Roles of regional, national and European policies in the development and catching up of Less Favoured Regions

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1. Introduction

One of the first goals of the CONVERGE project was to get a proxy explanation of the process of convergence in Europe. The present part of the report aims to analyse the influence of policies related to science, technology and innovation in the economic development of the Less Favoured Regions (LFRs) of Europe.

Different instruments and policies have been proposed to correct for the structural deficits that lead to gaps in convergence. On one side, experts propose measures relative to the main economic stream such as to introduce greater flexibility and liberalisation of the labour and service markets. Others propound the need of more innovation, R&D activities and civil infrastructures which implies the requirement of structural reforms in institutional, R&D and education policies.

By the same nature of the CONVERGE project, the work of the partners has focused on the analysis of the relevance of the innovation policies in their countries and regions for economic development, in agreement with the second line of initiatives that has been proposed above as an instrument for the catching-up of the less developed Europe.

Therefore, the present paper aims to analyse the outcomes of the innovation policies and their effects on catching-up under the comparative frame of what is being discussed, assessed and developed in Norway and the Alsace and Baden regions as a reference for a benchmarking exercise. The theoretical frame supporting the comparative analysis refers to the current concepts of "knowledge-based economy" and "systems of innovation" as both being considered good instruments to leave aside the idea of uniform process taking place in all countries and to

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understand the diversity of the transformation processes and the different paths followed by each country or region in their walk to the new economy.

1.1 Measurement and indicators

There are still great challenges of measurement to assess the value and efficiency of those concepts.

1.1.1Capacity for Innovation

The ability to measure the knowledge economy is still insufficiently developed as it directs attention to a variety of intangibles. Currently, the knowledge economy is measured by a number of old and new indicators (Remoe, 2000).

On the other hand, the main outcome of the System of Innovation is to create a (National or Regional) Capacity for Innovation which is able to influence the performance of the countries (or regions) in terms of growth, employment and competitivity.

The outcome of an effective Capacity for Innovation must be reached through the outputs of the basic elements or actors that built up the System of Innovation. The basic elements -public research organisms, scientific systems, firms, interface and support institutions- can be assimilated to the classical elements of the R&D systems -the science and technology part- whose inputs and outputs are being analysed with the conventional OECD indicators to which new indicators have been added to measure innovation performance, essentially thanks to the Community Innovation Survey.

1.1.2 New indicators. Cooperation.

These indicators have to take into account the shift in paradigm above from a linear model of innovation towards an interactive one as well as the increasing importance of SMEs in relation to their regional localisation.

A key feature of this new paradigm is the interactive learning. This behaviour has been always implicit in the realm of science base but has to be incorporated now in the behavioural strategies of firms.

1.1.3 Involvement of SMEs

SMEs are becoming an important player within the innovation systems concept. They are sharing an increasing part of the employment growth from the last decades as well as of the economic

wealth of countries and regions. Some confluent reasons may argue in explaining the situation. The SMEs are expanding in some specific sectors, classical manufacturing and new services. The growth of the small firms reflects rationalisation strategies and restructuring of large firms as an effect of the recessions from the 1970s onwards rather than the action of the small firms sector by itself. Third, the growth of the SMEs is also a reflection of the downsizing strategies of the large strategies that led to outsourcing to suppliers and subcontractors. According to the evolution of industrial organisation towards a more networked form, Isaksen and Remoe (2001) have underscored the increased need for cooperation between firms and knowledge producing organisations and the inadequacy of viewing SMEs "as a distinct group of firms and as a separate target group for innovation policy".

1.1.4 The relevance of regionalisation

The increasing involvement and relevance of SMEs in the performance of the innovation systems and their becoming an important target of innovation policy imply a greater importance of the regional level for the analysis of the innovation outcomes.

The need for intermediary organisations that may help in the transfer of knowledge and technology from universities and public research institutes to SMEs can be better satisfied through "local" organisations and "regional" policies.

The idea that innovation activity is a territorial phenomenon has been present in the literature on innovation and has gamed relevance with the notion of regional systems of innovation. As Isaksen and Remoe have stated (2001) the emergence of regional innovation policies and the development of systems of innovation has been laid out from the experiences and policy instruments of "success stories" - Italian industrial districts, Baden - Wurttemberg dynamism. In these cases, innovation in SMEs is seen as taking place around geographic clusters of small firms (OECD 1998 cited by Isaksen and Remoe, 2001).

1.2 Approaches to the identification of best practices in innovation policy

The recognition of the quality and relevance of innovation for the economic wealth of developed countries has led to searching for permanent "best practice" policy valid for each situation. This was an underlying aim of the CONVERGE project with the argument that this must be a recipe of policy instruments that would help to the LFRs for better succeeding in the process of catch-up.

However the analysis of the cases that we have explored at European, country and regional level reveals that the variety of geographical contexts, the organisation of the R&D base, the firms' abilities, attitudes, acting as forces and barriers towards innovation are preventing the finding of such "best practice".

European level

The SMEPOL project was carried out under the "Targeted Socio-Economic Research" programme as a collaborative project of 7 academic groups from Austria, Denmark, Italy, The Netherlands, Norway, Spain and UK. The project has attempted to answer several key questions relating the relevance of the policy instruments to theory, real needs from companies, correspondence between aims and instruments, efficiency of the instruments, achievements, impacts and level of coordination of the innovation policy instruments with the rest of the policy system (Nauwelaers and Wintjes, SMEPOL report).

The key message is that there is no "one-size-fits-all" policy portfolio. The regional differences in innovation capabilities are driving to the necessary blend of policy instruments and the development of "policy intelligence" as a means to obtain the best results from a confrontation between theory, ideas and reality.

On the other hand, the European Commission has been strongly involved in the promotion of the level of innovation in the European Union. The Green Book on Innovation published in 1995 rang the bell of the limits to innovation in Europe and represented a first step in that policy while proposing a wide field of action for innovation in the world of firms (Bulletin from EU, supplement 5/95). Along the year 2000 a series of publications made by the Directorate on Innovation, Unit on Communication and Public Awareness under the heading "Innovation and Transfer of Technology" have been echoing the relevant role of innovation for challenging the processes of globalisation and the new knowledge - based economy.

The Commission recognised that a policy for business (or industrial policy) should include today a strong bet for stimulating the innovation strategies and capabilities of firms, with measures or steps oriented to foster the creation and development of highly innovative firms, frequently associated to new technologies -"start ups", "spin-offs"-, the transfer of new ideas, knowledge and technology, as well as the settlement of an environment that may facilitate the thriving of firms.

The innovation policy from the European Commission had the guarantee of these conditions as its main goal. In spite of this endeavour, the global level of innovation within the European Union remains low and rather inadequate to compete with the two main competitors of Europe: United States and Japan.

The European Commission has recommended the application of learning processes of "best practices" as a way to improve the level of innovation capacities and to correct for the existing gaps. However the SMEPOL project has concluded on the difficulties to identify such "best practices" in a context of complexity showing the distance existing between wishes and realities.

