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MANAGING EDITOR
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EXTERNAL RELATIONS
Mario Calderoni

EDITORIAL ASSISTANT
Giovanni Farese

ADMINISTRATION
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UNICREDIT SPA "REVIEW OF THE ECONOMIC CONDITIONS IN ITALY"
Via M. Minghetti, 17 - 00187 Rome - Italy

E-mail: economia.review@unicreditgroup.eu
Tel. +39.06.6707.0245 / 0339 / 0678
Fax +39.06.6707.0241 / 0778

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Table 6 – Sectoral specialization of the industrial districts recognized by the regions

Region	Food products and beverages, agro-industrial products	Textiles and clothing	Hides, leather products and footwear	Wood products and furniture	Paper, printing and publishing	Rubber and plastic products	Nonmetallic mineral products	Basic metals and fabricated metal products	Mechanical equipment and machinery	Electrical and optical equipment	Transport equipment	Other manufactures	Ecological building	Nonindustrial activities	Total	Metadistricts
Piedmont	1	12		1	1				11			1[a]			27	
Lombardy		7	1	2		1		3	1	1					16	6
Veneto	6	2	4	3	1	1	3		7	2[b]	2[c]	2[d]	1	12[e]	46	[o]
Friuli-Venezia Giulia	1			2				1							5	
Liguria	1						3		2	1	3[f]				10	[oo]
Tuscany		3	4	2	1		1		1			1[g]			12	
Marche		8	11	4					1			2[g]			26	
Lazio		1					2								3	
Abruzzo	1	2					1			1				1[h]	6	
Campania	1	5	1												7	
Basilicata	2	1		2											5	
Calabria	1														1	
Sardinia		1[i]		1			2								4	
TOTAL	**14**	**42**	**21**	**17**	**3**	**2**	**13**	**4**	**22**	**5**	**5**	**6**	**1**	**13**	**168**	**6**

[a] Gold-work and jewellery.
[b] Eyewear and biomedical products.
[c] Bicycles and pleasure craft.
[d] Gold-work and silver-work.
[e] Of which: tourism and culture (6), logistics (3), ICT and advanced technologies (1), hotel equipment (1), and wind power (1).
[f] Includes shipbuilding and pleasure craft.
[g] Toys.
[h] Technology-training services for firms.
[i] Carpets.
[o] The Veneto Region had adopted legislation instituting meta-districts and supply-chain districts but these have not yet been recognized.
[oo] The Liguria Region has provided for the institution of supply-chain districts, but these have not yet been recognized.

Source: Calculations by M. Carminati on the basis of data published in IPI (2006a) and Confartigianto Imprese (2006).

The Industrial Districts as Local Innovation Systems: Leader Firms and New Competitive Advantages in Italian Industry

Giancarlo Corò* and Stefano Micelli**

1. The international debate on the new districts and the Italian paradox

The discussion on industrial districts, in Italy, is strangely paradoxical. Long studied as the paradigm for Italian economic growth, now that industry is seriously affected by competitive problems the districts are the focus of the most severe criticism (Gallo and Silva, 2006). At first blush the critique may appear warranted; if the districts are an important part of the Italian industrial landscape – accounting for 40 per cent of manufacturing employees and 50 per cent of goods exports (70 per cent in the sectors typifying "made in Italy") – then when industry shows signs of slippage the cause necessarily lies, at least partly, in the weakness of the model. The accusation is that the districts, thanks to a set of specific external economies, prolonged the survival of a system of sectoral and size specialization that is no longer suitable for modern competition. But the syllogism is anything but flawless.

First of all, it is hard to imagine that once freed of the constraints of the industrial district the Italian economy would be ready to launch a new process of investment driven by the large corporations and high-tech industries. As Marco Fortis has pointed out, these were the very components that "contributed" most heavily to the economic stagnation of the last ten years (Fortis, 2006). And the most serious analyses of Italian industrial decline reach analogous conclusions. It is recognized that the Italian model of product specialization has registered notable continuity even under the blows of Asian competition and admitted, *de facto*, that the greatest difficulties have been experienced by the

* Department of Economics, Ca' Foscari University, Venice.
** Department of Economics and Business Management, Ca' Foscari University, Venice.

other components of the economy – which is to say, high-tech and large corporations (Faini, 2004). Further, blaming the industrial districts risks distracting attention from other, more substantial causes of Italy's competitive decline, in particular the rigid service and factor markets, inefficient public administration, the absence of competition in very broad parts of the economy, and severe infrastructural shortcomings – in transport, communications, energy, education – that significantly raise the relative costs for firms exposed to international competition. In a period in which competition is growing steadily fiercer owing to substantial exchange rate and social asymmetries, it would be unreasonable to think that given the disadvantages of the institutional framework the industrial district system could remain invulnerable to the violent shocks of recent years.

The question, then, is whether the district model – an organization of production by small and medium-sized enterprises in which the local territory performs the function of infrastructure for economic, institutional and knowledge integration – can still contribute significantly to Italian industrial excellence and whether its example can still be seen as relevant internationally. Let us say right here that in our view the answer is affirmative.

