

**THE CHALLENGES FOR THE NEXT DECADE:
NOTES ON THE DEBATE ON THE DEVELOPMENT
OF THE EMILIA-ROMAGNA REGION**

ESRC Centre for Business Research Working Paper No. 176

Margherita Russo,
Department of Political Economy,
University of Modena and Reggio
Emilia, Via Berengario, 51
41100 Modena
Italy

e-mail: mrusso@unimo.it

Giorgio Allari,
Regional Secretary of CAN,
Bologna, Italy

Silvano Bertini,
Economic Activity Department,
Emilia-Romagna Region,
Bologna, Italy

Paolo Bonaretti,
General Manager,
ASTER,
Bologna, Italy

Elio De Leo,
Economic Activity Department,
Emilia-Romagna Region,
Bologna, Italy

Giuseppe Fiorani,
Board of Administration,
META spa,
Modena, Italy

Gianni Rinaldini,
Regional Secretary of CGIL–
Emilia-Romagna,
Bologna, Italy

September 2000

This Working Paper relates to the CBR Research Programme on Small and Medium-Sized Enterprises

Abstract

Facing exogenous changes and endogenous impasses, Emilia-Romagna, one of the richest regions in Europe, is undergoing transformation. In this paper, we outline the dynamics of change at the regional level, both in the changes in the interrelationships among the major actors, and the emergence of new phenomena such as demographic trends. Regional policy measures to foster local development are sketched by focusing on industrial policy, transport infrastructure plans and policy measures on learning processes, as they emerge in the changes undertaken at regional level in technical and vocational education.

JEL Codes: R58, O12, O18, I28

Keywords: Regional policy, industrial dynamics, local development, learning regions, technical and vocational education

Acknowledgements

This paper is forthcoming in *Concepts and Transformation*, vol. 5. n.1, pp.65-94.

The authors have discussed the issues presented in this paper and contributed to the following sections: Giorgio Allari (section 2.2), Silvano Bertini (sections 2.1 and 4.1), Paolo Bonaretti (section 3.2.d), Elio De Leo (sections 3.1, 3.2a-c and 3.3), Giuseppe Fiorani (sections 2.3, 2.4 and 3.4), Gianni Rinaldini (sections 2.6 and 2.7), and Margherita Russo (sections 1, 2.5, 2.7, 4.2). Margherita Russo is responsible of the synthesis project and of the writing of this version.

The authors would like to thank Francesco Cossentino, Paola Mengoli, Dino Passarelli and those taking part in the seminar on “Economic Development Coalition” held at Gnosjo, Sweden (14th-16th October 1999) for discussion on the topics presented in this paper.

Further information about the ESRC Centre for Business Research can be found on the World Wide Web at the following address:

<http://www.cbr.cam.ac.uk>

THE CHALLENGES FOR THE NEXT DECADE: NOTES ON THE DEBATE ON THE DEVELOPMENT OF THE EMILIA-ROMAGNA REGION

1. INTRODUCTION

1.1. The Emilia-Romagna region twenty years after the “Emilian model”

When Brusco drew wide attention to the development of the Emilia-Romagna region¹ in 1980, he proposed for the first time what he called “the Emilian model”. The model stylized the essential characteristics of the economic and social development peculiar to this region and gave an empirical analysis of what in the next decade became a common reference in discussing development, e.g. the role of the “embeddedness” of economic relationships in the networks of social relationships². The development of Emilia-Romagna region was not explained as the ephemeral outcome of small enterprises exploiting low wages or tax evasion³; it was this kind of embeddedness that was a key variable accounting for the success of the Emilian model.

Twenty years later, we find Emilia-Romagna among the “richest” regions of Europe. Although we believe that its position is still explained in terms of that model⁴, in this paper we argue that there are some deep changes which are important to consider in order to outline the many challenges for the next decade. Before looking in detail at the current situation at the regional level, we should consider that, although the economy of Emilia-Romagna has historically been open to foreign markets and has long been exposed to international competition, the general background is characterized by a series of rapid changes, all of them having a considerable impact at a local level and with no comparable effect in the recent history of the country.

Let us consider, first of all, the process of European integration. Even though monetary policy will no longer be decided at an individual country level, European integration urges the necessity for national policies and, in Italy, the government institutions are undergoing a thoroughgoing process of reform involving justice, education, social security and decentralization of central government functions towards local government institutions. In particular, the regions are becoming key actors in undertaking industrial and social policies, in accordance with the European guidelines.

These major changes and the new global market scenario have, of course, a considerable impact on the economy of Emilia-Romagna. In particular, since global competition is increasingly competition among “territories” (more than among individual enterprises), the local production systems of Emilia-Romagna are trying to keep pace with global changes, without losing their competitiveness and avoiding the social splits potentially involved in the ongoing changes in the social and economic life of the region.

Although this is a very wide theme for discussion in a single paper, we shall attempt to outline a way of reading these changes, and we shall start by stressing one element characterizing industrial districts and local production systems⁵, i.e. their ability to produce a surplus not immediately re-employed in production: culture, passions, personal involvement and labour supply not used in the organization of production under normal conditions. All these “redundancies” are used to face those qualitative and quantitative changes in demand that are typical for the products of the local production systems of Emilia-Romagna.

The notion of “system” here refers to what emerges from a multiplicity of interactions at several levels: within and between enterprises, between many different actors – such as enterprises, associations (of workers, of enterprise, of entrepreneurs), schools, universities, research centres and local authorities. The key element

linking a “system” to a territory is the presence of redundancies of the kind mentioned. These resources are “deposited” in the individuals and over time they are cumulated, enriched, modified, and handed on. If these redundancies were only in individuals, labour mobility would be a way of eliminating differences among territories. But the redundancies we are considering are those emerging from the interrelationships between individuals and institutions living and operating in that territory. Individuals decide to mobilize those redundancies not only to face changes in final demand, but more generally to face changes in the social, technical and economic environment: this ability, then, is crucial to maintain because these redundancies foster a virtuous circle linking competition to learning processes.

Who produces the redundancies needed in a territory to support its local production systems, and how? Individuals or institutions? Or both? And what is the time profile of the production of redundancies? In particular, what role is played today – and has been played in the past – by the various actors (family, school, local authorities, associations) in creating, transmitting, and mobilizing those redundancies? Once the mechanism that produces redundancies is in action, moreover, it is necessary to know how to use those redundancies. What relationships, then, are able to use redundancies present in a territory? To answer these questions we need to consider the social dimension of the local production systems’ development, including relationships among people, their history and their culture.

This paper cannot provide an exhaustive picture of the exogenous changes and the endogenous impasses that Emilia-Romagna is now facing, but it will present what appear to be the main issues in the present transformation era. Section 2 outlines the dynamics of change at the regional level with regards to both changes in the interrelationships among the major actors, and the emergence of new phenomena, such as demographic trends. Section 3 sketches the main

regional policy measures to foster local development, focusing on industrial policy, transport infrastructure plans and policy measures on learning processes, as they emerge in the changes undertaken at regional level in technical and vocational education. Section 4 summarizes the main points of our presentation.