Table 1. *European indicators on outcomes of innovation, and comparison of the CONVERGE countries by the European indicators of innovation with respect to European Union average*

N.	Description of indicator	Source / Year	EU	Norway	France	Italy	Ireland	Portugal	Spain
1	**Human resources**								
1.1	Proportion of graduates in science and technology in the higher education sector.	Eurostat (stastistics on education) 1997	37		31	32	39	28	32
1.2	Percentage of active population holding a higher degree	OECD 1996	13	19	10	8	11	7	13
1.3	Share of employment in medium and high technology industry[1]	Eurostat (R&D stastistics and Data on Employment) 1998	7.7		7.0	7.5	7.4	3.5	5.5
1.4	Share of employment in high technology services	Same 1998	3.0		3.6	2.6	2.4	1.4	1.9
2	**Knowledge production**								
2.1	Government (public) expenses in R&D as % of GDP (GERD)	Eurostat, OECD 1998	0.70	0.8	0.90	0.53	0.32	0.44	0.36
2.2	Business expenditure in R&D as % of GDP (BERD)	Eurostat, OECD 1998	1.20		1.38	0.55	1.03	0.14	0.44
2.3	Number of patents solicitors in high technology per million inhabitants	Eurostat, OECD 1998	14.9		16.3	4.2	0.9	0.0	1.7
3	**Transfer and application of knowledge**								
3.1	Share of industrial SMEs involved in innovation	Eurostat (Innovation survey) 1996	44.0		36.0	44.4	36.0	21.8	-
3.2	Share of industrial SMEs involved in cooperative projects	Eurostat (Innovation survey) 1996	11.2	15.6	12.0	4.7	23.2	4.5	4.6
3.3	Total expenses in innovation of the industrial sector as % of total turnover	Eurostat (Innovation survey) 1996	3.7	4.3	3.9	2.6	3.3	1.7	1.8

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[1] Medium and high technology sectors are: chemistry (NAAB 24), Office equipment (NAAB 30), electronic equipment (NAAB 31), telecommunications equipment (NAAB 32), optical and precise instruments (NAAB 33), automobile (NAAB 31), aerospace and other transport (NAAB 35).

4	**Financing of innovation, results and markets**								
4.1	Risk capital in technology firms (%GDP)[2]	Data of European Association of Risk Capital 1999	0.06		0.07	0.02	0.08	0.01	0.02
4.2	Capital investment in new markets (% GDP)	International Federation of Stock Markets 1999	3.4		4.7	1.1	0.4	0.2	-
4.3	Share of sales of innovations in the market of the industrial sector	Eurostat (Innovation survey) 1996	6.5	7.8	7.9	13.5	8.4	7.2	9.5
4.4	Share of Internet users per 100 inhabitants	Eurostat (International Union of TICs) 1999	14.9	37.8	9.7	8.7	11.8	7.0	7.2
4.5	Share of TIC Markets (% GDP)	European Observatory on Information Technology 1997	5.0		5.0	4.7	5.7	4.9	3.9
4.6	Changes in the share of the total production of OECD in high technology sectors	OECD 1996			-15	-12	-	-	-

Source: Innovación & Transferencia de Tecnología (número especial) Comisión Europea, Programa de Innovación/PYMES, Noviembre 2000.

Source: For Norway, Remoe (2000), for the other countries "La innovación en una economía del conocimiento", Innovación y transferencia de tecnología (Número especial), Comisión Europea, Programa Innovación/PYMES, Noviembre 2000.

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[2] The technology sectors include: telecommunications, internet, informatics, software, services, semi- conductors, other electronic components, medical supplies, biotechnology.

2. Analysis of policies. The comparative frame of the CONVERGE project

This part enters into the analysis of the practical policies that have been developed in some "favoured" regions to compare these dynamics with those taking place in the "less favoured regions of Europe" compared under the CONVERGE frame: Ireland, Italy, Portugal and Spain.

This analysis has attempted to go beyond the comparison in terms of the macroeconomic nature of the concept of "normal" convergence by exploring the effects of a series of related policies on the indicators that the European Commission has elaborated to compare the situation of innovation in Europe. The analysis presented here is two-fold. On the one side, there is a quantitative analysis of the positions of the countries with respect to those European indicators. On the second hand, a description of policies by using a common frame of the practical policies carried out by the countries regions studied under CONVERGE provides additional grounds to qualify the quantitative analysis and the relative position of the countries and/or regions.

2.1 Positions of CONVERGE countries in relation to innovation indicators

In order to dispose of instruments to compare the situation in innovation in Europe, the Council of Lisbon asked for the elaboration of a set of indicators. Communication (2000) C gave in an annex a first list of indicators, grouped into four categories as follows: human resources, production of new knowledge, transfer and application of knowledge, and financing of innovation, results and markets.

Table 1 offers a summary of these indicators which allow to carry out comparative analyses and collection of the results corresponding to the countries involved in the CONVERGE project showing the existence of disparities among them with no relationship between size and innovative capacity and skills as one small country, like Ireland, emerges as a relative highly innovative country according to these indicators, whereas big economies, within the frame of Europe, like Italy and Spain qualify poorly in this respect.

2.2 Mapping of the innovation capabilities of CONVERGE project countries and regions

Fig 1a and b presents a map of the countries position with reference to the four main group of indicators of innovation in Europe (table 1) as well as with respect to the two group of tools of second level that have been identified along the study (Héraud *et al.,* October 2000).

Fig. 1a registers the relative positions of the regions and countries studied in the CONVERGE project with respect to the institutional frame of technological support, as deduced from the application of two indicators, human resources and knowledge intensity and efficiencies (see table 1 for a detailed description of such indicators). These indicators are a reflection of the intensity and effectiveness of R&D and education policies essentially. Fig 1b illustrates the positions regarding

the functioning of the business sector on the basis of two indicators such as the behaviour of firms in innovation and the effects on market and uses of technology (table 1 offers more details on these indicators which in essence express the degree of influence of innovation and industrial policies). Among the LFRs, Ireland occupies the most positive position in general terms, in spite of her lagging in knowledge intensity and efficiency (share of scientific production and patents). The relative equivalent or better position of Spain and Portugal with respect to this indicator does not reflect in the innovation behaviour and success of their respective business sectors. The well known splitting between Northern and Southern Italy is once more put into evidence.