Our argument commences with a provocation: How strange that Italians should begin to doubt the competitive resiliency of the industrial district system just as the most highly developed and dynamic parts of the world are rediscovering the value of "clusters" of firms as instruments to support innovation! The international literature has never been so rich in theoretical and empirical work on the economics of industrial clusters and on technology districts. And where the discussion is in course, the aim is not to stave off decline but to bring about the conditions to foster firms' investment in innovation, to attract specialized human and creative capital and thereby increase the competitiveness of the national economy. This is evident first of all in the United States, where the well-established group of studies on "silicon landscapes" and "high-tech clusters" (Saxenian, 1994; Porter, 1997); Bresnahan and Gambardella, 2004) have been flanked by interesting research work on territorial creativity (Florida, 2002) and on cultural and artistic districts as factors in industrial competitiveness

(Rosenfeld, 2006). Clusters are the focus of a great deal of attention in northern Europe as well, Sweden and Denmark in particular, where the model is seen as the ideal instrument for enhancing cooperation between business and academia (Iked, 2004). And in eastern Europe too there is interest in the district model, with a view to attracting foreign investment and at the same time rooting economic growth in the local territory (Ketels and Sölvell, 2006).

The European Commission's seventh framework programme includes a specific support measure for clusters to encourage joint investment by firms and institutions in innovative projects (Weiers, 2007). Nor is China absent, its own attention to industrial clusters having increased sharply in recent years. The Chinese Ministry of Foreign Trade has estimated that 50 per cent of output in the southeast – the most highly industrialized part of the country – comes from specialized districts (Gi Qiang, 2006). And this is the model that the Chinese Government is looking to in order both to attract foreign investment to the interior of the country and to enhance innovative capacity in the high-tech sectors. It is no accident that the 2007 annual conference of the international association of clusters will be held in Guangdong, one of China's most heavily industrialized regions.

This concise account would appear to indicate the success of the cluster or district model internationally. So why are the districts now subjected to such criticism in Italy itself? The answer is that in Italy the concept of the industrial district that has been established, among both supporters and detractors of the model, is much more rigid and historically determined than that adopted in academic discussion and policy debate abroad. The weight of the district tradition here makes it harder to describe the evolution of local manufacturing systems towards renovated organization, technology and competitive arrangements as a sign of vitality. Except for experimentation with technology districts, which has remained at national policy level, the Italian idea of the industrial district has been associated almost exclusively with traditional manufactures, neglecting the fact that the nature of district economies – pools of specialized know-how, marked division of labour between firms, dynamic competition – creates the ideal conditions for keeping the learning process alive and thus encouraging innovation.

This essay considers the districts from a different perspective, more fertile for analysis and for economic policy: that of local innovation systems. First of all, we recall the factors of modernity inherent in the district formula by examining some recent analyses of the emerging organizational forms of the knowledge economy. Second, we present the findings of recent research on leader firms in Italy's main industrial districts, looking at three particularly important aspects of the changes under way: the international opening of the value chain, the distinctive features of competitive advantage, and the relationship between business strategy and performance. Finally, we offer a number of considerations on policy, dwelling in particular on the need to see district external economies not only as a historical legacy but as a deliberate project in support of innovation.

2. Networks, entrepreneurship and territory: The factors of modernity

The international discussion on industrial clusters has confirmed that they represent a laboratory of economic and social action that is anything but backward, and indeed that they can be seen as an emerging model of innovation and technological development in a number of advanced industrial economies (Breschi and Malerba, 2005). In Italy too, therefore, is necessary to give adequate responses to the districts' need for growth and strategic repositioning, not only to keep from losing an extraordinary industrial cultural heritage but to support the countless processes of innovation that have been initiated and to extend the potential for business growth to new areas. To underpin a strategy of this kind, however, we need to go beyond a debate centred on the internal analysis of the districts and identify the factors of economic modernity that can be detected in the broader processes of change in competitive arrangements. This leads us to consider the matter from three analytical perspectives. One is the *economics of the product chain*, which sees the process of value creation as the result of integration of a variety of specialized, independent production processes. A second highlights the importance of the *entrepreneur's role* of promoting and imparting continuity to innovative activity. The third stresses the *value of the local territory* as a major institutional and intellectual resource for the knowledge economy. All three factors have contributed to the districts' growth in the past, and all three remain essential to guarantee their competitiveness in the future, but only if they succeed in radically renovating the way they function.

2.1. The new value chain economy. The competitiveness of the industrial district is based on flexible specialization, i.e. a form of organization of production that can respond effectively to differentiated goods markets in which demand is constantly changing. Charles Sabel and Michael Piore proposed this model of production, characterized by the technical fragmentation of the manufacturing cycle and by an original form of social coordination of the product chain, as an alternative to the large, mass-production corporation based on vertical integration and managerial governance (Piore and Sabel, 1984). Though they cannot exploit the economies of scale of the major industrial corporations, the small firms located in the districts do form part of an extensive system of division of labour through which they enjoy certain specific external economies – in the labour market, in intermediate inputs, in services, and so on – and engage in continuous interchange of know-how. This particular social ability to provide for the "versatile integration" of production enabled small and medium-sized enterprises to produce an effective response to differentiated, variable demand such as that for typical Italian export products.