2. THE DYNAMICS OF CHANGE: ENDOGENOUS AND EXOGENOUS FACTORS CHANGING THE REGIONAL ENVIRONMENT

In describing the dynamics of change in the interrelationships among the major actors, a first consideration is that the actors are no longer those acting of the 1980s, when the “Emilian model” appeared on the world scene: the social, political and economic context, in which the roles and the aims of those institutions and organizations are defined, are no longer the same as twenty years ago, and the people in those organizations have also changed. This last observation might seem a trivial one, but twenty years are enough to put into retirement an entire generation of leading figures. This could affect, among other changes, a missing link with past experience, that in some cases provided the motivation for action. The interplay of changes at different levels is very difficult to describe, and here we shall focus only on those affecting the impact of the regional policies that will be discussed in section 3.

2.1. The manufacturing enterprises: global competition and local roots

In the last decade, manufacturing enterprises in the region matured, bringing about two significant linked changes that will have a long term influence on the development path of Emilia-Romagna: the internationalization of production and the emergence of new local linkages. Policies for extending product ranges are carried out not only internally, but also through mergers and acquisitions or the creation of new firms⁶. As a result, more than in the past, many

enterprises and often their networks are now characterized simultaneously by local and global relationships and this will greatly affect their relationships with the territory in which they originated. Increasing external relationships have not reduced the importance of relationships with other companies in the local production system. To some extent, the global competition has highlighted the value of local resources where the social, and not only technical and economic, dimension of production finds a proper space in which innovation might emerge. For example, in the region there are cases where a number of sub-suppliers have become specialized producers of components able to sell their product directly at an international level; a number of them, on the other hand, are starting to improve their services, providing no longer single parts, but complex components, the production of which involves, in turn, the outsourcing of the many parts and the co-ordination of other specialized sub-suppliers. Especially in the mechanical sectors, the relationships between the sub-suppliers and their contractors are less and less based on simple execution of the design prescribed by the contractors; in some cases, large contracting companies have selected a small number of sub-suppliers to which they have assigned the entire design and production of complex components of new products. These activities are, then, upgrading the competences of such sub-suppliers and, in turn, will also probably change – upstream – the competences required by their sub-suppliers.

Another change occurring in manufacturing activity in the region is the blurring of territorial and sectoral boundaries of local production systems. Local systems competing on the basis of knowledge need complementarities and, in some cases, complementarities emerge within the existing networks, by the development of specific engineering providers and specialized services; in other cases, however, there are close relationships between different complementary systems within or, sometimes, outside the region (as in the case of the agricultural-food production system or the motor production system).

In general, changes in the manufacturing enterprises have generated an increasing need for qualified knowledge to improve quality, management capabilities, to manage international market and production relationships, and to innovate products and business organization. All this has stimulated a high demand for new competencies: on the one hand for SMEs it is difficult to absorb all of them internally, on the other hand, there is a shortage of these competences in the market, even though in some fields (such as software, engineering and management consultancy, design and creativity, communication) a very rapid growth in the number of individual professionals and small firms has taken place in recent years.

2.2. Associations of small enterprises: from representative of member SMEs to supplier of services for SMEs

The Emilian model identified a crucial actor never before mentioned in the literature on economic development: the associations of small enterprises. These emerged after the Second World War to give voice to a multitude of small artisan and industrial enterprises. This role of inter-mediation was crucial in the development of the surging industrial district, providing a linkage between the individual small enterprise and local authorities, political, institutional and social actors, both at the local level and at the national level.

In the past twenty years these associations have interwoven that role with a new role as suppliers of specialized services to support member entrepreneurs. In the rest of the world these tasks are accomplished by various bodies, both private and public, but in Emilia-Romagna there is a clear prevalence of the associations *di rappresentanza*, and it is of some interest to discuss the peculiarity of this situation. Although it is a phenomenon common to all the associations of firms in the region, CNA of Emilia-Romagna is an outstanding case. It is the largest association of SMEs in Italy and its main presence is in Emilia-

Romagna, where it embraces about 65,000 enterprises (in all sectors except agriculture)⁷, with a total of 250,000 employees.

CNA acts in three main ways: 1) it represents the firm in the dealings with trade unions and local and national government; 2) it carries out tasks for some enterprises, such as payroll, tax accounting and income-tax return; 3) it supports the firm's competitiveness in the market⁸. Through seminars, conferences and small group discussions it also allows important formal and flexible relationships to form between firms, that sometimes generate enterprise networks formed for getting information, benchmarking and forming new businesses. In this role, the association facilitates inter-firm relationships, providing them with a sort of marketplace where interactions may take place. Although it acts in orienting public policies for local development, the association does not have the power to intervene in individual firms' decisions, but it does act as a consultant⁹.

To perform all these activities, CNA of Emilia-Romagna relies on a big organizational structure with 2,500 employees distributed in 230 municipal offices, 10 provincial offices and one regional office. It is run by the members themselves, who create a leading group, now consisting of 1,200 persons. In practice, to maintain such a large ramified organization, resources are drawn not so much from the annual membership fee paid by the members, as from the services it offers to the member enterprises. Therefore the CNA of Emilia-Romagna is not only the largest association of SMEs in the region¹⁰, but is also the biggest service enterprise of Emilia-Romagna, with a territorial diffusion and a range of services unmatched in the region.

2.3. The reasonableness of the trade unions of Emilia-Romagna¹¹

Emilia-Romagna is a place of strong traditions of solidarity and association, which accounts for, *inter alia*, the relatively high rate of union membership even in small firms. Decisive were the 1970s, when the Emilia-Romagna unions responded to productive

decentralisation with a bargaining policy that did not allow wage cuts in small firms. This dynamism forced a great number of SMEs to innovate in order to survive.

What needs to be emphasised, however, is that union power, with some exceptions, has never created unmanageable or destructive situations, but has rather aimed at reasonable behavior inspiring local wage policies uniform with those run at the national level. Moreover, the presence of strong bargaining at the local and individual firm level has enabled the effective application of the national contract, an adequate application of levels of skill and a continuous check on working conditions (both inside and outside the factory). The presence of a widespread cooperative and artisanal tissue, run by ex-worker entrepreneurs, has provided experience of management and bargaining practices based on the search for consensus¹². Union power has been a deterrent for fair competition, and in this sense it has not been opposed by entrepreneurial associations. The balance of interests in Emilia-Romagna has led to constructing a negotiating game on the basis of written and unwritten rules, made up of reliability, acknowledgement of representativeness and prior information all of which has facilitated negotiation and the search for conciliation, with strong commitments regarding investment, employment and environmental issues.

Indeed, the region has been a workshop in industrial relations, and has featured behaviour later adopted at the national level – e.g. the law on home working, on mobility, on the cohesion of policies of territorial development and training, also on territorial bargaining in the artisanal sectors, as well as individual firm and national bargaining. This experience has shown how it is possible to create an atmosphere of understanding and trust based not on “community spirit”, but on the independence of those involved, making conflict explicit and regulating it through the extension of the negotiation.