2.3 The case studies on the dynamics of policies

2.3.1 Policies under consideration for the "catching-up" process

The CONVERGE project has attempted to undertake a preliminary, though yet subjective, exercise in order to assess the influence of several policies (education/training, R&D, industrial and innovation) in a series of indicators related to innovation performance and growth, factors that may be helping to the catching-up of the Less Favoured Regions. This exercise has been carried out by taking into account the following definitions for each policy:
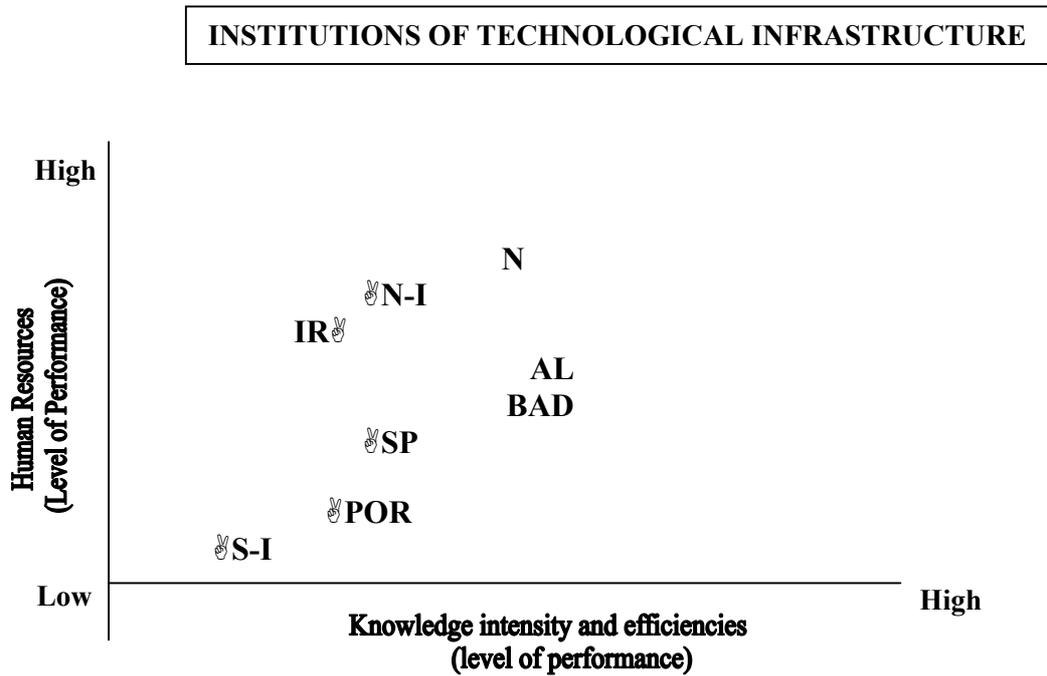
Innovation policy: refers to that policy addressed by funding innovation strategies or R&D projects of the firms aiming to apply science, basic knowledge and technology (tacit and codified) resulting either from internal activities or external collaboration with public research centres or universities. Example within the EU: Space, Energy and TIC sectors, former BRITE programme, Green Book initiative. Main indicators: innovation performance, firms behaviour.

R&D policy: aims to foster the promotion of science base, codified knowledge and infrastructure for research in the public sector and in the firms. Examples within the EU: Life Sciences, Health, Environment, could include part of the Structural Funds. Mains indicators: knowledge intensities and efficiencies.

Education and training policy: concerns those policies and actions addressed to foster development of the higher education sector with specific actions on the formation of graduates in science and technology, the promotion of postdoctoral exchanges as well as those of highly skilled people between countries or between institutions. Examples within the EU: Marie Curie scheme, Shared R&D projects. Main indicators: human resources

Industrial policy: refers to the instruments and tools aimed to drive industrial competitiveness, funds development and industrial projects from firms. It uses and develops IPR and fiscal incentives. Examples within the EU: Patents, common market Main indicators: market and technology structural changes in economy.

Fig. 1a . Position of the CONVERGE countries and regions with respect to their technological infrastructure as an indication of R&D and basic innovation capabilities.

INSTITUTIONS OF TECHNOLOGICAL INFRASTRUCTURE

High

Human Resources
(Level of Performance)

N

✌N-I

IR✌

AL
BAD

✌SP

✌POR

✌S-I

Low

High

Knowledge intensity and efficiencies
(level of performance)

Fig. 1b . Relative position of the CONVERGE countries and regions in relation to firms innovation behaviour and results as an indication of innovation effectiveness.

BUSINESS FUNCTIONING

High

Firms innovation behaviour
(Level of performance)

BAD
✌NI
AL ✌IR
N

✌SP
✌POR

✌S-I
Low

High

Market and technology
(Level of performance)
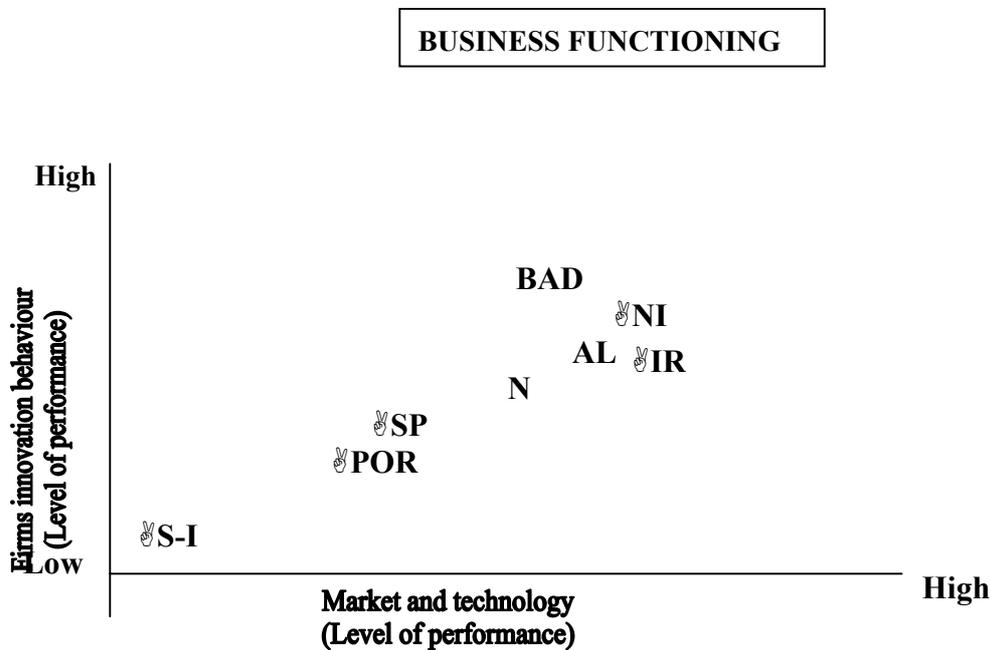
| N - Norway | AL - Region of Alsace | N-I - Northern Italy | POR - Portugal |
| BAD - Baden region | IR - Ireland | S-I - Southern Italy | SP - Spain |

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2.3.2 The case studies

For comparative purposes, the dynamics of the policies has been analysed according to a following common frame exploring the arguments underlying the establishment of policies, their goals, who and what have been the main stakeholders as well as the outcomes of those policies and instruments. This provides grounds to justify the position of the countries and regions in fig. 1a and b as well as to assess the policies impact.

The case of Norway

The paper from Norway (Isaksen and Remoee 2001) evaluated three policy tools; TEFT (Technology diffusion from research institutes to SMEs); RUSH (Regional development between state owned colleges and SMEs) which has in part been carried out in the form of REGINN (Regional innovation systems); and NT (The innovation and new technology programme in Northern Norway). The information beneath concerns these three policy tools

a) Arguments underlying the establishment of the tools

TEFT: The basic argument was the perceived need for firms to enhance their technological capability. SMEs (in Norway firms with less than 100 employees) in particular were the target group, as these usually have weak internal resources and a low capability to handle technological development on their own. These firms therefore need increased contact with R&D-institutions to enhance their competence and innovation activity. Collaboration between SMEs and research institutions, however, was seen to be filled with barriers (regarding competence and 'culture'). Thus, broker were seen as needed to link research institutions and firms, leading to establishing the technology attaché system in the TEFT programme.