The ICT revolution has in no way diminished this network organization of production; if anything it has extended the opportunities to expand beyond local confines. The spread of network technology, in fact, has increased the potential for the technical fragmentation of the production process in any number of industries, facilitating access to externally developed "technology modules". Modular production gained ground in the sectors where it had traditionally had a role, as in equipment and machinery, and has now also invaded such typically scale-intensive industries as chemicals, with the substantial differentiation between basic production – with integrated cycles – and specialized applications, where SMEs and start-ups play a leading role (Arora, Fosfuri and Gambardella, 2001; Cesaroni, 2004). The clearest case is that of IT applications. The possibility of purchasing in

the form of services complex processing that requires expensive hardware and highly skilled human capital allows even small businesses access to these technologies, where their internal development would be disproportionate to the scale of output. But even within the ICT industry itself there are clear signs of the fragmentation of production cycles, with an increasingly sharp separation of the specialized phases of research, design and development on the one hand from that of manufacturing (Lazonick, 2005). As William Baumol has shown, the growing complexity of the knowledge required by modern industry is generating "technology consortiums", product chains in their own right that jointly develop complementary innovations. The innovation of one link produces externalities for the others, reducing the risk of investment in research (Baumol, 2002). In fact, the "technology consortium" may represent one of the most advanced forms of production district.

The reduction in the costs of using the market, combined with the strengthening of intellectual property rights, has thus further stimulated outsourcing, increasing the potential for the spread of the product chain many-fold. Evidence of this is the rapid growth in intra-industry trade in intermediate goods (Feenstra, 1998) and the increasing international fragmentation of production (Arndt and Kierzkowsky, 2001). The theory of global value chains (Bair and Gereffi, 2001; Gereffi, Humphrey and Sturgeon, 2005) offers an analytical description of the variety of forms of the new international division of labour made possible among other things by the growing efficiency of logistical management. As we shall see shortly, the way in which the leader firms in Italian industry districts are reorganizing their supply chains on a cross-border basis has much in common with these models.

However, the literature does not contain only elements of continuity with the district model. The main factor of change is the international extension of supply networks. Until the introduction of the euro, recurrent competitive devaluation boosted Italy's exports but created macroeconomic conditions unfavourable to investment abroad. With the single currency the situation has changed drastically. The relative price of outward investment has tended downward, while at the same time the profitability of importing components and production phases has increased. Accordingly, district firms have an incentive to

extend their originally local supply chains internationally. The spread of ICT together with the development of modern logistics and transport services and the adoption of certification and quality control become a major permissive factor, in that they lower cross-border transaction costs and thereby increase the marketability of production phases.

The question is what remains of district relationships once the leader firms open to new forms of extensive production organization. But as we shall see, international opening of the product chain does not preclude interactive relations with strategic local partners, chosen on a much more selective basis than in the past but also more closely involved in innovative projects. Further, the development of international business is creating a much greater demand for services, prompting the local community to promote the growth of specialized service functions (design, training and technological development, logistics, finance, communication, marketing, and so on), which are increasingly fundamental components of the new districts.

2.2. The entrepreneurial economy. A characteristic feature of the industrial district economy has certainly been the labour market, whose special characteristics have given firms the benefits of flexibility and competitive conditions. Within the districts it is easier for the individual firm to recruit already skilled workers during cyclical upswings and also easier to downsize when demand contracts. At the same time the close ties between industry and the community allowed the local build-up of specialized technical know-how. In districts the community takes part in the production process, renovating knowledge and skills thanks to often informal processes of knowledge-sharing. According to Becattini and Rullani (1993), these sharing processes played a key role in the competitiveness of local systems. Participation in community life ensured the development of tacit knowledge that underpinned the competitive edge of district firms.

It is important to underscore the diffusion of incentives for technical learning that stem from the social mobilization of the market. In other words, in the industrial districts work (and learning) has not been the rudimentary observance of rules and procedures laid down bureaucratically by the time and motion men but rather

active participation in the social construction of a meaningful economic system. Nonaka and Takeuchi (1997), in their analysis of the organizational conditions favouring the generation of useful knowledge within firms, also highlight the importance, together with the variety and abundance of environmental resources, of the independence and personal motivation of the protagonists of innovation. They propose a scheme of relations that appears to be closely patterned after the apparently chaotic operation of the district system. The diffusion of entrepreneurship in an economic system, in fact, becomes a factor that speeds up the search for innovative solutions, in that it increases the probability that the person producing the innovation will also appropriate its benefits.