2.4. Local authorities: the importance of inter-mediation among actors

This balance of forces is partly due to the mediating role of the local authorities, whose desire is for a good public image. Local administrations were, and are, in general governed by pro-labour majorities, and this has somehow offset the economic power of the entrepreneurs in the workplace, but without having to rely on normative interventions or violations of bargaining autonomy. Intervention by the institutions has always been requested as a device for compensation in the most serious conflicts, clashes on questions of principle, and also crises and closure of firms. The assurance of impartiality of arbitration promoted understanding by the workers of the real needs of the firm while the possibility of punitive use of urban planning instruments or discredit in the economic and financial society represented a sanction on socially unacceptable or incorrect behaviour by firms, and encouraged the search for alternative solutions. But social control has also functioned vis-à-vis the unions, who could not seek public support for ultimately corporative demands. Moreover, in this framework, small firms found it advantageous to join an association that was becoming a privileged interlocutor in negotiations with the local authorities on problems which they could not solve alone as in the case of certain public services (e.g. factory canteens, transport, professional training), or when the solution of firms' crises required mobility on the part of the workers.

This practice allowed workers a greater margin of action than that obtainable from power relations in the factory. Indeed, the presence of workers in local administrations elected as citizens' representatives rendered the various social actors less unequal from the decisional point of view. The possibility of social defence against losing one's job – even if it does not match the lifelong employment typical of Japan – avoided the prevalence of union policies centred around obstinate protection of bargaining achievements, and provided an

incentive to cooperational relations. Lastly, this practice has enabled entrepreneurs to understand and face up in advance to the social impact of their economic decisions, and to appreciate the value of having a good reputation both inside and outside the workplace.

2.5. Demographic trends and development

In general, as the productive structure is currently articulated, existing firms are capable of growing and new firms enter at a moderate rate. In the next few years the labour demand in this region is expected to increase, though at a rate of growth lower than in the 1970s and 1980s, and certainly with a different composition as regards the professional profiles required by manufacturing enterprises and service firms. However, the supply for labour may present more of an obstacle for economic growth of the region than the demand.

The natural population growth in the region is negative¹³. Quantitative projections of the professional profiles of labour demand over the next decade are not available, but notwithstanding the lack of precise data, one can be certain that the demographic aspects will have multiple effects that will have to be faced by education and social policies. Let us call attention to two of these effects.

The first concerns the large deficit that would be needed to fill jobs with a fairly low degree of skill (dirty and heavy work). Despite the high level of automation in the region, there is still a demand for very low-skilled labour – in both the service and construction sectors, but also in manufacturing – and this is often associated with unhealthy working conditions. The demand is met by a work force coming from areas of Southern Italy (where unemployment remains above 20 per cent), but predominantly by citizens of countries outside the EU.

Immigration has contributed crucially to the development of all Northern Italy. As regards Emilia-Romagna, in the 1970s (when population growth was positive) several social and cultural

interventions had the effect of raising the level of the social and cultural, as well as wage, expectations of the migrants who were not pushed to the margins of society, but became an active element in a far-reaching process of social and technical change. One reason why work conditions improved was because it was not socially admissible to attract people from outside to perform dirty, heavy jobs, which could be avoided by the introduction of suitable technology. This process of transformation increased the wealth of such places, involving civil society as a whole. Today, the new wave of migration calls again for intervention to raise the social and cultural expectations of those arriving in search of work. This is an essential condition for avoiding social splits, and to foster potential feedbacks for the regions from which these workers come. It requires not only social and cultural intervention, but also policy measures in the field of technical and professional education.

The second effect concerns the generational turnover in the ownership and management of many family-run enterprises: the number of offspring has fallen and the growth of these firms is strongly dependent on the abilities of that offspring.

In the face of these changes it is not hard to see how the former harmony between certain technical and vocational schools and the local economic system has broken down. It was that harmony that had started a virtuous circle in which the technical skills learnt within the school represented, in the particular social and productive structure, a fundamental element of knowledge filtering down through the entire productive tissue.

2.6. Social changes causing difficulties in union action

Both at the regional level and in the individual local production systems, the unions today play an active part in the interaction between government and social forces. This interaction, preliminary to the important decisions in policy making, is called “concertazione”:

it does not rule out social conflict, but it helps to define the scenario within which the social actors will independently act.

Indeed, it does not exclude union bargaining, such as that currently in progress on change in workplaces, from industry to the tertiary and public sectors. Here the issue concerns the capacity and possibility to influence the actual conditions of work, when not only the content of work is changing but – as a result of decentralisation and tertiarisation. Workers are subdivided into groups with different forms of contact even though they may belong to the same production cycle, they are subdivided into groups with different forms of contract. The coexistence within the same firm of a multiplicity of labour relationships calls once again, in new terms, for the affirmation of rights and safeguards as universal conditions of work.

The last decade has witnessed the decline or delocalization of traditional industrial sectors, and the disappearance of corresponding professional and social identities, and the increasingly heterogeneous nature of labour relations. Tensions and divisions have sharpened within the world of work, for example between citizens and service operators, between EU and non-EU workers, between active and retired workers. At the same time public intervention in the economy, and against social inequalities, has diminished in Emilia-Romagna as in Europe as a whole. The unions are examining these topics concerning strategic nodes of social life, in a period in which union organizations are showing signs of weakness¹⁴. Indeed, the acceleration of economic and social change casts doubt on all forms of representation of interests, not only those of the unions. But the unions – paradoxically to a greater extent just where they are strongest – are more exposed to these changes. This is because among all the major social organizations, unions are the least formalised and the closest to the formation of material needs, and hence most sensitive to their change.

2.7. To what extent do industrial relations affect local development?

Thus it is not irrelevant even in the case of Emilia-Romagna, to pose the reverse question of what effects the evolution of industrial relations will have on development.

Emilia-Romagna has experienced how the nature of union relations has helped to create a highly structured and regulated society, in which the recognition of workers' rights and their safeguarding has become a commonly and widely accepted datum. It is worth recalling that the experiment in social services, which characterised the initiative of local institutions in Emilia-Romagna, was born as a response by the institutions to requests put forward by the unions in firm bargaining and was sustained by some very tough action. Over the last fifteen years, it has been persistently argued – against the unions – that these union relations and this system of social services involve an excessive cost for firms, so that Emilia-Romagna, as against competing regions, would inevitably run into economic disaster. But in fact, a strong structure of union relations – even in recent years – far from representing an obstacle, has been a valuable resource for development, as is witnessed by the fact that Emilia-Romagna has one of the lowest levels of unemployment in Europe. It is important to bear this in mind in the face of ongoing processes of transformation in the “age of globalization” and the information revolution, whose challenges pose new possibilities but also new risks. Two examples illustrate the seriousness of the scenario.

The first has to do with social and health services, which have played a central part in sustaining the economic development of Emilia-Romagna, but which are now viewed as involving excessive costs¹⁵. Cuts undertaken to reduce the deficit in this sector have negated important experience – such as the territorial mental health services – that required years to mature. Set up to provide an answer to the closure of the mental asylums (envisaged in Italy by the Basaglia law of 1978), in the past decade these services were the feather in the cap

of Emilia-Romagna. Now, their staff and functions have been reduced in the name of efficiency that gives scope to private operators and thus bypasses the weaker strata of the population who, today more than previously, feel the effects of social change that often brings far-reaching disadvantages, including mental ones.