RUSH: The arguments behind RUSH resemble those of TEFT of strengthening the innovation capability of SMEs. The idea was to develop a organisational model that could provide the regionally based colleges in Norway with the means to interact better with the regional industry, and thus be an important node in a regional innovation system. The programme founded only the efforts of the colleges to change their way of behaviour, i.e. stimulate the college staff to enter into contact and development work for regional based firms. Project in firms had to be funded from elsewhere. Behind this effort to strengthen the role of colleges was also the idea that these institutions were seen as under exploited as instruments for regional economic development. Experiences from the Steinbeis Stiftung in Germany was seen as good lessons in transforming the colleges to be more actively engaged in regional industrial development.

RUSH was an experimental programme, lasting for 4 years (1994-98), and covering only 4 colleges. The REGINN programme, initiated in 1997, took over the mandate of RUSH, covering the

whole country and both regional colleges and research institutions. Still the argument was to increase co-operation between regional knowledge organisations and the industry, however, REGINN targeted specific industries or clusters in a region.

NT: The programme targets industry in Northern Norway. This region has a comparatively traditional industry, with a low level of R&D. In the mid 1980s a committee was set down to propose a strategy to develop Northern Norwegian industry, which focused strongly on growth through R&D and innovation. The NT programme was the main initiative that was implemented from the plan of the committee. Thus, the main argument was to raise the R&D-intensity and innovation activity in Northern Norwegian firms as a way to develop the region

b) Goals

All the tools aim to stimulate different aspects of innovation activity in firms, most notably technological innovations. All the tools also aim to stimulate co-operation between R&D milieus and firms (mostly SMEs). RUSH and REGINN aim to stimulate co-operation between firms and regionally located research organisations and regional colleges, TEFT aims to improve collaboration between SMEs and five largest technological research institutions in Norway, while NT aim to strengthen contact between what the programme denotes as 'centres of competence' in different parts of Norway and abroad and firms in Northern Norway.

More specific aims:

TEFT shall develop firms' ability to become a continuous customer of the R&D system (at least 25% of the firms that have concluded a technology project in TEFT shall within 2 years contract new service from a research institution), and help R&D institutions to reorient themselves towards activities more relevant for SMEs.

RUSH shall generate 'additionality' in the colleges, i.e. contribute to improved business relations beyond what the colleges would engage in anyway. The goals were related to mobilisation of college staff in projects for regional industry and the number of students' projects. REGINN is explicitly aimed at contributing to improved co-ordination between all the existing knowledge institutions in an area, as well as other policy technology and policy instruments, in stimulating increased innovation capability in important industries or clusters in the region.

NT shall contribute in developing the best firms in Northern Norway by investing capital, contribute with competence as well as develop networks between firms and between firms and knowledge institutions.

c) Main stakeholders

The initiative for the TEFT programme (and its forerunner) came from the demand side, i.e. the largest technological research institution in Norway (SINTEF). The idea was a support programme to enhance the transfer of technology from SINTEF itself to SMEs. The initiative may be seen in the light of the criticism meeting SINTEF (particularly in the 1980s and beginning of 1990s) of being too much oriented towards big firms and of little value for Norwegian SMEs. SINTEF may also be in need of new customers as the institution have a rather low basic funding. The programme, and the development of it, was (and is still) supported by the Ministry of Local Government and Labour and the Ministry of Trade and Industry.

RUSH: The initiative came from the Norwegian Industrial Association, and the idea developed in co-operation with this Association and the Norwegian Research Council. In particular the Norwegian industrial attaché in Stuttgart in Germany brought back the idea of the Steinbeis Stiftung. The development of the following REGINN programme were initiated by the Ministry of Local Affair and Labour and the Norwegian Research Council.

NT: The main stakeholder was the Ministry of Local Government and Labour, responsible for regional development in Norway. The responsibility to implement and develop the programme was given to the Norwegian Research Council and the Norwegian Industrial and Regional Development Fund. An independent programme secretariat was set up in Northern Norway that has been very important in developing the programme since its start in 1987.

d) Main outcomes

Typical outcomes of the programmes are:

TEFT: Improvement of existing product, development of a new product or improved production technology in the firm as the result of a joint project between the firm and researchers. The co-operation between the firm and the research institution sometimes continues in new innovation projects (about 30% of the firms engage in a new procurement from their own initiative with 2 years after completion of a technology project).

RUSH/REGINN: Development of new process technology, organisation methods, knowledge etc. jointly between a local network of firms in the same industrial sector and a regional college or research institution. The project will also likely lead to more extensive and closer collaboration between the firms and the college/research institution in the future. The RUSH programme to some extent managed to mobilise more college staff to enter into project for the regional industry. The concrete results of this interaction has not been assessed, however, it seem to be fairly meagre.

NT: Introduction of a new product or process on the market, resulting from a project co-financed by the NT programme. NT staff often acts as broker to couple the firm with research institutions and other firms in accomplishing the project. The programme seems to be successful in hitting its target group of quite resourceful firms, increase the innovation activity and capability in these firms, which result in new innovations on the market. This is achieved with a comparatively high cost per project.

e) General assessment

Norway is a country that has been evolving a good position in the wealth context taking profit of its geographical position, natural resources and a relative strategy of education and innovation support to SMES; it reveals good performance in relation to human and innovative behaviour of the firms. However there are limits in the R&D base and in the market success of the firms.

The cases of ALSACE and BADEN

This study is centred in the case of Alsace. Baden is considered a reference for comparison.

a and b) Main goals and arguments underlying the establishment of policies

ALSACE.

Alsace is relatively rich (in GDP per head and household income) and has a good level of technological knowledge and general education for European standards. A significant contrast with neighbouring German regions like Baden can nevertheless be observed, mainly in terms of technological output (as measured with patents statistics for instance) and firms' strategic power, including innovative behaviour which is traditionally very strong in the South-West of Germany - at least in the second half of the XXth century.

- Academic institutions are strong. ITIs located in Alsace are relatively specialised in basic research. This scientific supply does not match ideally with the local knowledge demand, since regional economic activities are not often "science-based". Thus, Alsace has no real *regional system of innovation.* Important elements of innovation system, like public labs or branch plants, are located wihin the regional territory, but these actors are not regionally linked in a coherent system.
- Business attitudes are positive towards incremental innovation and international development. The typical Alsatian firm is a relatively efficient SME in a "medium tech" activity. There are also a lot of (sometimes large) branch plants depending on external (national or international) governance, drawing their knowledge and strategic factors from networks that are external to the region.
- The regional institutions have always strongly favoured Direct Foreign Investment (FDI), and this policy revealed very successful. As a result, industrial activity and employment are satisfying (for

French standards). But strategic decisions are less and less taken at the region's level: Alsace tends to be a *medium tech production platform*.

Then, in terms of innovation policy, the *goals* are:

- *increasing involvement of science:* inciting university labs and other ITIs to develop more contacts with firms, to transfer technology and knowledge, to take into account the social and economic environment when designing their research strategy;

- *networking the firms for innovation*: inciting SMEs, particularly in traditional sectors, to regroup and develop collective strategies; they are supposed to learn innovative attitudes with the help of ITIs (typically: interface organisations between public research and industry, like CRITT specialised in new materials, lasers, production technologies, etc.) but also by co-operating with other firms ("filieres" policy for instance).