Again in this case, therefore, the work experience of small district firms, far from being a marginal part of the story, should seen as the embodiment of a kind of entrepreneurship (Audretsch, Keilbach and Lehmann, 2006) and personal capitalism (Rullani, 2004) that are the emerging forms of organization in the knowledge economy. In the advanced economies, in fact, work is no longer mere subordination to technical norms. Rather, it implies the capacity for self-organization and learning, readiness for continuous improvement and the search for innovative solutions. These characteristics are linked above all to those high-value-added activities on which the competitive advantage of industrial enterprises increasingly depends, such as planning, design, R&D, communication and marketing, distribution and finance. These activities require not only the development of new skills but also a new attitude to their role on the part of entrepreneurs. The complexity of the market demands adaptability, immediate responsiveness, which translates into a demand for personal involvement in innovative work. Knowledge workers, by definition, do not simply perform a set of tasks defined by the job description.

The entrepreneurship of the industrial districts is in this spirit of active participation and personal involvement, which represents an important cultural attitude towards innovation. Generally speaking, in an economy dominated by large corporations workers are utterly passive in the face of the risk of market shocks, and their sense of precariousness depends on how strong or weak their contractual protections are. In other words, in the management-dominated

organizations technological and market changes trigger resistance on the part of workers and their representatives. In an entrepreneurship economy, market change is likelier to trigger a process of technical and productive renovation, both through industrial adaptation on the part of existing firms and through the creation of new business activities and a drastic winnowing of incumbents.

Rullani (2004) rightly points out that uncertainty can turn into opportunity for those who can count on a dense network of social, economic and professional relations. The net provides protection in case of failure. The problem of the precariousness of jobs due to the growing complexity of the global economy cannot be solved, that is, by binding firms to rigid contractual agreements but by increasing the web of social and professional relations of which the individual worker is an active member both in the local community and by means of a broader area of interaction. From this standpoint the experience of Italy's industrial districts is highly instructive.

2.3. Local economic systems. The rise of the districts coincided with the rediscovery of the local territory as a competitive factor and more generally with the definitive demise of the hypothesis that there is "one best way" to economic development. This experience has shown that the knowledge and skill accumulated over history can become a significant factor of growth in the global arena. In the industrial districts, the territory is not just the background to economic action but the place in which critical production knowledge and know-how that would be hard to transfer via formal channels of communication is generated, built up and then shared.

One might imagine that the type of knowledge involved in these processes of local transmission is strictly practical, based on traditional craft skills. Actually, though, as studies on the geography of innovation have demonstrated abundantly, technical and scientific knowledge also shows a definite inclination to local roots (Feldman, 1994; Asheim and Gertler, 2005). This goes especially for the *creation* of scientific and technological knowledge, in that during the experimental stage such knowledge is not at all codified, and personal contacts among researchers become fundamental. In this perspective there are three economic reasons to explain the important role of the local territory

and community in innovation. First, because spatial proximity favours the communication of critical information about technological applications that as a rule does not circulate in the traditional channels of scientific communication. An intriguing example is *errors* – an inevitability in any process of innovation: conferences and seminars are not held, nor are scientific articles published, about mistakes. Nor is it easy to learn of them through imitation or reverse engineering, in that only the best solutions, the successes, selected through experiment and then the market, are ultimately embodied in products. Errors can be learned of by being near the people who make them during testing. Working in a district therefore makes it easier to see the mistakes made by those who are testing something new, easier to see the road that is better not taken. Error recognition, that is, helps to economize on knowledge.

A second reason, much better known and widely studied, is that researchers need continuous contact with scientific institutions. Universities, research centres, and the laboratories of technology leader corporations are thus essential. By definition all such institutions use universal language, but the continuity of firms' relations with professors, researchers and laboratories increases the potential for the exploitation of knowledge.

Third, there is the principle of mutual positive externalities. Working with a team of excellent researchers and technicians increases the productiveness of team members, and the likelihood of this increases with the number of skilled researchers and technicians within a local system. The development of new technological clusters is thus explained not only by the activism of policy makers but also by economies of knowledge location (Bresnahan and Gambardella, 2004).

Globalization has thus speeded the evolution of new forms of geographical division of intellectual labour. A first effect was mentioned above, namely the international fragmentation of product chains. ICT networks annihilate distance and make the world "flatter", because information is accessible in the flow dimension, which by definition has no geographical constraints. Production processes have been enormously extended in geographical terms, but companies' coordination costs have not been increased. However, this flattening is offset by another, equally significant trend that reaffirms the importance

of the geography of the division of intellectual labour. Economically relevant knowledge and know-how tend to concentrate in particular places that globalization tends to reinforce. Richard Flora's dictum that "the world is spiky" reflects this geographical concentration of knowledge during the present stage in world economic development.

The transformation that industrial districts are undergoing, therefore, does not diminish the importance of the local territory as the locus of concentration of economically relevant knowledge and skills. District firms that can compete globally are able to "flatten" their production processes, exploit a new geography of production, and use new technology to manage their increasingly worldwide, complex logistics. At the same time the growing focus on service and creative functions leads them to seek within the local territory those external reputational and knowledge economies that now define the "product culture". Product culture does not mean manufacturing alone. Rather, it means a heritage of knowledge and skills that have a dialectical relationship with the production function and become the origin of innovation.

