

Collaboration and collaborative networks policies: Italy case

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1. A list of the current CCN policies ('90s), including description and assessment

1.1 National policies

a) Science–industry links

The National Research Programmes NRPs (Law 46/82)

Description and Assessment:

their goal is mobilising scientific and technological competencies for promoting technologies with large potentiality of application. Two are the expected main results: technological innovation with potential of large diffusion and the formation of new clusters among industrial and public research institutions. The Programmes are defined by the Minister of University and Scientific and Technological Research, they are organised by topics and they establish project costs and priorities. Programmes are articulated into projects conducted under contracts; main contractors are single industrial companies or an industrial consortium; public research institutions cannot lead projects, but they participate as partners. Each project requires the commitment of a critical mass formed by the co-operation of a number of parties. The State finances 100% the project's expenditures and the results become State property, but the contractor has an option to acquire (with a separate licensing agreement) the exclusive right to their use. In this case he must pay royalties on the commercial outcomes to the State.

Between 1982 and 1992 17 National research programmes (NPRs) were launched, covering 187 research themes, for a total budget of 1.04 billions of Euros). In 1996 4 more NRPs were launched (234 millions of Euros) and 3 new PNRs were going to be launched (source: Minister of University and ST Research). Some characteristics of NPRs are the following (source B. Potì in Haudeville, Héraud, Humbert, 1995): participants to NPRs are 34% Universities and Public Research Institutions (PRIs), 53% industries and 13% others. Single contractors are 8%, consortia 20% and 73% are third (public and private) parties, in collaborative or subcontracting relations. Third parties are 10% suppliers of the industrial main contractor, 35% users, 34% other producers, 14% competitors and 7% others. Main contractors are 73% large firms and 37% small and medium firms

(less than 200 employees). The networks promoted by NPRs have involved mainly new agents, which was not previously involved in linkages with the main contractors. Linkages were represented by subcontracting links more than by collaborations, with a short perspective of duration and a limited access to the whole research results by agents different from the main contractors. Licence agreement for acquiring the use of the PNRs results by main contractors were a narrow number.

The research companies RCs (Law 46/'82)

Description and Assessment:

the public manager of the Special Fund for Applied Research (IMI) may hold controlling equity interests in research companies created with the Special Fund capital for the purpose of implementing research project of national or sector interest (health, food, biology, chemistry). These research companies are owned by many different industrial shareholders (including groups, consortia, Associations, companies and so on).

In the first ten years (82–92) these companies were considered an important place in which social and economic aims of public and private industrial research can meet, facilitating also the transfer of knowledge to SMEs. But in 90's their role has suffered of the recession felt by industry, which has led to cutbacks in R/D activities.

b) SME co-operation at national level SMECOO (Law 317/'91)

Description and Assessment:

the Law 317 is an important instrument for innovation of SMEs in Italy. Among the others, the law disciplines a set of incentives for the creation of consortia composed of SMEs, other consortia with mixed private and public participation, or consortia that are established to ensure greater credit capabilities to SMEs. This part of the Law is not specifically aimed to research or innovation, but mostly to the creation of consortia for the rationalisation of the production activities (including technological development) of the associated firms and of all activities that can benefit by better co-ordination, like commercialisation programmes, distribution networks, promotion of sales and so on. These measures seem to look at rationalising dispersed activities, through economies of scales. The law offers a contribution to capital costs incurred by consortia for setting up these activities.

c) Links between Universities and SMEs UNISME (Law 197/'97; Law 449/ '97)

Description and Assessment:

the law focuses on the employment of people with Laurea or Doctoral degree in research activities of SMEs. The beneficiaries of the financial contribution are SMEs or consortia of SMEs. The new

employees have to be employed with full time contracts lasting at least two years and with a salary not smaller than the average one of people with that professional qualification.

The law 449 has the same objective: it aims encouraging the employment of people with Laurea or Doctoral degree by SMEs. One difference is that the incentive is an indirect measure in the form of a tax credit of 8,000 Euros per each new employee up a total of 30.000 Euros. Moreover the law 449 introduced two additional measures: first it included the possibility that a firm apply to universities or other public institutions to demand that individual researchers be seconded to the firm for a period, that cannot exceed four years. The researcher keeps his employment relation with the University or research institutions and the firm provides only an additional incentive. The University can deny this possibility, but not later than within 30 days. Other measures included in the Law 449 concern tax credit to SMEs, consortia or also to large firms (if research investment is additional in the sense defined by UE) for new research contracts commissioned to universities and other public research institutions and for scholarship offered to students attending doctoral courses within Universities.

d) International co-operation initiatives

Participation to Eureka programmes (Law 22/87)

Description and Assessment:

Eureka is an initiative promoted in 1975 by 17 European countries, which had the goal of encouraging industries and research institutions to co-operate on technological projects. The leading feature is the absence of predetermined technological areas, a bottom up approach. The initiative doesn't fund projects out of joint resources; partners from various countries which want to work together may seek financial support by their respective Government. Italian partners in Eureka use mainly the Law 22/87, which reserves 10% of the Special Fund for Applied Research to international co-operative projects.