- *transfer of technology through transfer of personnel*: transferring S&T knowledge to a SME is often difficult insofar as such knowledge is in a complex codified form; psychological attitudes within the firm (also at the head) add to the difficulty of the transfer; the right way to induce such innovative learnings (learning technologies, and learning to learn which means accepting innovation) goes through the transfer of personnel: in the case of a traditional Alsatian firm, younger technicians appear to be the ideal vector (CORTECHS procedure), rather than engineers or scientists.

- *exogenous development*: maintaining ambitious FDI policy in order to help renewing the industrial fabric.

BADEN

The region belongs to the powerful Land of Baden-Wurtemberg, in the midst of the European industrial and innovative core. S&T level is high, thanks to firms' as well as ITI's activities. A long tradition of intermediation organisms and a clever governance strategy have helped to link actors into a real regional innovation system. The knowledge basis and knowledge production are relatively applied in nature. This leads to very good results in medium technology activities, but concerns are increasingly quoted in the field of new science-based domains like biotechnologies, NICT, etc. Is the Baden-Wurtemberg traditional innovation system (including mental attitudes) fit for the new vintage of innovative sectors? The educational and training system has been very efficient until now, but starts showing some drawbacks: too strong professional identities, leading to insufficient flexibility and difficulties to organise necessary business reshaping or adapt to technology fusion (in nanotechnologies for instance).

In comparison with Alsace, we can consider the following specificities:

- noticeable efficiency of traditional institutions like *Steinbeis Foundation,* in informing and supporting firms for innovative projects; it is not easy to imitate such a model, since institutional setting is quite different in a French region, that has developed local applications of standard models of institutions and procedures designed by the central State; but it is worthwhile noting that *Steinbeis* started recently to operate in Alsace, in co-operation with local institutions.

- more important role of KIBS (knowledge intensive business services) in sharing and capitalising innovative knowledge between actors; these private firms significantly contribute to the efficiency of the innovation system in Baden; one policy recommendation for Alsace could be to help indirectly firms through supporting KIBS' creation and development;

- the policy has been more focused on firms' creation than on supporting existing firms; this is the way chosen for renewing the economic environment and changing general attitudes towards radical innovation; this is also possibly a political orientation to favour in Alsace.

c) Stakeholders

The stakeholders in the process of design and implementation of the policies are in a typical multi-level space in the case of a French region like Alsace: to a significant extent, the policy is designed in co-opearation (or negociation) between regional institutions and State organisms. Policy setting is completely different in Germany since innovation policy is a clear reponsability of regions (Länder).

In the case of Alsace, private stakeholders are also largely external actors because of the very high level of FDI. About the half of Alsatian employees in industry depend on foreign capital. This is a logical consequence of the continuing policy of "territorial marketing" of regional authorities, whose positive aspects are low unemployment rate and constant renewal of economic activities' portfolio, but that has also some potential negative aspects in terms of local governance.

University and other ITIs play an increasing role on the regional innovation arena, but they are still involved in networks extending largely outside the region.

d) Outcomes

* The policy of technology transfer through personnel (technicians) movement is a success.
* The policy of networking firms is only partially a success.
* Increasing the involvement of the scientific community seems to be a long process; one of the problem for the regional authorities is that such involvement is not mainly local.

* Exogenous development (including innovative aspects) through FDI seems to be a sort of *de facto* policy paradigm in Alsace.

* Remark for Baden: the ambitious policy of firms' creation is probably a good model (complementary to the policy of supporting existing business), but the outcomes are considered sometimes as slightly disappointing, at least in comparison with the level of policy efforts.

The case of Ireland

a) Arguments

Ireland has been progressively recognising since the 1980s that the World Economy is technology driven. Policies and socio-economic efforts have been aimed to fill the gaps in R&D, education and innovation of the country with respect to the more successful smaller industrial nations in Europe to compete in the global economy. When it comes to R&D spending, the need to increase it was deemed essential. The accumulation of human capital to increase the coverage and "productive-orientation" of the internationally respected Irish education system has been considered a strategic goal.

Throughout the 1980s and early 1990s, Irish Industrial Policy has, through the operational goal of export-led manufacturing output growth, sought to achieve its core underlying objective of jobs creation to reduce Ireland´s high unemployment figures (a result of late industrialisation and continuing flow of manpower out of agriculture) and stem the flood of emigration. With the marked economic turnaround from 1993 and the advent of virtual full employment the focus of Enterprise Policy has shifted from jobs creation to a drive for enhanced productivity and international competitiveness and a structural shift to more value-added industries and sectors to fend off the threat from newly industrialising competitors. The new remit for enterprise development agencies is to share the risk with competitors who seek to develop their capabilities in key areas such as business strategy, human resources (management and staff skill sets), R&D and innovation, and e-business.

b) Goals

- Increase investment in R&D in line with national development policy.
- Supporting the key technologies.
- Promote more collaboration between the actors of the National System of Innovation.
- Provide a highly productive and profitable enterprise sector to act as the main engine of economic growth.
- Boost the supply of highly skilled, creative and flexible workforce.

-   Encourage moves from unemployment to employment and participation in the labour force. Increase the level, relevance and quality of private sector training.
-   Make finance more readily available to enterprise, especially to SMEs and start-ups.
-   Review tax and benefit systems to actively supporting employability and job creation.

c) Stakeholders

Ministerial Departments (Education & Science, Enterprise Trade and Employment, Social Welfare. Development Agencies (FORFAS, Enterprise Ireland, IDA)

d) Outcomes

-   Public funding for R&D as a percentage of total government budget increased steadily from 1990 to 1999. Business Expenditure on R&D (BERD) is on par with EU average and with economies such as Norway, Denmark, Netherlands.
-   GNP per capita converged from 79% EU average in 1994 to over 90% by 1999.
-   The unemployment rate fell by some 9 percentage points in the five years to April 1999. Unemployment was down to 5% by 1999.
-   The value of manufacturing exports climbed significantly from 16.5 billion euro in 1991 to 47 billion euro in 1981. Foreign direct investment (FDI) performance was again to fore.
-   Employment in internationally traded services grew from 10,000 in 1991 to 40,000 in 1998, and the FDI component increased from 58% to 70%.
-   The gross value added (GUA) of the manufacturing sector grew by 95% in real terms from 1991 to 1998, powered by a vigorous output performance of the FDI cohort which was concentrated in two sectors, Chemicals and Electrical Equipment.
-   Irish-owned industry reversed the decline in employment that prevailed since the mid 1960s. Productivity (net output per person) in *indigenous* industry grew 4.2% per annual in real terms in the late 1990s, helping to boost average indigenous profitability to 8.8% of *sales* by 1998. This is less than a quarter of the profit rate achieved by FDI manufacturing companies and reflects the persistent heavy bias of Irish-owned industry in traditional low-productivity sectors. Moreover, comparing productivity in individual Irish-owned sectors with the performance of indigenous industry in other EU countries reveals substantial deficits.
-   Indicators related to knowledge intensive activities reveal a positive trend and place Ireland well down in the league tables in the company of the other Cohesion LFR regions, though growing fast.
-   The venture capital supply has been growing in Ireland along the 1990s but is concentrated too narrowly in Communications, Electronics and Biotechnology sectors.
-   The total tax burden was significantly reduced in the recent period.