It should be made clear, nonetheless, that the notion of territory as it emerges from this changing competitive framework is not the same as that adopted in traditional industrial district policy-making. The local value that is relevant to firms is no longer just the legacy of the past, however illustrious this may be; rather it must be seen as the result of more self-aware institutional planning. This challenge will be decisive to the fate of the new production districts.

3. Districts on the move: The findings of the TeDIS observatory

We begin our inquiry into the evolution of leader firms in Italian industrial districts by looking at the findings of the TeDIS observatory from 2001 to 2006. The observatory has conducted a series of quantitative surveys using structured questionnaires as well as qualitative case studies. The surveys have covered 45 districts, including such key Italian export products as home furnishings, clothing and textiles, automation equipment and machinery, and foods. The firms studied have annual sales of at least €2.5 million,

which is a high enough threshold to distinguish industrial from artisanal enterprises. In addition to the data gathered through interviews and questionnaires, the observatory uses information drawn from the Company Accounts Data Service and processed by the Banca Intesa research department, which complements the strategic analysis with a series of economic and financial references (Chiarvesio, Di Maria and Micelli, 2006; Corò and Micelli, 2006).

The leader firms had average yearly sales of €16.5 million and a workforce of just over 70. A large fraction (37 per cent) are now part of formal or informal groups. The observatory's data confirm some key hypotheses on the international projection of district firms: exports make up an average of 45 per cent of total sales, and more than 40 per cent of the firms export more than half their output. In terms of competitive strategy, a quarter report a position of market leadership, albeit in niches of limited overall volume, and another 50 per cent declare that they hold significant positions compared with their main competitors.

3.1. Leader firms as open networks. It is no surprise to find that Italy's district firms have managed to maintain a high proportion of exports. What is more interesting is to see that their international dealings go beyond simple exports, with an increasingly solid and high-level presence in markets abroad through branches, sales networks and franchising. Another new feature is the international projection of the product chain itself. About 30 per cent of the firms surveyed say they produce using a series of suppliers located abroad.

The district firms have three kinds of foreign partners. First are their strategic suppliers, i.e. those that are both relatively rare and that produce key components. Geographically, they are located mainly in Europe, notably in France and Germany.

A second type of presence in international supply channels is linked to the cross-border extension of tied subcontracting. The district firms locate crafts workshops or small industrial firms abroad, mainly in eastern Europe; they provide raw materials and technical assistance in exchange for highly competitive labour costs. This does not, however, eliminate dealings with suppliers and sub-contractors in the home district, to which the leader firm assigns such selected tasks as prototype production and the production of the first series. In this case,

they are proper partners chosen for the quality of their services and their ability to contribute to product innovation.

The third way of maintaining a presence in the internationalization of production is foreign direct investment, which the district firms concentrate in eastern Europe. The literature on management-controlled companies has long considered this form of internationalization as the only legitimate one for international supply markets, but for the average district firm it is just one of the ways to expand beyond national borders, as part of a process of opening marked by flexible, differentiated strategies.

The international opening of these firms, as the numbers show, is structural, a given in the evolution of the districts. For many leader firms the district is no longer the perimeter within which the production process is carried on, nor the sole space within which marketing choices are developed. The district is no longer a self-contained economic area, as some British and American literature has called it, but a local node of international economic processes that both originate and conclude elsewhere. To grasp the future of the districts one must analyze the strategies and instruments with which firms have begun to interact within the international chains of the division of labour and assess how far the competitive advantage acquired on the local scale can be defended. The local scale does not vanish from the strategic horizon of the firms, far from it; but it does take on a new meaning with respect to a past in which it was a constraint as well as a competitive resource. For that matter, if firms' ability to be present in the market is no longer to be gauged by the complete coverage of an entire product chain but instead by the capacity to manage given value-added phases, especially in the area of services, then relations with a select network of local partners becomes a decisive condition for retaining control of the production cycle.

If we consider the two dimensions of internationalization for these firms – i.e. the internationalization of production and the presence in outlet markets – we can produce a four-cell table clarifying the firm's strategic position *(Figure 1)*. The lower-left cell shows the more traditional firms, those whose production remains concentrated in the district and that only *sell* the products abroad through traditional channels. These are still the largest group numerically (accounting for

almost half the total), although in terms of sales their weight is considerably less (30 per cent). A significant number of firms (nearly 28 per cent), shown in the lower-right cell, have begun a plan of investment to increase their control of markets abroad through various forms of presence in the outlet countries. This is the classical path to growth based on strengthening the traditional commercial outreach of district firms. A small fraction of firms that can be described as open upstream (upper-left cell), i.e. firms having initiated the internationalization of production (through sub-contracting and foreign direct investment) to recoup competitiveness by cutting costs.

