamos enfrentar (Cardoso, 2008).

A pluralidade nos métodos é essencial para uma *Innovative Economics*, a visão de Swann (*ibidem*: 71) para uma ciência económica que garanta o diálogo com os campos adjacentes à Economia e uma fertilização cruzada. A ideia de uma *Innovative Economics* é convergente com a Economia Satisfatória que deve se conseguir impor como novo referencial da ciência económica (Pinto, 2008).

5. UMA TENTATIVA DE CONCLUSÃO

A distinção entre uma vertente positiva (pura) e uma vertente normativa da Economia é uma ficção desadequada. O domínio da Economia, o económico, é impuro (Reis, 2007). As empresas, os indivíduos, os países, as instituições, enfim aquilo que constitui o material, a textura do objecto da ciência económica, tem em si uma dimensão normativa *a priori*. Não é possível expurgar o conteúdo normativo da Economia e assumi-la como uma ciência positiva. A ideologia não pode deixar de ser relevante na Economia.

A objectividade continua a ser, para muitos economistas, dependente de aspectos basilares da Economia Ortodoxa, como o formalismo matemático ou a análise marginalista. Mas a objectividade está dependente da relação do sujeito e do objecto e não de determinado método. O método específico que se utiliza é apenas uma das questões a considerar para compreender o fenómeno. A objectividade da Economia não é posta em causa pelo seu carácter normativo. Não é possível retirar nem às empresas, nem aos indivíduos, nem aos países, nem às instituições os valores que condicionam a acção, que moldam o comportamento individual e se reflectem na performance económica. A visão tradicional de objectividade, importada das ciências naturais para as ciências sociais (Prpic, 2009) é largamente desadequada aos pressupostos centrais da Economia como a agência humana ou a não-ergodicidade. É necessário consolidar uma noção útil de objectividade para a Economia.

Vale a pena relembrar como o maior economista do século XIX e o maior economista do século XX participavam nestes debates. Apesar dos métodos quantitativos da época destes pensadores não terem o mesmo grau de sofisticação dos métodos actuais partem dos mesmos pressupostos. A agenda metodológica de Marshall e Keynes para analisar sistemas económicos complexos permitiu a Marchionatti (2002) sistematizar alguns pontos coincidentes. Os métodos quantitativos são instrumentos relevantes, não só úteis como necessários para ambos os economistas, mas que carecem de uma análise cuidada para generalizações, uma vez que a natureza do material económico é distinta de outras ciências. A matematização só é a abordagem adequada quando é coerente com as propriedades do sistema a analisar. A procura de resultados gerais para todas as situações é uma utopia, um estilo quase-formal é muitas vezes o mais apropriado para ligar conjuntos alargados de ideias associadas e onde uma mistura da intuição, julgamentos de valor, e capacidade analítica (senso comum treinado) é necessária para lidar com a interpretação da complexidade do económico.

Os instrumentos da Economia, como a econometria devem servir, antes de tudo para compreender o económico para que a boa vida a felicidade humana possam ser alcançáveis. A escolha do método depende da sua adequabilidade ao objecto em análise. As investigações

e previsões econométricas são muitas vezes as mais robustas e precisas, mas devem ser entendidas como uma imagem vaga do processo e não uma imagem de elevada resolução. Mesmo Krugman (1998: 1836) num artigo que pretende ser uma defesa do formalismo, acaba por mostrar que é importante deixar lugar na Economia para outras abordagens: *"In short, two cheers for formalism – but reserve the third for sophisticated informality."*

Todos os colectivos de pensamento têm as suas formas de se expressar, de socializar e integrar os seus membros. A econometria é umas das formas de partilha entre os economistas que continuará a subsistir e a consolidar-se mas que terá um papel mais modesto apesar de indispensável na Economia. A codificação excessiva pode ser estéril ao fechar o colectivo sobre si mesmo e pode ser uma forma de esconder os resultados da possibilidade de uma discussão mais geral e potenciadora de encontrar falhas no edifício científico. Latour (1987) mostra como esta é uma estratégia defensiva comum na produção de artigos na ciência. O *core* disciplinar de uma área científica como a Economia é caracterizado por um excessivo povoamento que encoraja o uso de jargão, debates intensos sobre ninharias e um trabalho seguro e rotineiro levado a cabo por uma alargada comunidade intelectual que protege a custo o *status quo* que obteve com o seu treino intelectual.

Existe na actualidade uma maior heterogeneidade teórica do que metodológica. A teoria económica está a deparar-se com uma série de novos desafios que poderão condicionar a evolução da disciplina. As escolas institucionalista e evolucionista têm evidenciado as limitações da ortodoxia da ciência económica. A crise dos mercados financeiros deixou também, à vista de todos, como os mercados, nem sempre funcionam, e como as instituições criadas com o Consenso de Washington, e alicerçadas e consolidadas por ideias da Escola de Chicago, falharam na promoção de uma globalização justa. Valerá a pena neste contexto tomar atenção às opções metodológicas que servem os economistas. Ao querer participar nesta controvérsia distancio-me das posições extremas de Tony Lawson (2009), que refere que a econometria ou outros métodos estatísticos são irrelevantes e que deveríamos eliminá-los. Como Juselius (2009: 11) afirma até Keynes apreciaria uma econometria bem aplicada:

> *"As Keynes was a scholar with a deep respect for the complexity of economic life, he would probably have been convinced that econometric models, when adequately used, are indispensable as tools for improving our grasp of the complicated economic life."*

Os métodos formais, como a econometria, têm o seu lugar numa Economia Satisfatória. Um lugar entre muitos outros métodos, da estatística multivariada, aos estudos de caso, ou a outras análises qualitativas. Temos de encontrar esse lugar.

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