- Ireland characterises by a low corporate tax strategy. One downside of this strategy has been that it tended to discourage FDI from performing tax-allowable activities such as R&D in Ireland. The government is reconsidering this "disincentive".

e) General assessment:

Ireland is performing well in educating skilled personnel and in their employment as well as in the behaviour and commercial success of firms. The low rate performance corresponds to the efficiency in the production of knowledge and its transfer to technology and innovation firms´ activities.

The case of Italy

a) Arguments

Innovation policies specifically designed to foster R&D and innovation in LFRs have traditionally been rather limited in the case of Italy and implicitly contained in the main industrial-oriented policy scheme. Innovation policies have been un fact indirectly contained in the "intervento straordinario", the latter being by far the major policy action carried out during the period 50-80s to tackle the historical backwardness of the South of Italy. This broad policy scheme was based on large infra-structural investments, financial support to private investments and settling of public owned firms in capital intensive sectors. Such form of public intervention has largely failed. This was a result of the isolation of the industrial settlements (the so called "cathedrals in the desert"), the progressive sclerosis of the productive system, the low responsiveness of the latter to the market dynamics and last but not least the presence of severe management failures. During the 80's the logic behind the "intervento straordinario" has progressively changed starting to take on board specific measures to sustaining R&D and innovation (the 64/86 low). This was a natural result of the growing awareness among policy makers of the importance of technology and innovation for sustaining economic growth and catching up processes. Another specific tool introduced in the 80's has been the inclusion of quotas for LFRs in the main financial schemes supporting innovation projects (the 46 laws). Probably the most effective set of industrial and technology policies introduced were those sustaining investment in fixed capital which have been a major instrument to modernize the productive structure of Italian industry in general and southern firms in particular. However the extremely favourable conditions offered to firms to purchase new vintages of capital have led firms to over-expand their production capacity instead of strengthening their internal innovative capabilities. In the last decade industrial and technology policies for the LFRs have been heavily shaped by European policies directed to Objective 1 regions and in particular by the European structural funds.

The dominant role that that the central government has historically played in the design and implementation of industrial and innovation policies mentioned above has prevented local

administrations from developing the necessary policy-designing and policy-making capabilities. This is probably the most negative and long lasting heritage of the "intervento straordinario", especially in the light of the on going devolution process of policy functions and responsibilities from central government to regions. Also the recent experience of EU structural funds in Italy shows that their actual utilization and effectiveness has crucially depended on the competencies of local policy makers and administrators. In fact, EU structural funds ion order to be effective require the presence of a well structured and coherent policy strategy by local regional authorities. Only in this case it is possible to channel the structural funds towards those policy targets leading to a supra-local value added in terms of economic growth.

b) Goals

In the light of the considerations made above it is possible to state that till very recently no explicit goals were targeted by national or regional policies in the areas R&D and innovation. Nevertheless in the middle of 70's a few specific initiatives have been launched such as schemes to favour University-industry links and the emergence of technological centres. More recently the 64)86 law has introduced special schemes to support University centres, local R&D and innovation networks as well as the setting up of scientific infrastructures in LFRs. This actions were stopped at the beginning of 90's when a general plan to set up 13 science parks in different Italian LFRs was implemented

c) Stakeholders

On a formal/official ground the main stakeholders in the process of design and
implementation of industrial and innovation policies have been the central government, the relevant ministers and regional authorities. However, a much more substantial role has been played by the leading economic and political actors operating in the various regions: large firms, local lobbies, influential politicians. Such actors have acted outside a structured and coherent policy framework. It is also interesting to point out the increasing importance over the last few years of "collective actors". An effective legislative measure recently introduced in Italy is one setting up the "patti territoriali" (territorial pacts) which through an articulated set of incentives aim at mobilizing local private and public resources and institutions in the design and implementation of programmes of industrial development at a local level. This measure has been adopted at the European level with the introduction of the "territorial pacts on employment".

d) Outcomes

The general outcome of such policies, where successful, have been a reduction of the economic and technological gap between LFRs regions and the much more developed regions in the north of the country. The results have been rather uneven across LFRs with a few areas witnessing rapid

industrial growth and others continuing lagging behind. As far as innovation is concerned this catching up process has largely consisted in an alignment to technological and productive best practices. This was again a result of the predominant role of policy schemes supporting firms' investment in fixed capital.

e)   General assessment

North Italy possesses a good performance in terms of skills and knowledge assets in industrial innovation and less in R&D. The stronger position N1 might have as compared to Alsace in not reflected in a single point in fig. 1a and b but may result from an integration of the different positions recorded for N1 in such figure: fig. 1a relates to R&D capacities preferentially whereas fig. 1b records strengths and activities in innovation capacities. Southern Italy is clearly lagging behind by all indicators.

The case of Portugal

a) Arguments and context

Portugal started to emerge from a long lethargic period of isolation and backwardness in the 1960s. It is possible to locate the foundations of a modern S&T policy in that period, particularly after the setting up of the National Board of S&T (JNICT) in 1967.

Portugal has meanwhile registered important advances, from its initial situation as a declining colonial power to the more recent status as an European catching up country. In fact, the Portuguese economy has been characterised as in a trajectory of convergence since joining the EC: while in 1986 GDP per capita (in ppp) was only 55% of the EC average, the most recent data indicate that the value of this indicator is now about 75% of the average. Despite this progress, the structure of activities and the international specialization have remained however concentrated in low-tech sectors. In addition to that, when measuring without the ppp "filter" the relative labour productivity of the manufacturing industries, one finds that it stayed below 40% of the respective EU average during the 1990s (Godinho and Mamede, 2001).

b) Goals

In the context of evolution highlighted above, it is possible to say that the science and technology policies over the recent decades have mainly addressed the structural backwardness problems, with an implicit overall objective of contributing to the country's development, namely through the preparation of human resources holding advanced qualifications in S&T.

Despite that overall implicit goal, it is possible to identify as a prominent characteristic of those S&T policies that they have not remained stable, in terms of both their strategic orientation and

specific goals. It is therefore possible to consider four periods since the 1960s. In what follows we will identify those periods and refer briefly to the specific goals that were pursued in each of them.

Stage 1 (late 1960s/early 1970s). The central goal had to do with the creation of a "national S&T system". For that purpose investments were carried out in relation to both the national R&D laboratories and the research facilities in the universities. There was an aim of acquiring minimal critical masses in some areas, through the training of young scientists abroad and the setting up of teams in specific research areas. At the same time JNICT acted as a funding agency and started to promote the co-ordination machinery needed to provide coherence to the whole S&T system.

Stage 2 (late 1970s/early 1980s). In this period a clear preoccupation arose of gearing the existing institutions towards addressing social and economic needs. Strategic ("practical") goals were defined and there was an attempt of developing and strengthening the R&D capabilities around the main economic specialization poles and also in the emerging high-tech areas (IT, biotechnology and new materials).

Stage 3 (late 1980s/early 1990s). In combination with the industrial policy, efforts were developed in order to create a technological infrastructure and the adequate mechanisms for university-industry collaboration. There was a perception in this period that "windows of opportunity" existed for the country leapfrogging into the "new paradigm". At the same time new policy actions to support private business R&D were implemented.