A further example is the in the renewal of regional contracts for artisan workers. In the name of “globalization”, artisan firms no longer wish to bear the costs of regional bargaining, which would penalize them relative to competing artisan firms in regions with weaker unions. Yet it was this selfsame union power that in 1993 enabled the agreement between associations of artisan firms and the Emilia-Romagna union organizations to create a wage integration fund for firms with less than 15 employees¹⁶.

These two examples call attention to two aspects of a general issue. On the one hand, it is necessary to assess the consequences of decisions that in the short term have a positive impact on the budget deficit, but that might be nullified by the social costs in the long-term. On the other hand, we must understand whether – in the relations among the social forces – the ideology of globalization and efficiency advocated with reference to short term gains do not risk becoming a device for dismantling experiences whose importance goes beyond the interests of the individual local administration or enterprise.

3. REGIONAL POLICY MEASURES TO FOSTER LOCAL DEVELOPMENT

3.1. New institutional settings and regional policies for local development: the innovative response of Emilia-Romagna

In recent decades, regional development policies have been developed along four major lines – infrastructure, service centers, incentive measures and credit guarantee consortia¹⁷. A recent far-reaching change is the process of administrative decentralization envisaged by

the Bassanini Law¹⁸ of 1998. The Administrative decentralization has implied a transfer – from the State to the regions – of new competencies, but also of assets and financial resources. Moreover, new tasks to be decentralized and delegated to the local authorities have been set up. The effects of these changes have led the regions to rethink their role and policy measures to support the regional economy. Emilia-Romagna was the first region that approved a law¹⁹ to reorganize its new competences as envisaged by the national law, moreover it has also started a process of deep revision of its internal organization and structure²⁰.

To provide more effective policies to foster local development, the approach to development policy has drastically changed, giving new impetus to policy measures co-ordinated at the regional level through a “programmazione negoziata” (negotiated programming) that must involve all the local actors (both public and private) from the very beginning, so that interests and requirements from each of them can be taken into consideration. The framework within which these measures will be implemented is certainly another novelty in regional policies for, according to the new regional legislation the resources for the implementation of the region’s industrial policies are pooled in a common fund (the “Fondo unico”). This fund is not administered by the laws of the different sectors, but by a three-year regional programme, updated on an annual basis. The new system enables the incentive system to adapt to the actual requirements of the firms. One common administrative act, yearly updated, enables greater flexibility, indeed, as compared to many other legislative measures required in the past.

Alongside these changes in regional policy, the priorities in industrial policies can be divided into two main groups. On the one hand it is necessary to spread and foster the development with focus on the characteristics of each area. On the other hand, support must be given to the small and medium enterprises so that they can face the challenges of internationalization, innovation and access to financial

resources. The instrument that enables these orientations is the Regional Three-Year Plan²¹, to which we shall make reference in this section. With its approval in December 1999, Emilia-Romagna is the first region in Italy to pass a plan of this kind.

These policies are supported by other policies at the physical infrastructure level, such as a long term transport plan (PRIT), and policies on learning processes, as they emerge in the changes undertaken in technical and vocational education. Together with this set of policies, a regional plan for social policies, integrated with the other measures outlined above, is being drafted. Although social policies will be a crucial component of the regional policies for the next decade, as the plan has not yet been presented for public discussion, in this paper we will not discuss this topic. Nor shall we present other related themes such as the environmental policies set up by Emilia-Romagna, a region that, even in this respect, is one of the most innovative in Italy. To sketch an overall scenario of the new regional policies, in this section we shall focus on policy measures regarding manufacturing enterprises, transport infrastructure and vocational and training education.

3.2. Industrial policy measures

The main strands of regional industrial policy may be summarized with regard to the following interventions which we shall examine in turn: area programs, internationalization, credit and innovation.

a. Area programs: implementing negotiated planning

In the first place, one way for the region to accomplish the strengthening of local development is to introduce special “programmi d’area” (area programmes), which have two principal novelties. The first is that “back-up measures” are not elaborated separately for each sector, but on a territorial basis. Each programme contains a wide range of measures aiming at fortifying the weak

points and consolidating the strong points of each area, and hence at fostering its development. The second novelty is that projects are developed through a method of negotiated planning.

To date eight area programmes have been initiated, covering a wide range of cases: two major municipalities re-qualifying their urban areas, two mountain areas of the Appennines, four areas with special problems, including the Adriatic coast cities, a thermal site, one port of the region and a new industrial site to locate the expanding production facilities of the motor producers already operating in Bologna and Modena. The programs provide for the investment of public resources equal to 226 billion lire (117 million euro) of regional money and 319 billion lire (165 million euro) of local and territorial money, during the three-year period 1998-2000. Private investments in excess of 1,200 billion lire (620 million euro) should be added to this.

One challenge will be the real ability of the social forces, acting at a local level, to build credible area programmes. On the basis of the programmes under way at the time of writing, the regional administration must also establish proper instruments to monitor the efficacy of their actions. Monitoring is crucial not only to check the standard of the expected results, but also for implementing the two novelties of the area program framework: the institutional requirements for having a more complete integration of the multiplicity of interventions needed in the same programme, and ways of fostering negotiating planning.

b. Internationalization: the new institutional settings

A second level of intervention concerns policies of support for internationalization of small firms through a variety of channels. Despite their small size SMEs in the Emilia-Romagna region have always been very active in foreign markets. Emilia-Romagna is, as a matter of fact, one of the most important export regions in Italy, as it

accounts for 11.3 per cent of the national export with a value in 1998 of 50 thousand billion lire (26 billion euro). The reform of ICE (Istituto per il Commercio Estero) and the competencies that have been transferred from the state have given the region a key role in this context. To overcome the fragmentation that still exists today in this respect, the final aim of the region is to set up a common regional body to support the presence and the consolidation of the production system abroad. Therefore the Emilia-Romagna region – in co-operation with the Ministry for Foreign Affairs, ICE, SACE (Istituto per i Servizi Assicurativi del Commercio Estero), and SIMEST (Società Italiana per le Imprese all'Estero) – has set up a regional agency for internationalization. The agency is located near the ICE office in Bologna and will work through a region-wide network involving associations within the different sectors, entrepreneurs' associations and the trade fair and banking systems. The objective is to provide firms with information and assistance so that they can benefit from the services for internationalization that are already available, and also to integrate the means for financial support and insurance offered by the national authorities.