The Italian total participation to Eureka since 1986 to 1993 amounted to 186 projects. The dominant presence were large firms, but there was also a significant number of SMEs, located in the North and Centre of Italy.

1.2 Regional policies (which operate at regional and multi-regional level = contemporarily in different regions with the involvement of the Central administration working in the interested field i.e. transport, telecommunication and so on). We concentrate the attention on measures for promoting the less developed Southern regions INNOREG

a) Networks of public research institutions

The multi-regional plans of the period 1989-93 and 1994-1999 foresaw an RTD Operative programme devoted to the development of scientific and technical competencies through the

development of university structures and actions connected to R/D infrastructures and activities. In the second period (94–99) attention has been dedicated to the R/D demand, rather than only to the offer, including measures for innovation diffusion, technology transfer and training for technology transfer. In this second period the resources dedicated to Research and Innovation employed a large part (50%) of the total amount of the multi-regional plan (about 667.7 MECU). They include: Research and Innovation Centres (investment in public centres); financing of industrial research, by an increase in the Special Fund for Applied Research (Law 46/82), in the aim of helping firms located in the South of Italy; training of personnel for the projects financed by the previous measure.

The Multi Regional Plan includes also measures for Diffusion of Innovation through technology transfer: feasibility projects for the use of new technologies by the SMEs aggregates and training of new personnel for innovation transfer.

Some Research Centres show a good integrating capability with the Southern productive tissue, especially for what concerns some programmes co-ordinated by ENEA (Agency for alternative energy sources) and INFM (National Institutes of Physics of Materials).

Moreover for what concerns concrete undertaken actions, at the end of '98 the most significant actions in the Research, Innovation and Technology Transfer activities were 82 projects co-ordinated by the prime Research and Innovation Centres (sometimes carried out in pool with local SMEs) and industrial research programmes carried out directly by SMES.

b) Science–industry links

The creation of Scientific and Technological Parks is considered relevant for the technology transferring, innovation diffusion and for the development of the Southern regions of Italy. This measure is included in the Multiregional Plans, managed by the Minister of University and Research. At the end of 1998 35 projects were carried out in 10 S/T Parks in Southern Italy and some of them had a rather good integration with the local productive environment.

c) Other industrial co–operation initiatives

The central and local government have started to promote specific programmes that involve local governments and various local actors (the so called Territorial Pacts and Area Contracts). These programmes are based on lines of actions defined at local level, co-operatively. Then specific activities are to be implemented on the basis of projects applied for the different lines of actions (infra-structural investments; investments by companies). The resources come from the central budget and from EU programmes, in particular from the Structural Funds.

2. A very short review of the CCNs policies in Italy

Over the past twenty years the Italian government has produced an articulated set of policy instruments for innovation and technology policy, within which measures for co-operative links among industrial firms and between industries and public research institutions are included. Some of these instruments is innovative. Also at regional level, in spite of differences across them, especially between North and South, various regional government has produced several instruments to encourage local development, based on the creation of a more articulated and connected local environment, aimed at better spill-over effects.

The critical problem, both at regional and national level, is the implementation of these measures. In many occasions CCN policies have suffered of the same problem of other innovation policy tools: they could not be effectively implemented, since the lack of resources, delays in their availability; retards in adopting the necessary regulation; difficulties on the side of the public administration in managing the instruments.

The place of the CCNs policies in Italy is important, given the relevance of the SMEs presence in the national industrial structure and the regional problem. While there is a tradition of consortia or informal collaboration among SMEs in the North and Centre of Italy, even if not necessarily oriented to innovation, the South area is still an open problem, with a low interconnected tissue, isolated firms, low integration of large and small firms, separation of public institutions and industrial firms.

Critical aspects specific to CCN policies are:

- as to industry-public research institutions links, problems concerning institutional aspects such as IPRs (Intellectual property rights) regulation and incentives to researchers (including evaluation criteria) for added activities of transfer and collaboration with industry. Anyway the climate is more favourable to collaboration, notwithstanding some regulatory obstacle, since Universities and Public research institutions have got administrative and financial autonomy and researchers mobility has been increased. The quality of the science-industry relation is influenced also by the fact that there is still a stronger role of public research in comparison with the industrial involvement in R/D activities and therefore the scientific production doesn't fit always the needs of industries;

- as to inter-firm relations, there is a strong inertia in reproducing the past organisations; therefore industrial districts don't evolve and, even if a good example of geographical collaboration and networks, they have ended with crystallising local specialisation. Moreover, in different geographical areas, such as the less developed southern regions, collaborations is a less frequent event and the new legislation and policy, focusing mostly on the promotion of public

infrastructures, have not still influenced the persistent low firms' capability of absorbing new knowledge from external sources;