Stage 4 (late 1990s). The major goal in this most recent period has been the internationalisation of Portuguese research, through the attainment of standards of excellence. The professionallization of academic R&D has also been sought through the introduction of systematic evaluation procedures.

Despite the variations in orientation, two common goals have been present throughout these 4 stages. Firstly, a significant part of the financial resources has always been devoted to advanced training of scientists and engineers. Secondly, a share of those resources has also been consistently oriented towards the support of academic research activities.

c) Stakeholders

We must clarify that the "S&T policy" we have been describing has been – with the partial exclusion of stages 2 and 3 above – basically a "science policy". The country's "technology policy" on the other hand has been mainly associated with the industrial policy, even though this has never been assumed in an explicit way. The assumption of the need of a technology policy, addressing the needs of firms and the industrial sectors, has been particularly present since the PEDIP interventions were implemented as part of the 1st and 2nd Community Support Framework programmes (1988-1999). Those programmes had conceptions, in what regards technology policy

aims, relatively convergent with those expressed in stages 2 and 3 referred to above, even though articulation and full coherence between both the S&T policy and industrial policy were never fully attained. This situation is in part a responsibility of clashing cultures between the bureaucracies of the S&T department (more recently with a status of Ministry) and the Industry Ministry (see on this Caraça, 1999).

Other problems have also hindered the possibility of a persistent S&T policy, with strategic goals and continuity throughout the most recent decades. The bureaucracy within the S&T department has never stabilised, to give continuation to existing procedures and policy approaches (Henriques, 1999). More importantly, the relatively low technological dynamism of the prevailing economic activities has meant that the private sector has never performed an active role in the setting of the national S&T priorities. This weakness has been responsible for the fact that specific interest groups have been able to capture the S&T policy in different moments, driving it according to their partial needs and interests (Godinho, 1993).. As a result, we arrived into the late 1990s with an S&T policy and an industrial policy relatively at the odds with each other, without consistent common objectives and without articulation of interventions between them. This led to a situation that has been characterised as of "systemic failure", in the sense that the major stakeholders have not been able to collaborate in the setting up of a proper innovation system geared towards adequate goals.

d) Outcomes

Despite the highlighted fragilities, some progress has been reached in terms of acquisition and accumulation of technological capability. FDI outlays into the country have given a positive contribution with respect to that. Another exogenous factor – the disciplines imposed by the EU within the CSFs – was relevant in stimulating the development of systematic mechanisms to evaluate national policies (Godinho et al. 2000).

Other major outcomes include:
- Development of a professionally staffed university, with a continuously growing number of students (22 thousand in 1960, 367 thousand in 2000);
- Creation and strengthening of a few areas of academic excellence, with several teams integrated in leading international networks;
- Setting up of a technological infrastructure (in some parts effective, in others not so much);
- Development of some poles of advanced technological endogenous capabilities (but heterogeneity remains in this respect the dominant characteristic);
- Emergence in a few areas of systemic innovation dynamics (yet a full "national innovation system" remains to be developed).

The Case of Spain

a) Arguments

Spain has been holding a laggard position in science and technology issues and related indicators when compared with most wealthy countries, essentially after correcting for the demographic factor. There have been difficulties for developing an internationally competitive scientific community - Spain did not enjoy a "golden century for science" - and there has been a lack of tradition in recognising the political and economic relevance of science and technology as factors necessary for growth and development.

In critical moments - technocratic reform in the 50s, evolution of democratic transition with the upsurge of the Socialist Party to governance in the 80s, the integration of Spain into the Common Europe in 1986 - the discourse of "modernisation" has paid attention to science and technology as instruments for such a process of modernisation.

b) Goals

The policies and related instruments put into force for reforming the situation on science, technology and innovation, were aimed:
- To increase the size of the system of research and innovation in both the public and private sectors.
- To introduce science and technology issues in the political agenda.
- To correct for structural deficits at the institutional, organisational and geographic levels.
- Under the great political goal of improving the coordination between resources and political actors, the specific aims were the following:
  - To increase the public resources devoted to R&D activities, with the hope to drive also an increase in the research and innovation efforts of the private sector.
  - To promote the competitiveness of the scientific community in the world context.
  - To introduce the culture of research and innovation into the businesses and their managers.
  - To foster the links between the science realm and the industries, in order to allow for a better use of the knowledge produced by universities and public research organisms.
  - To favour dialogue and collaboration between the political actors of the State and the Regions.

c) Stakeholders

One of the most important tools at stake has been the Law for Scientific and Technological Development, known popularly as the "Law for Science", enacted in 1986. It has been the main

political instrument for those goals that were implemented by the *National Plan for Research and Development* which was designed as the functional and operative instrument of the Law. Its first edition was launched in 1988 and lasted until 1991. Two other editions, corresponding to the 1992-1995 and 1996-1999 periods, have followed. Regional R&D Plans for different regions also followed. The role of relevant representatives from academia and the scientific community had been decisive for these political initiatives at Governments and Parliaments levels.

After the general elections of 1996, the conservative Partido Popular took the lead. The new government introduced some changes in the organisation of the science and technology management system. While keeping the spirit of the "Law for Science" and attempting to correct for one of the main limitations at institutional level of the system such as it is the lack of coordination between the institutions responsible for the programmes, the science and technology political agenda was placed under the direct responsability of the Prime Minister. An Office for Science and Technology (OCYT from its name in Spanish, *Oficina de Ciencia y Tecnología*) was established and set under the authority of the Ministry of Presidency, chaired by a Vice-Prime Minister and in charge of the coordination of the Ministerial Cabinet. The main tasks of OCYT during the period 93-99 have been the management of the Third National Plan and the design and elaboration of the fourth National Plan which has shifted and enriched its scope towards the innovation process as it has been defined as a plan for research, development, and innovation (R+D+I).

Before the implementation of the fourth version of the National Plan, the first one incorporating innovation as a clear target, the elections of year 2000 won again by the Partido Popular led to a new reorganisation with the creation of the Ministry for Science and Technology. In this last direction, academia and scientific community seem to have been loosing influence. In any case, business and political actors have played a limited role and their impact must be understated.

d)   Outcomes (and General assessment)

- All the analyses, data and indicators, support the contention that the efforts carried out in Spain along the last half of the twentieth century have led to the building of a System of Research and Development with satisfactory scientific outputs. However its outcomes in relation to the building of innovation capacity in the productive sector have been rather limited. The public R&D system and the business system have followed separate paths.

  It is likely to conclude that Spain do possess a National R&D System but the country is still lacking a specifically built National System of Innovation shaped according to the main characteristics and specifities of the country. However, there are patches of systems of innovation in some of the Spanish regions (Cataluña, País Vasco, perhaps Madrid), precisely the most industrialised ones.

- Economic criteria do not allow a grouping of the regions of Spain in terms of innovation capacities and assets. Non-Objective 1 regions are characterised very differently according to their research and technological efforts. Three of them (Madrid, Cataluña and País Vasco) are the leaders in these efforts whereas Baleares and La Rioja which are the leaders in economic wealth are the laggards in these efforts.

  The data on employment profiles of the regions point out in the same directions: high heterogeneity, lack of correspondence between the wealth of regions and the predominant employment rates in traditional innovative sectors, similar shares of employment rates between sectors in regions with marked differences in their wealth status.