c. Credit: strengthening of the positive experience of guarantee consortia

Credit policy is a not a new strand in the regional policy of Emilia-Romagna: with the aim of supporting the investment capacity of SMEs, which is often insufficient, a system of credit guarantee consortias has been strengthened since the 1980s. These structures were financed partly by the region, partly by associations within the different sectors, as well as Chambers of Commerce and associated firms, and acted as guarantor of loans that the firms apply for at the bank, often thereby achieving favorable rates. At present, 54 consortia, with the capacity to provide financial support up to 1.100 billion lire (570 million euros) a year, are operating in all productive sectors. As a result of the new competencies that have been delegated from the State, the region can continue to support the credit guarantee

consortia, while providing its own guarantee funds and establishing agreements with credit institutions to support loans for particular aims. Moreover, the Regional Administration aims at defining proper measures with regard to the capitalization of the firms. These measures should make it possible to prepare small enterprises for listing on the Stock Exchange, and to develop an innovative financial system so that new venture capital enterprises can be created and internationalization can be further promoted.

d. Innovation: building a research network among the various actors

With regard to innovation, the guidelines of regional policy respond to the growing demand, especially from SMEs for services helping businesses to maintain and develop their competitive advantage through technological and organizational innovation, both within and outside the firms. The wealth of research activities and human resources available in the Region has obviously had a strong impact on the regional production system, however it still remains a critical factor for enhancing the competitiveness of the enterprises operating in this territory²². Regional policy aims to build a bridge between the world of production and the world of research, as these two worlds continue to have problems communicating with each other. This can be done through a network of devices to identify the needs of the enterprises and hence transfer the results of the technological research.

Establishing a system which positively matches the services offered by research bodies with the demand for knowledge and skills from the firms requires the promotion and definition of specific activities facilitating the transfer of knowledge. Defining and implementing these activities in turn require special methods, and particular survey and implementation methodologies.

Researchers and research organisations are not immediately available to meet firms' problems relating to innovation, owing to a lack of

organisation and competencies. Moreover, what is needed is not only to be able to respond adequately to the immediate innovation needs expressed by the firms, but also to be able to interpret and identify trends in technological needs. Only then is it possible to promote research activities and orient research organisations in those directions that are strategically important for the industrial system. Then fostering local development requires the emergence of specific activities able to make innovation “useable”, taking into account broader technological trends, even at the international level. This implies the necessity for defining, testing and producing specific methodologies in order to match, effectively, technologies with businesses. These methods should include technical-organisational audits and new methods for planning, demonstrating, piloting and disseminating innovation, but they should also include information and training initiatives and joint research with businesses because innovation should also be seen as an upgrading of knowledge already possessed by those involved in the process. Special emphasis should also be placed on projects and services concerning cross-sector and pervasive technologies (for example, logistics and telecommunications) since these underpin the success of entire systems of SMEs at local and regional level.

In order to reach these objectives, a reorganization and redefinition of business assistance and service centers throughout the Region is required, as well as the development of new organizations and instruments to promote innovation and technology transfer projects. Following similar experiences in other European countries, these new organizations and instruments would entail close collaboration between industry, research centers, universities, regional business assistance organizations on strategic objectives for the introduction of innovative processes. The debate on these issues is still open nevertheless the basic idea under discussion is the necessity of promoting a “Regional System for Industrial Research, Technology Transfer and Innovation”. Such a system should formally integrate, at the institutional level, many components such as: enterprises, service

centres, universities and scientific research institutions. Collaboration between these components would generate a systemic effect that would benefit the entire economy of the region, moving from the current periodic and often haphazard forms of collaboration to institutionalized, long-term collaboration based around the joint development of multi-annual innovative projects.

Consistently with the needs for research and technology transfer in a regional productive system, the Emilia-Romagna Region proposes to encourage contracts between SMEs and research institutions and universities, projects which are part of EC and supra-national funded programmes, and the creation of new companies using the results of innovative research.

The Region will also implement a series of funding-related actions at the system level. It intends to facilitate investment in technology along three lines. The first aims at redirecting the actions of credit guarantee consortia towards the provision of investment in technology, and the provision of advance payments against public funding already granted to research and technology transfer projects. The second is to organize an economic risk assessment and technology rating system in conjunction with the funding system, thus also stimulating the creation of special funding products. Lastly, it intends to involve all the actors of the funding system in defining new funding products designed specifically for innovation and technology transfer.

3.3. Transport infrastructure: new opportunities for action

Emilia-Romagna has developed along the Via Emilia highway, which crosses the region from south-east to north-west. In consequence of a heavy increase in road traffic (71 per cent in goods and 44 per cent in passengers over the latest 15 years), relief measures have been indispensable. Two remedies to solve these problems have been highlighted. The first is to move the increasing traffic from road to

railway, through investments in the development of the railway system and intermodal transport. The other is to create an infrastructure network that can work as an alternative to the central axis. This network would provide a better direct access to industrial districts, to urban areas and to peripheral districts in the mountains or on the internal plain of the region.

These remedies were already singled out in the transport plan of 1985, but its results were almost insignificant. The new transport plan PRIT (Piano Integrato dei Trasporti) – approved in the autumn of 1999 – forecasts development measures for the next decade along the same lines, but with an actual possibility of realizing them. In fact, in the past a large part of the infrastructure (roads, highways, railroads) was owned by the state and governed at the central level; now the Bassanini Law has transferred many (but not all) of these assets to the regions. In Emilia-Romagna, the regional administration has provided the legislative framework to manage those infrastructures: with possession of the physical assets and financial resources to realize the interventions²³, now a process of change can really start.

4.4. Vocational training and labour policies: the difficult links

A pillar of the Emilian model, technical and vocational education has played a crucial role in promoting and sustaining local development (Brusco 1982; Capecchi 1990, 1997). In the past decade, changes in strategic and organizational behaviour of firms have brought a strong need for qualified workers (Mengoli-Russo 1998), both technicians able to manage new technologies, and specialized workers rich in tacit accumulated knowledge and the capacity for problem solving. Although these changes in labour demand are not recent there are still some critical impasses in the supply of labour. The impact of demographic decline is starting to be felt: less and less young people desire to work in the manufacturing sector; technical and vocational schools are facing a shortage of enrolments, in particular in mechanics. In general, in Emilia-Romagna the tensions in the labour

market are marked *inter alia* by the growing numbers of so-called atypical jobs with mixed duties²⁴. Moreover, changes in family structure and the social centrality of women, divided between home care and paid employment, repropound the theme of equal opportunities. And finally, notwithstanding a general labour supply shortage, young people with high educational qualifications spend a long time to find a job, also because their pattern of professional expectations has changed.

In brief, it seems that the process of production and maintenance of redundancies, mentioned in section 1, might be lacking. In the coming years, all this might have drastic effects on the productive systems. The lack of workers is of course stimulating immigration, but immigrant workers are unskilled and are generally employed in less innovative activities, with a lower quality of working conditions. This mismatch in the labour market calls for urgent intervention through a wide range policy measures at the regional level, from vocational and technical education to labour policy. In what follows we provide a short summary of the context within which such policies should produce changes.

a. Initiatives undertaken in Emilia-Romagna

Regional policy in this field will be greatly affected by sweeping institutional changes now underway in Italy in the education system²⁵. The autonomy of the educational institutions together with overall reform by the Ministry of Education constitute the new, modified context within which the school diploma exam is being reformed, the compulsory school age raised to 15 years, obligatory training defined up to age of eighteen and the start of upper integrated training courses. Reform of the entire educational path should commence shortly, through the definition of two education phases: primary, for seven years, and secondary for five years, terminating at the age of eighteen²⁶. Overcoming the centralized structure of school education and reforming the education phases will enable a significant

proportion of the curricula to be defined at local level, in such a way as to adapt education to the social, cultural and economic context in which it stands. These changes will push the local authorities to perform new and more important tasks, also with regards the entire local training system.