Finally, a small group that is especially important for their visibility and sales can be classed as following the open network model (upper-right cell). These are firms capable of international projection both upstream and downstream along the value chain. By number, they account for just over 12 per cent of the sample. By sales, they are much more important, accounting for about a third of total sales. Analysis of open networks in the various industrial sectors and geographical areas produces interesting observations: open networks are more common in automation equipment and machinery industries, which are characterized by global product chains, as in the motor vehicle and home appliance industries; they are less common in home furnishings, still with strong local roots. They are more common in the district areas of the North-East and less so in the South. Yet the phenomenon characterizes all sectors and all parts of Italy, irreversibly marking the evolution of the district model.

3.2. The factors of competitiveness. Analysis of the characteristics of the various types of district firm reveals significant differences of organization and management. The differences between traditional and open-network firms do not bear solely on the degree of internationalization of production and marketing but are perceptible also in the management of innovation, in the use of new technologies and in communication capability. The process of opening, that is to say, coincides with an upgrading of management on several fronts, which contributes to an overall redefinition of the business's competitiveness.

Table 3 offers a detailed picture of the main areas of differentiation

among the new district firms. Compared with traditional firms, open-network firms invest much more frequently in proprietary brands (56 as against 37 per cent), believe more strongly in product innovation (83 as against 66 per cent), invest more in design and R&D, and have patents of their own (45 as against 20 per cent). Not least, their ICT endowment is certainly superior in quality, as the figures on enterprise resources planning programs show. These latest-generation integration management applications require thorough knowledge of corporate processes and an ability to codify that is far removed from the culture of the more traditional entrepreneur or manager.

3.3. Industrial strategies and economic performance. It is a legitimate question whether these emerging business models have the capacity to produce positive economic performance and whether the investment necessary for the kind of strategic repositioning described here is effectively rewarded by satisfactory returns. To answer, we must look at company accounts over a long enough period of time to verify trends in sales and changes in the various contributions to volume growth. To do so we have processed the data examined above jointly with the accounting data of the individual firms.

Overall, the examination of our sample reveals the difficulties that district firms have coped with in recent years. The total sales of the 700 firms covered by the observatory remained basically constant from 2000 to 2003, but this apparent stability conceals differences mentioned in the previous section. The automation-equipment industry, despite the problems caused by the new competitive environment, grew by about 5 per cent, while the clothing sector's sales fell by 7 per cent. Gross operating profit diminished in all sectors, the median falling from 8.3 per cent in 2000 to 6.9 per cent in 2003.

We use three aggregate variables to study the relationship between company strategy and performance, each of them a summary gauge of a variety of operating parameters:

a) Technological innovation: the presence of internal R&D structures, patents held, any cooperation with research institutions;

b) Design and product innovation: investment in product development and the size of design offices;

The conclusion, as succinctly as possible, is that investment along

these lines does pay, provided that the firm succeeds in building a strategy based on a coherent mix of these three variables, not concentrating on just one. *Table 4* highlights the link between investment in innovation and company performance. For each of our three variables, we have compared the best firms with the worst, defined respectively as the top and bottom quartiles of the distribution for the variable. The first indicator is the change in sales between 2000 and 2003, to see whether the firms that invested in our three variables increased their sales volume. Second, we analyzed the ratio of gross operating profit to sales as a gauge of profitability, to test the competitive capacity of the firms.

The firms that invested in technology, product innovation and ICT outperformed the average in growth of business volume and profit. The firms that did not invest in these three areas performed less well, especially in sales, which actually decreased. This highlights entrepreneurial and management effort as the key factor in innovation for competitiveness.

There are significant sectoral differences. In automation machinery and equipment, the relative importance of technological innovation and ICT outweighs design. This applies to firms producing automobile components, for which continuous product and process improvements and real-time integration with the customer's business processes are obligatory. Even here, however, the role of design is not marginal. In clothing, by contrast, what counts is design and product innovation, combined with network technology, while technological innovation plays a lesser role. This is the case of the many garment companies that elected to invest in creativity and communication while sub-contracting production to suppliers in Italy and abroad thanks to the innovative use of the new technologies. But again these firms did not forgo R&D investment, in the awareness that even in these "low-tech" industries it is important to keep tabs on technological innovation.

In the framework of local development models, let us note that the performance and results of firms in any given industry or district can vary significantly with company policy and strategy. Successful firms have an original mix of factors that tends to be consolidated over time. These are "idiosyncratic" courses that are hard to replicate or imitate but that share a number of basic ingredients on which the winners have

invested heavily. A major theme for a new industrial district policy, then, should be to create propitious conditions for the spread of these paths to innovation.

4. Three principles for a new district policy

To recognize the modernity of industrial clusters is not to idealize the model but to view the changes taking place as confirmation of the local productive fabric's capacity for renewal and competitive repositioning. In the case of the Italian industrial districts, the rapid rise of international competition makes such renewal all the more urgent. And the effort required will be substantial for public institutions as well, because it requires a change in the local economic policy perspective, a transition from industrial districts to local systems of innovation.