- Objective 1 regions share a predominant role of the public sector in their R&D efforts, although there are also marked differences between them. In general, it can be said that Spanish less-developed regions do possess incomplete, "primitive" systems of innovation.

- There is a poor correlation between the degree of economic convergence with Europe and the level of research and technological efforts (potential innovation capacity) as illustrated by the cases of Baleares and La Rioja or by the positive economic performance during the last years of some Objective 1 regions (Castilla-León, Castilla-La Mancha, Extremadura…) grounding its positive trajectory essentially in the agricultural (agro-food) sector.

- The percentage of innovative firms in Spain is lower than those of most European member countries. Moreover, the Spanish innovative firms are less active in R&D activities than their European counter parts. The trend seems to be changing to a slight increase in the number of innovative firms and essentially to a strong increase in the R&D vocation of those firms.

- The most innovative sectors in Spain are those behaving as such since long (agriculture and manufacturing industries are showing better performance than services, energy, building)

  Among the innovative sectors, the industries belonging to areas of innovative tradition standing at least for twenty years are the most prone to perform R&D activities and programmes, i.e. pharmaceutical, electronic and optical material and equipment, transport material.

- Spain is moving towards convergence with Europe in economic, and innovation and technology indicators, but the paths of convergence for these two parameters are moving quite differently and do not match according to geographical and temporal parameters.

3. Assessment of the influence of policies related to innovation on the economic progress of the less favoured regions of Europe.

Table 2 draws on the information gathered along the CONVERGE project, and from a meeting held in Madrid (October 2000), with the specific aim of exploring the possibilities of carrying out an assessment of the influence of policies on the development of the four countries involved in the CONVERGE project, that either qualify as a whole less-favoured country or possess regions with this qualification. The annotations about positive and neutral effects of the policies are self-explanatory while the note as counter effects reflects a mismatch between the goals and outcomes of a given policy with the trajectories of countries and regions akin to the corresponding indicator, i.e. a policy inspired and supported by big multinational firms when such firms are not operating in the country or region; a policy driving to the formation of skilled personnel who does not fit to the demands of the internal labour market. As it is recorded in table 2, none of the policies appears to show a complete, integral positive influence profile on the whole of the factors. There are evident differences between the four countries into consideration, thus giving additional support to the "importance of diversity" in the shaping of Europe. Nevertheless, two of the policies -those related to R&D and innovation- show the greater degree of homogeneity and positive influence among the countries, with the exception of their potential effects on inducing structural changes in economy. It is obvious to acknowledge that the exercise on the assessment of policies related to innovation and their influences on economic parameters is not an easy one. It must depend on the potential beneficiaries or on the time reference. This attempt has taken into account the potential benefits of the country or regions as a whole for attaining convergence and has been looking to the period of building a common Europe.

3.1 Some critical points and considerations

a) The CONVERGE project was aimed to learn how the less developed regions (LFRs) of Europe have been evolving to design and put into practice strategies and actions to "catch-up" the most developed regions of the European Union. Though not originally addressed as a "benchmarking" exercise, the comparative nature of its analytical approach makes the project to be considered like a benchmark of the policies of LFRs with some developed regions of Europe in relation to innovation and economic wealth. In this line of thought, the CONVERGE project seems to match with one of the mains streams of the European Commission and Member States agenda in relation to research. This exercise has been performed by using a combined methodology with indicators proposed by the European Commission and qualitative approaches developed along the project.

b) In a "knowledge-based" economy or "learning" economy it seems reasonable to attribute a central role to innovation activities and to the policies that promote them[3]. This central role attributed to innovation implies that the policies targeted to its promotion have to be considered not as a result of an isolated, single strategy but as the confluence of a series of policies like those related to education, specific R&D, social cohesion, industry, fiscal and commercial aspects. The sum and/or interactions of the outcomes of these different policies must be taken into account when analysing the possible effects of innovation policies and initiatives.

c) In the context of a "knowledge-based" economy and in an increasing global world, the concept of National System of Innovation (NSI) -or its regional counterpart, RSI- seems to provide an adequate ground to being used as indicator of the input factors and outcome elements ("strengths") that measure the ability of a country or region to cope with the requirements (or challenges) imposed by the current socio-economic context. In order to evaluate the level and degree of the construction of an efficient NSI (RSI) for each country or region, a series of traditional input and output indicators as well as the data derived from the Community Innovation Survey have been used.

d) Within a frame of diversity, the CONVERGE study has allowed to identify a series of common facts and features as the following:

- the critical importance of human resources extending the need for a good science and technical base to the requirement of skilled, well trained personnel for performing satisfactorily all the activities involved in the efficient management of innovation (and R&D) policies.
- The creation of infrastructures and interface institutions has followed patterns of imitations. By leaving aside their own structural deficits with respect to bureaucracy, firms behaviours, actors habits, the LFRs may have overestimated the positive influence of mimicking policies and decisions adopted by more developed countries.
- There seems to exist difficulties to identify when innovation is performed and where there are benefits through it and by the development of spillovers, in particular because this analytical approach is applied in a given geographical context, to a complex system where there is coexistence of back-ward regions and firms, high technology firms and emerging technologies, each having its specific rules for emergence and holding different dynamics.

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[3] In a Conference held in Brussels (15-16 March, 2001) under the title "The contribution of socio-economic research to the benchmarking of RTD policies in Europe", Bengt Aake Lundvall who was the leading discussant made the provocative statement that innovation should be, in the present context, the dominant issue in the political agenda of EU. He went further in the final session of the Conference to raise the utopian proposal that Europe should shift the focus of policies from economy to innovation. Accordingly (Lundvall dixit), innovation (and RTD) policies at the European level should be placed under the direct responsability of the President of the Commission. In our opinion, this may introduce the innovation issues at the centre of interests of the EU Parliament and attract more media attention.

Table 2. Assessment of the influence of several policies on some factors that may influence the economic wealth of the Europe LFRs.

Policies		Innovation performance				Education/Qualified employment				Firms behaviour				Structural changes in economy			
		Ir	It	P	Sp	Ir	It	P	Sp	Ir	It	P	Sp	Ir	It	P	Sp
Innovation	Regional		+		+		+		o		+		+		+		o/−
	National	+	+	+	o	o	+	o	o	++	+	+	o/−	+	+	o	−
	European	++	+	+	+	o	−	−	−	+	+	+	+	+	+	+	−
R&D	Regional		+		+		+		+		+		+	−			−
	National	+	+	+	+	+	+	+	+	++	+	+	++	++	−	−	−
	European	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−
Education Training	Regional		o		o		o		+		o		o	o			o
	National	+	o	+	o	+	+	+	++	o	o	o	−	+	o	o	o
	European	o	o	o	o	+	+	+	o	o	o	o	o	o	o	o	o/−
Industrial	Regional		+		+		o		o/−		+		+		+		+
	National	+	+	o	+	+	o	o	o/−	+	+	+	+	+	+	+	+
	European	+	o	o	o	o	o	o	o	o	o	−	−	+	o	o	o

++ : very positive; +: positive; o: neutral; −: counter effects
Source: own elaboration (CONVERGE project)

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