Targets and the resources for defining the right to study and learn throughout one's life are largely determined by the European Social Fund (ESF), the key word being "employability". In Italy, ESF goals can be achieved only through an integration of the various components of the Italian education system: from technical and vocational training and on the job training, to secondary and upper secondary education.

The main instrument to achieve this integration is the decomposition of the curricula into competence and knowledge modules, with mechanisms of validation and recognition of training credits that will accompany a person at all levels of education, both secondary and tertiary, and throughout the person's life. As regards post-secondary education and training, the major innovation will be the new provision of integrated upper technical-professional training. For a year now, a post-diploma two-year period of high technical specialization has been experimented with²⁷, involving firms, schools, universities and vocational training. This effort towards developing the capacity for adaptation, relation-building, and problem solving aims to bridge the gap that currently separates Italy from other European countries in the segment of non-university vocational training.

Emilia-Romagna aims at tackling labour market problems by a raft of interventions. In 1998, the regional training system was responsible for various training activities, aimed at persons and firms, and involving 98,000 participants, 74,000 of them employed workers and 16,000 young persons entering work at the various levels of qualification. The resources of the ESF handled annually by the region amount to about 300 billion Lire (150 million euro).

In Emilia-Romagna 40 professional training centers – which, as mentioned, stand alongside the schools - are located in more than 140 accredited sites in the regional territory. Direct state participation in these centers, which in the 1970s was an important initiative of economic and social policy, has now diminished to a marginal role. Currently the centers are largely private, linked directly or indirectly with union, entrepreneurial or religious associations. The six main centres have a regional dimension, and provide about 40 per cent of the training places. The rest are at the provincial or township level. An internal staff of more than one thousand is made up of administration workers, trainers and planners. The technical teachers, on the other hand, are drawn almost entirely from firms or professions.

b. Reform of the vocational and educational system: a hinge to strengthen the emergence of learning organizations and innovation

In Emilia-Romagna there is an ongoing debate on how to go beyond the limits of a regional structure that previously enabled strong growth, but that now faces new problems of development and requires innovation in regional policies.

The theme of learning lies at the root of this problem. It is well known that individual learning and organizational learning on the part of firms and institutions are crucial issues, which are decisive for innovation in firms and local productive systems. Learning has to do with the processes of creation, of exchange and sharing of knowledge, which *within firms* is mainly performed through the interaction of working groups, and *among firms* through the ability to construct networks of relations with other firms, organizations and institutions. In these processes, the dimension of communication is of fundamental importance, since it influences the acquisition of knowledge and information, their sharing, the construction of significances, organizational memory, and the learning of new routines.

An essential device for any policy of development is therefore to link the training system with both the education system and the labour market. But success of an integration of these three systems depends on two critical aspects: one is linked with the special nature of the productive tissue in Emilia-Romagna, the other concerns the more general issue of intervention in this field.

The first critical point lies in the fact that a great number of small firms find it difficult to adopt training strategies that strengthen individual learning and organizational growth. In particular, the constraints of structural and managerial culture in SMEs make it hard not only to identify training needs, but also to plan and organize training: training requires time, it should be seen as a permanent process of change. Moreover SMEs have only limited resources to meet the changing demands of their clients, which makes it almost impossible for them to take any of their employees away from production. All these difficulties result in the paradoxical situation that the initiatives of the training system are taken up only by the most efficient firms, whereas they bypass many SMEs and thus have only a minimal impact on the improvement of the productive system as a whole. In addition, the supply of training cannot match the specific demand of each individual firm, as it is very expensive to produce specific programmes for a limited number of employees.

The second regarding the effectiveness of the policies – rather than the goals which are established in the EU programming of resources – concerns the *way* in which the various actors in the system coordinate themselves to reach the targets. The action of the public decision-makers must be transparent in setting out the framework of restrictions and the opportunities for the different actors, in such a way that the public competitions for the resources made available simulate a real market of training demand and supply. But simulating the market by public competition creates problems for public goods like training and learning.

Here the territorial context, (i.e. the concept of the *learning region*) becomes central and must reorient the modalities of governance and public policies in the field of training and further education. It is not enough to emphasize the objectives, partly exogenously determined, and on which general agreement among the actors involved is easier to reach. In promoting an effective training policy it is of decisive importance that the dimension of the individual firm go hand in hand with the dimension of community, of territorial interests and reference to local labour markets. This may allow self-organization of training courses by individual workers, and the involvement and collaboration of suppliers of services for SMEs with local training centres, whether associations, professional offices or consultants. Lastly, we should add incentives for investment in the technological and didactic infrastructure of the training centres or agencies, not to speak of long-term relationships with persons having the best professional and technical knowledge.

4. CONCLUSIONS

4.1. Key factors for competitiveness: learning and innovation as a benchmark for action of all the actors in the region

Today, the firms of Emilia-Romagna face new challenges and have to meet competition from the rapidly evolving and emerging enterprise systems of other countries. In recent years a series of factors have had a major impact on the local industrial system. Italy's entry into the European Monetary Union has meant that producers can no longer count on devaluation of the Lira which previously made it possible to protect their competitive status in overseas markets. The rapid, nearly exponential growth of new technologies both in the specific manufacturing activities and in relation to "horizontal" issues (such as information systems, logistics, etc.) is revolutionizing communication systems and introducing a level of mobility in capital, goods and persons which was unthinkable just a few years ago.

These factors have made it increasingly difficult to compete against low-cost economies and as a result the emphasis has now shifted not only to the ability to innovate, but also to the ability to anticipate market trends as crucial factors in maintaining competitive advantage. All recent economic analyses lead to the same conclusion. Faced with this challenge, the only way to succeed is to increase technological and organizational innovation in single companies and in the production system as a whole. It is therefore necessary to develop, enhance and channel the system's propensity for innovation. This should be done by stronger regional policy promoting the quality, presence and commitment of those organizations that promote industrial research, innovation and technology transfer among enterprises and the collaboration with research centers and learning centers, in order to increase technical and scientific skills in the business world.

In other words, it is important to try to incorporate the traditional efficiency of the local enterprise system into an industrial system oriented towards forms of production having a much higher added value and requiring higher levels of technology.

The key question in this phase of the evolution of regional economy is how to preserve the combination of competitiveness, social cohesion and spacial diffusion of economic development. Or in other words, the question is how it is possible to keep strong local roots in economic activities, high employment and good wages in a new context. Basically there are three main conditions for this:

- preserving and reinforcing specialized and non-transferable knowledge at the local/regional level;
- increasing the efficiency and quality of the local environment, improving internal and external connections and urban and environmental quality;

reinforcing enterprise structures in managerial terms, in order for them to be protagonists on the global scene and leaders in their market niches.