The findings of the survey described above suggest three guiding principles for the change. The first is recognition that leader firms play a crucial role in projects for innovation. The internationalization of the supply chain has created a need for a "service intelligence" that the local leader firms have filled in an original fashion. They set up internal functions of their own increasingly oriented to product development and the management of outsourced production cycles, such as planning and design, R&D, patents, quality control, logistics and distribution, communication and marketing, and finance. For these internal functions to grow and take root, the local territory must accompany this development, creating a market in specialized services, in particular in the most critical areas for competitiveness: technological R&D, creativity and design, logistics and finance. The risk, if the local market in services fails to develop in this direction, is that the successful firms above all – those that have created production networks abroad and that therefore have a greater need for high-level services and infrastructures – may seek out more suitable locations, possibly in the metropolitan areas. In this sense, in the future the districts will be more service- than manufacturing-oriented, hence more like the big cities with their varied economy.

The recent focus of many scholars on "medium-sized enterprises" may have diverted attention from the fact that in reality these firms are

almost always a node in a much more extensive network of value creation that includes small manufacturers, service companies and professionals. The contrast between dynamic medium-sized firms and districts is meaningless, especially considering that those firms' competitive edge almost always depends on the rich local fabric of technical and productive cooperation. To foster innovation diffusion, it might be useful to acknowledge this important role and to support product chain projects in which the medium-sized firms can perform the function of coordination and institutional interface. Assigning them an institutional role nevertheless means rethinking the established interpretation of the community governance of the districts, in which representation of economic interests was reserved exclusively to associations and public institutions. It is important to go beyond this arrangement, however, for several reasons: because this will permit a more realistic view of the organization of district productive systems in which teamwork almost always means work between different, competing teams; because it provides factors that enhance the effectiveness of resources allocated to innovation and technology transfer, for which entrepreneurial skills and business incentives remain essential; and because a new arrangement can be a tool for increasing the firms' investment in relations with the local community and help upgrade the district itself.

The second guiding principle is the international opening of the value chain. Italy's industrial districts are not the closed production systems they once were, communicating with the rest of the world only in procuring raw materials and selling finished goods. International outsourcing is now a distinctive trait. The leader firms that have responded best to the new situation are those that have used the outsourcing of some stages of production to exploit rather than simply bend to the potential of the cheap labour available around the world. Our studies have shown that this strategy has benefited not only the outsourcing firms but also, in the medium term, the local economy, which has reacted by developing new technological and service activities that are less vulnerable to price competition (Tattara, Corò and Volpe, 2006). Now we are at the start of a new phase in the internationalization of the "made in Italy" (and "made by Italy") brand, in which firms explore distant markets via joint investment in production and distribution networks, without which it is hard indeed

to serve the promising new consumer areas. But modern industry also needs another kind of internationalization, i.e. an opening to culture, science, financial capital, and human and creative capital. For a number of districts the ability to attract human resources from outside – not only production workers but also technicians and expert managers – has become a necessity to ensure continuing growth of local production. And the most innovative projects too require capital resources that can only be raised internationally. Local institutions – associations, banks and educational institutions above all – must accordingly set the objective of openness to these resources, making the community more attractive to foreign investors.

The third guiding principle for a policy to sustain the current evolution of the industrial districts thus becomes the renewal of the intermediate institutions. Business associations, universities and research institutes, consortiums and trade fairs, service centres, technical and vocational schools, local banks have unquestionably been a major factor in the success of the districts. In addition to producing local public goods, they have helped create a cooperative climate in the local market and enabled local firms and workers to identify with the districts. Yet if the districts are to keep step with the international competition, these institutions too must be renovated, averting the risk of being limited to the mere function of distributing public resources.

For one thing, in the meantime the community is raising a demand for new services and infrastructure consistent with the competitive advantage of the new district firms. Creativity and technological experiment play a fundamental role in innovations in typical export products. The increasing scientific and technological content of "traditional" products can take any number of forms: new materials; more functional products; safety, health, and environment friendliness; new systems of automation, prototyping, logistics and communication; and the construction of plant upstream of the final product.

All this entails, first of all, a much closer relationship between companies and scientific institutions, starting with universities, and necessitates the radical revamping of technical training. The improvement of the quality of human capital and of the capacity to incorporate technical knowledge is a precondition for enhancing the innovative potential of firms. The traditional service centres for technology transfer

need to achieve scale economies, which inevitably means going beyond local demand. The interesting cases of several local district centres that have achieved a level of service that has won outside recognition show how this enriches the local web of skills and relations that are useful to all the firms (Corò and Grandinetti, 2007). The fact that until now the intermediate institutions have been sheltered from competition makes renovation harder but no less necessary.