– as to regional policies, aimed at given balanced conditions of competition to regions, the Italian regional administrations are gradually learning how to deal with their increasing power in industrial and technology policy and with the increasing amount of resources, coming from UE and Structural Funds. But there are still great differences in the ability of the regional administrations in managing resources and plans. The evolution of the RTD policies achieved by the Southern Italian regions has been the following: the first multi-regional plan provided a vast amount of resources to achieve new Universities, technical laboratories, public research centres and ST parks. A change took place in the second Plan, which began to pay attention to the demand side, aiming at involving more the local entrepreneurial environment. But in the South there is still a persistent gap between the training and research output and the requests of the socio-economic system. In the future Plan (2000–2006) the Minister of University and Research has put as major goal the strengthening of the research and innovation capacity of the socio-economic system in particular by strengthening the links between scientific sub-systems of the South and entrepreneurial sub-systems, by inserting in firms more personnel coming from public research sector, by promoting the constitution of centres of technological competencies coherent with the existing productive specialisation, by promoting technology transfer services and by promoting spin-offs and an entrepreneurial role of researchers;

– as to the National Research Programmes, a specific measure of relevant importance, their success has suffered of a reduced diffusion of their results (low number of licence agreements established and an organisational form based more on subcontracting relations than on collaborations). Best results have been achieved by consortia;

– the 13 Science and Technology Parks in the South of Italy have been characterised by inefficiencies, given to lack of funds, bad management of the relations with the local tissue, lack of application of an important article of the Law 46/82, which envisaged the constitution of offices of technology transfer and of technology assessment in universities and similar institutions, with 100% contribution from the State. The Italian legislator acknowledged very early (1982) the opportunity of creating this kind of offices, internally at Universities and externally, but the initiatives have not still spurred.

3. Evaluation of CCNs policies

3.1 Characters of networks produced by National Research Programmes:

more horizontal than vertical networks

national networks

formal relations

low degree of openness

asymmetric relations between main contractors and subcontracting firms or public institutes, except for consortia (around 20% of main contractors in 1995)

low stability of networks, given to the organisational solutions and to the industrial instability of '90s.

3.2 Rationale, market/systemic failures addressed

Policies at national level:

The National Research Programmes, NRPs, which have had as target group large firms of industrial groups, had a double rationale: being an incentive to innovate for private firms in specific chosen fields, and the promotion of exchanges between complementary sources of knowledge such as private and public research actors.

The co-operation among SMEs (Law 317) SMECOO and among SMEs and Public research institutions UNISME (Laws 197 and 449) had respectively in the first case the goal of rationalising dispersed activities of production, improving the productivity of groups of firms and creating productive vertical/horizontal networks; in the second case the rationale was to develop SMEs capability of being customers of public research activities (sustaining employment of people from Universities and financing contracts of research from SMEs to Universities). The limits are in the insufficient lowering of barriers to co-operation given to non financial aspects and the limited presence of intermediary (brokers, animators, organisers; technology transfer services) features.

Policies at regional level

The main rationale of regional policies INNOREG is to develop well functioning regional innovation systems, by improving the local external economies due to a strong and diversified research and education infrastructure and the co-operation between the local industrial actors and the R/D environment. The programmes sustain the public investment in research infrastructures and the investment of private firms in R/D activities through incentives, but the gap between public research supply and local industrial need is still important, specially in the Southern regions.

3.3 Perceived or actual benefits

NRPs = direct results for the target group of large firms, in terms of improved ability to deal with complexity and enhanced learning effects;

SMECOO = direct results for the target groups of SMEs in terms of increased scale and scope of activities, shared costs, flexibility and probably also learning effects;

UNISME = less results than expected in terms of improved ability to deal with complexity and welfare effects;

INNOREG = the target groups are the local industrial tissues and the result is a still low improved ability to deal with complexity, low enhanced learning effects and no welfare effect (in terms of increased expenditure in overall industrial R/D)

3.4. Problems identified or future failures

NRPs = problems in the relations between industrial and public research partners, given to the cultural differences and institutional barriers; instability of relations among industrial partners, due to changes in strategies or in industrial ownership; not strongly recognised problem of externalities, given the large presence of public research institutions;

SMECOO = for the moment lack of specific information

UNISME = for the moment lack of specific information;

INNOREG = distance between scientific activities and local industrial demand in regional areas, specifically in the South of Italy

3.5. Angle of intervention

	NRPs	SMECOO	UNISME	INNOREG
Awareness of the network possibilities:	X	X		
Search of partners				
Building trust and a shared knowledge base	X	X		
Organising the network	X	X		
Ensuring providing complementary resources	X	X	X	X
Active co-operation	X	X		