The dangers that Emilia-Romagna faces concern the problem of knowledge transmission, owing to the scant reproduction of intermediate technicians, both in terms of new regional employees (generally interested in non-material jobs) and immigrant workers (generally little qualified), which can provoke a discontinuity in enterprise organization. A second danger is in social breakdown and the loss of identity of more dynamic entrepreneurs, unsatisfied with their external environment, because of bureaucratic obstacles, delays in infrastructure development, and low quality of services.

These considerations are at the basis of the new policy approach of the regional government, that is oriented towards stimulating innovation and efficiency on the one hand by strong investment in the simplification of enterprises and public administration, improvement of the quality of relationships between enterprises and credit institutions, enterprises and research structures; and on the other hand by promoting systemic innovation through projects involving networks of enterprises, or even clusters at the territorial level.

Broadly speaking, not only business-to-business relationships are under pressure, but also the relationships between firms and local institutions, service providers, infrastructure and so on. Entrepreneurs demand levels of efficiency and competence consistent with their own re-organization imposed by the market. But these institutions are much slower in assuming “time to market” responsiveness and this is creating serious breakdowns in the system, and loss of feeling of belonging to a community, while individualism among entrepreneurs increases. Nowadays public administration, service providers, banks and all other actors involved in economic development are under pressure to respond to the new environment and to support firms adequately.

In this context the key factors for competitiveness are: capacity for continuous learning, necessity for continual improvement of quality, innovation and capacity for problem solving; quick response to market requests and needs; flexible but dynamic organization; and continuity and financial stability of firms. This implies that: enterprises in local production systems must also be open to accumulating knowledge from external sources (such as other systems or research structures); bureaucracy, service providers and infrastructure must be very efficient and able to respond quickly to firms' needs; individual enterprise management, even if in a flexible system, becomes relevant and complementary and not alternative to local externalities. All this implies, in turn, that the necessity for continuous learning is not specific to the activity of the enterprise but must be the benchmark of all the institutions and organizations operating within the region: from local authorities to schools, from associations to regional administration.

4.2. The social dimension of regional development: a challenge to be faced

In outlining the orientations for development of the Region, one must remember that firms' need for greater competitiveness must not increase inequalities, i.e. the structured differences of access to the system of social compensation. Do all enjoy the same new opportunities, or is social exclusion on the increase?

Some worrying social processes include the spread of moonlighting (especially in sectors like building and trading), and even certain forms of cultural barbarity such as public opinion campaigns that associate problems of law and order with the growing presence of extra-EU workers. All this while the enterprise system as a whole is undergoing restructuring and reorganization that leads to fragmentation of work places and concentration of the devices of command. In this perspective, the Emilia-Romagna region must show

itself able to follow some fundamental orientations, without making the dual error of viewing past experience as a happy but finished period, or conversely as a reassuring heritage to reposit in a changed context.

First and foremost, economic policy must encourage a competitiveness founded on the response to the multiple necessities of the “territory” and the raising of the quality of life and the quality of work. The territory must be understood in relation to the ability to generate and maintain what may be over and above what is strictly necessary, since this is a strong point of the local productive systems in the region. A higher quality of work is the alternative to precarious labour relations, which ultimately lead to denigrating the workers coming from other regions. Only in this way will the flexibility and the new typologies of labour relations become a positive element in a wider process of training and expansion of opportunities for all, citizens and firms. If, however, they become merely a device for reducing labour costs, the reverse will occur. The recent Regional Law on the new competences of the region may open up some positive and interesting possibilities in this direction, by encouraging negotiation and planning among the social forces in the territories.

But the development policies will also have to bear in mind that the social security system must be reformed and extended, since new needs and demands are emerging, both individually and collectively. Suffice it to observe that today there are around 50,000 citizens in the region living in a state of non-self-sufficiency. And this reform will be effective only if it is able to highlight once more the central role of the local communities and the territories that must be the place for interface between institutions and social forces.

Notes

- ¹ In 1980 an Italian version of the “Emilian model” was published in the left wing review *Problemi della transizione*. The novelty of the analytical approach Brusco proposed in that paper aroused the interest of many international scholars – such as Charles Sabel, Michael Piore, Frank Wilkinson, Jonathan Zeitlin – who supported the publication of an English version of the paper, finally published in 1982 by *The Cambridge Journal of Economics*.
- ² Cf. Polanyi (1957) and Granovetter (1985).
- ³ This was a typical argument presented in a wide literature on development, stemming both from main stream economic theory and from the left wing tradition (cf. Brusco and Pezzini, 1992).
- ⁴ Many aspects of the Emilian model have been examined in other papers, cf. the essays collected in Pyke, Becattini and Sengenberger (1991), and Cossentino, Pyke and Sengenberger (1996).
- ⁵ An industrial district is “a socio-territorial entity typified by the active co-presence, in a circumscribed territorial area chosen for natural and historical reasons, of a community of people and a population of firms” (Becattini, 1979: 112). The dominant economic activity of a district is characterized by the presence of a local production system in which firms specialize according to a phase in the same production process. The final product of the district is generally bound for the world market and there are stable relationships between suppliers and customers which operate within the district. Within the same territory there might be more than one local production system, not as completely centered on the same territory as the dominant one in the industrial district. Cf. contributions in Bellandi-Russo (1994).

- ⁶ An underestimated number of 100 firms of the region are multinationals (99 in 1997, but 36 new takeovers have occurred in the last two years); 163 firms, on the other hand, are owned or participated in by foreign firms. Many of these firms are medium sized firms (50-250 employees) belonging to local production systems; but also smaller firms, even without direct investment, are able to establish non-trading linkages (such as production agreements or licensing) at an international level. Cf. R&P “Italia Multinazionale”, Documenti CNEL n. 17, Roma, 1997.
- ⁷ Members are generally enterprises with less than 50 employees, but in the last decade many medium-sized firms (with less than 150 employees) have joined the CNA in order to have access to the many services it offers.
- ⁸ CNA acts in the location and development of areas for industrial settlement, participation in fairs and exhibitions (in Italy and abroad), and the organization of vocational training courses. It promotes enterprise co-operatives and provides assistance for the access to credit from banks and creation of credit guarantee consortia (70,000 enterprises involved), and it supplies hardware and software equipment for company needs, and services for increasing product and process quality.
- ⁹ A recent survey conducted with a sample of associated firms has highlighted the fact that entrepreneurs involved in association life improved their own capability to tackle their company’s problems (cf. SWG ,2000).
- ¹⁰ About ten other associations of SMEs operate in the region.
- ¹¹ For more details see Brusco and Fiorani (1998).