5. From legacy to project: an institutional challenge for the Italian economy

The Swedish government's agency for innovation has maintained that "production districts are now recognized as an important tool for promoting industrial development, innovation and ultimately economic growth" (Iked, 2005). Michael Porter reached similar conclusions and argued that the theory of clusters not only offers indications on how to upgrade the innovative potential of a locality but also suggests considering the clustering of related activities in a local area as a general criterion for industrial policy. The purposes of a policy of support for industrial districts thus go beyond local development to embrace the strengthening of the competitive capabilities of the entire national economy (Porter, 1997). The decision taken by the French government in 2004 is in keeping with this position; it proposed relaunching innovation policy through 67 competitiveness poles, each working for the objective of attracting economic, institutional and specialized human resources to hold and advance a selected set of technological frontiers.

These theses represent a substantial change from the traditional approach to industrial districts. They are no longer seen as historical or geographical elements of a country's industrial system but as *policy instruments* for innovation. This idea is much more controversial than it might seem at first glance. Actually, the thesis sustained by Marshallian theory is that the clusters are essentially the result of a historical and social process that at some point combines with specific market mechanisms. Only when this combination arises can the local accumulation of specialized external economies take root. The action

of market forces is not a secondary but an essential element in the theory of clusters. If anything, it is the liberation of those forces – with the fall of the political, trade, and logistical barriers to factor mobility – that favours the formation of production clusters whose (specific) capital and (specialized) labour meet in a particular place to benefit from increasing returns (Krugman, 1996).

In this view, industrial policy has no role. Indeed, most observers have stressed the spontaneous, self-organized nature of production clusters, which is hard to reconcile with externally derived regulation. Yet if we want to ensure their continuity and future prospects, we must meet the trickiest challenge of all for the districts and their firms: making their external economies not an inheritance, a sort of "natural resource", but a project. For we must acknowledge that the self-generated external economies of the districts not only produced locational advantages but also got firms into the habit of exploiting these economies and not worrying much about reproducing them. In the long run, however, if not properly renewed even these collective resources – skills, flexibility, trust, reputation – will be depleted or depreciated. As in the tragedy of the commons, the depletion of community resources may come about as a result of the success of a production system, but a success that makes growth unsustainable, because it consumes the essential resources faster than they are reconstituted.

A new policy for production districts is therefore necessary in Italy, but doubly difficult. The limitations consist both in firms' diffidence towards conscious, more demanding forms of institutional cooperation and in an administrative culture that is little inclined to recognize the independence of agents who invest at their own risk in innovation and who should accordingly be credited with the social benefit of the externalities generated through their projects.

The first regional policies for districts failed precisely because they were unable to strike the right balance between competition and cooperation in appropriating public funds, in the misconceived notion that the complex governance of the districts could be boiled down to the ritual of "concertation" with the social partners. The national industrial policy inaugurated with the paper "*Industria 2015*" and with the Finance Law for 2007 is perhaps overhasty in liquidating that experience. In practice, it fails to acknowledge the local community's

important function of versatile integration of production, which is in the best tradition of Italian industrial districts, as Paolo Sylos Labini noted with interest in his last works. Nevertheless some recent regional programmes – in Veneto, Friuli Venezia Giulia and now also in Puglia – show that a different course is practicable. In these regions industrial districts are no longer only a historically determined reality, to be recognized and protected in traditional fashion, but local coalitions of firms and institutions that share a medium-term strategy for growth and want to invest in innovation projects in the local community. In this way Italy's districts can become something more than an important element in our industrial heritage; they can be essential though not exclusive vehicles for the competitive repositioning of the entire country.

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Table 1 – Characteristics of the TeDIS observatory firms		
Main business	Finished goods for market	49.5%
	Finished goods for other firms	33.3%
	Parts, components and industrial processing	17.2%
Average turnover 2003 (millions of euros)		16.5
Median turnover 2003 (millions of euros)		9.0
Average staff size 2003		73.1
Median staff size 2003		46.0
Exports as % of sales – average		45.1%
Competitive position	Leader	23.5%
	Significant	50.8%
Group membership		36.9%

Table 2 – Internationalization of district firms *(percentage of total sample)*	
International sourcing	30.7%
of which:	
Strategic suppliers abroad	63.3%
International sub-contracting	17.1%
Foreign direct investment	38.2%

Table 3 – Traditional and open-network district firms	Open-network	Sample average	Traditional
Investment in proprietary brand	55.7%	42.5%	37.0%
Investment in product innovation	83.8%	75.5%	65.7%
Earmarking of specific resources to design	51.3%	37.4%	3.4%
Earmarking of specific resources to R&D	82.5%	57.2%	46.8%
Patents	45.0%	29.7%	19.9%
Enterprise resources planning	51.3%	36.4%	27.9%

Table 4 – Innovative strategies and performance of district firms		Variation in sales 2000-2003 (median)	Variation in ratio of gross operating profit to sales, 2000-2003 (median)
Technological innovation	best	5.9%	8.2%
	worst	-5.5%	6.4%
Adoption of ICT	best	6.0%	8.1%
	worst	-9.9%	6.8%
Design and product innovation	best	4.2%	8.0%
	worst	-2.3%	7.1%

Figure 1 - Four types of industrial district firm