- ¹² These experiences bear witness to the possibility of alternative strategies to confrontation which in the 1950s was very acute in Emilia-Romagna, with large popular participation in union and political struggles.
- ¹³ Demographic projections for the region show that over the next ten years a gap of about 6,000 units between labour demand and supply will have to be bridged: cf. Local authority for culture, sport, youth projects, training systems – Emilia-Romagna Region (1995). Even more pessimistic trends are suggested by demographic projections disaggregated at a provincial level and for Modena's industrial belt: cf. Fiorani (1997).
- ¹⁴ Cf. Cella (1999).
- ¹⁵ A similar example is that of the infant schools and creches which, in the 1970s, became a reference model on an international scale.
- ¹⁶ This agreement provided for the establishment of a bilateral body with representatives from artisan firms and workers. The experience enabled the setting up of a similar bilateral body in other regions. It must be borne in mind that Italian law entails that, in the case of market crisis or restructuring, only manufacturing firms with more than 15 employees can draw on the public wage integration fund in order to compensate possible wage cuts of their employees due to reduced working hours.
- ¹⁷ For a description of these measures cf. contributions in Pyke, Becattini and Sengenberger (1990), and Cossentino, Pyke and Sengenberger (1996).
- ¹⁸ Cf. D.L. n. 112, 31/3/1998.

- ¹⁹ Cf. the Legge Regionale (Regional Law), n. 3, 21/4/1999, on the “Riordino del sistema regionale e locale”.
- ²⁰ Cf. the “Agenda della modernizzazione della regione” defining the lines for this ongoing process of transformation.
- ²¹ Cf. Assessorato alle attività produttive – Regione Emilia-Romagna (1999).
- ²² In Emilia-Romagna there are four public universities (Bologna, Modena, Ferrara and Parma) and one private university (the Cattolica at Piacenza). They all have sizeable technical and scientific departments (employing about 10 per cent of total teaching staff and almost 9 per cent of the research staff of all the universities in Italy) covering a wide variety of subjects. In addition to these universities, the region can also call on the services of three other research centers: CNR (Consiglio Nazionale della Ricerca – National Research Council), ENEA (Ente Nazionale per le Tecnologie, l’Energia e l’Ambiente – National Institute for Technology, Energy and the Environment) and INFN (Istituto Nazionale Fisica della Materia – National Institute of Material Physics). As recently estimated by the OECD, in 1997 the overall research activity provided by the research centers in the region (universities, CNR, Enea, INMF) accounted for almost 17 per cent of all scientific research produced in Italy. In particular, 10 per cent of Italian scientific publications are produced in Bologna.
- ²³ In total, 31 thousand billion lire has been assigned for this ten year plan: 60 per cent has already been financed, or has had precise guarantees that it will be financed; the other 40 per cent will be obtained either through mortgage or transfers from the state.

- ²⁴ This term, in Italy, means jobs performed with contracts different from the traditional ones for permanent dependent workers, or for independent workers.
- ²⁵ Cf. Mengoli and Russo (1998) for a fuller description of the education system in Italy and for a critical discussion of regional differences in technical and vocational education.
- ²⁶ The present system involves five years of primary school, followed by three years of lower secondary school (scuola media) and a further five years of upper secondary education (licei, technical and professional institutes).
- ²⁷ At the national level, the experiment involves 150 courses. The national experiment follows positive experiences in Emilia-Romagna, result of an agreement between the Ministry of Education and the Emilia-Romagna Region.

References

- Assessorato alla cultura, sport, progetto giovani, sistemi formativi – Regione Emilia-Romagna. (1995) *Atti della conferenza La popolazione dell'Emilia-Romagna alle soglie del 2000, (Proceedings of the conference on "The population in Emilia-Romagna on the threshold of 2000")* Ferrara 24-25 December 1994.
- Assessorato alle attività produttive – Regione Emilia-Romagna. Crescita, qualità e innovazione delle imprese e del lavoro in Emilia-Romagna. Programma regionale triennale per lo sviluppo delle attività produttive 1999-2001, November 1999, ("Growth, quality and innovation in firms and work in Emilia-Romagna").
- Becattini, G. (1979) Dal settore industriale al distretto industriale. Alcune considerazioni sull'unità di indagine in economia industriale, ("From the industrial sector to the industrial district") *Rivista di economia e politica industriale*.
- Bellandi, M. and Russo, M. eds. (1994) *Distretto industriale e cambiamento economico locale. ("Industrial districts and local economic change")* Torino: Rosenberg & Sellier..
- Brusco, S. (1982) The Emilian Model: Productive Decentralization and Social Integration, *Cambridge Journal of Economics*.
- Brusco, S. and Righi, E. (1985) Enti locali, politica per l'industria e consenso sociale: l'esperienza di Modena, ("Local authorities, policy for industry and social consensus: the experience of Modena") paper presented at the OECD Seminar *Opportunities for urban development*, Venice, 25-27 June. in S. Brusco (1989), *Piccole imprese e distretti industriali* Torino: Rosenberg & Sellier.

- Brusco, S. and Fiorani, G. (1998) Competitività, partecipazione e condizione operaia nelle piccole imprese emiliane, (“Competitiveness, participation and workers’ conditions in small Emilian firms”) *Sociologia del lavoro*, (68).
- Capecchi, V. (1990) A history of flexible specialization and industrial districts in Emilia-Romagna, in Pyke, Becattini and Sengenberger (eds.).
- Capecchi, V. (1997) Riforma della scuola e cambiamenti nel mondo del lavoro, (“Education reform and changes in the world of labour”) *Inchiesta*, (116).
- Cella, G.P. (1999) *Il sindacato, (The Trade Union)*, Bari: Laterza.
- Cossentino, F., Pyke, F. and Sengenberger, W (eds.) (1996) *Local and regional response to global pressure: the case of Italy and its industrial districts*, Geneva: ILO
- Fiorani, G. (1997) Il mercato del lavoro e il mercato edilizio nel comune di Modena e nel comprensorio di Modena dal 1991 al 2011, (“Labour markets and property markets in Modena and its district”) Modena: Comune di Modena. *Mimeo*.
- Granovetter, M. (1985) Economic action and social structure: the problem of embeddedness, *American Journal of Sociology*.
- Mazzonis, D. and Ennals, R. (1999) The Emilia-Romagna Model of Development Coalitions, *Concepts and Transformation*.
- Mengoli, P. and Russo, M. (1998) *Technical and vocational education and training in Italy: structure and changes at national and regional level*, Materiali di discussione, Department of Political Economy, University of Modena and Reggio Emilia.

- Polanyi, K. (1957) The economy as an instituted process, in *Trade and market in the early empires: Economies in history and theory*, edited by K. Polanyi, C. Arensberg and H. Pearson, Chicago: Free Press.
- Pyke, F., Becattini, G. and Sengenberger, W. eds. (1990) *Industrial districts and inter-firm co-operation in Italy*, Geneva: ILO.
- Russo, M. (1996) Units of investigation for local economic development policies, *Economie Appliquée*. XLIX(1).
- SWG. (2000) Le aspettative e le proposte degli artigiani e della piccola e media impresa, Report presented at the CNA Forum on “Le vie del nuovo. Le proposte della CNA per un’Emilia-Romagna all’altezza del cambiamento”, Bologna: 15 February 2000 (“The expectations and proposals by artisans and small-medium enterprises” report presented at conference on “New paths. CNA’s proposals for an Emilia-Romagna able to face change”).