

Rural innovation, farm evolution and territorial indifference: a case of governance failure?

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Abstract

The paper analyses the capability of a rural territory to innovate and, particularly, farms' attitude to change. To this end, an empirical analysis will be proposed, by comparing two groups of farms: the first group is located within a rural districts, as recognized according to the Italian law n. 228/01; the other group operates outside the rural district, but in rural areas with the same degree of rurality. To investigate farms' propensity to innovate, an innovative milieus approach is proposed. The application of this method requires the comprehension of the three paradigms characterizing it: organizational, technological and territorial paradigm. Our results evidence a territorial indifference in introducing change in farm activity, then making clear a sort of failure in rural governance.

1. Introduction

Innovation in rural areas is a difficult topic to analyse; to confirm this, there is no shared definition of rural innovation yet. A good starting point is the normative concept of modern rurality, towards which address rural development policy. As Iacoponi (1998) points out, modern rurality is based on sustainable development, diversified rural economy (where multifunctional agriculture is the key sector), a well preserved natural environment. The idea of "modern rurality" fits with a new concept of innovation, either on territorial or farm scale; in this perspective, innovation does not imply technical aspects but it includes a coherent process of growth integrated with rural environment. As recently stated by Knickel *et al.* (2009), *innovation involves much more than technology; more and more it relates to strategy, marketing, organization, management and design. Farmers are looking for alternatives to industrial agriculture and don't necessarily they apply "new" technologies. Their novelties emerge as the outcome of different ways of thinking and different ways of doing things.* In this context a relevant question becomes: are there territorial differences in the propensity to innovate? Why similar rural territories innovate differently?

The paper analyses the capability of a rural territory to innovate and, particularly, farms' attitude to change. An empirical analysis will be proposed by comparing two groups of farms and by evaluating their attitude to innovation. The first group of farms is located within a rural districts, as recognized according to the Italian law n. 228/01; the other group operates outside the rural district, but in rural areas with the same degree of rurality. Is district farms' propensity to innovate higher? To investigate the propensity to innovate and the way in which farms adopt innovation, an innovative milieus concept is proposed: this approach can be considered as useful tool of analysis to really understand innovation in rural areas. The application of this method requires the comprehension of the three paradigm typifying it:

- organizational paradigm;
- technological paradigm;
- territorial paradigm.

Of course, the "district atmosphere" should foster a superior propensity to innovate: is this the case? And, if not, are we in presence of a failure in the rural governance?

2. Theoretical background

The long debate about transferability of industrial district model has brought to the recognition of rural and agrifood districts. Rural districts are instituted through the Italian law of modernisation for agricultural sector (n. 228/01), which defines rural district as follows: *rural districts are local production systems (article n. 36, paragraph 1, law n. 317/91), characterized by a homogeneous historical and territorial identity resulting from the integration between agriculture and other local activities, and from the production of special goods or services, coherent with natural and territorial traditions and vocations.*

A useful schedule of the district characteristics is provided by Pacciani (2003):

- high number of small enterprises;
- relevance of agricultural sector, with multifunctional role;
- basket of territorialised good and services;
- rural innovation;
- supply chain management;
- a strong sense of territorial identity, which foster a sustainable rural development;
- promotion of informational activities aiming at studying and monitoring territorial problems;
- local partnerships and reciprocity among local actors;
- support to local employment.

Due to integrated approaches to rural development, rural innovation is a difficult to explore concept; to cope with, the paper proposes a relatively new approach of analysis to rural areas, the *milieu innovateur*, recommended by the GREMI (Groupe de Recherche Européen sur le Milieux Innovateurs) since 1984 (Aydalot, 1984). After first contributions concerning local productive systems, where GREMI has analysed territorial system under the perspective of the dynamic efficiency, while industrial district perspective analysed them under a static perspective (Capello, 2006), GREMI group devoted its attention on other territorial systems, like urban areas and natural resources (Camagni, Maillat, 2005). Last phase of research has its core on the concept of anchoring, sustainability and localisation of innovation (Crevoisier, 2010). Peyrache-Gadeau *et al.* (2010) state that *l'innovation tend aujourd'hui à intégrer différentes dimensions notamment celles de la durabilité (économique/technologique, sociale, gouvernance/participation civique, dimension culturelle /esthétique et symbolique). Ceci implique de reconnaître la multiplicité des rationalités et la multi dimensionnalité des champs de valorisation et de légitimation sociale de l'innovation*".

The importance of social and institutional ingredients increase difficulty of analysis, by redefining the boundaries of innovation: what should be an exhaustive perspective in evaluation of rural innovation processes in rural districts? To answer the question a useful starting point is that rural innovation implies an upgrading of integration processes on behalf of farms. This integration involves an integrated rural development model where agricultural production takes place within not homologated trajectories. Starting from this and recovering the aforementioned Knickel's definition, multilevel and multiactor dimensions of innovation emerge. This is the reason why we privilege here a *milieu innovateur* approach, which catches all relevant components of the process through the consideration of three paradigms: technological, organizational, territorial (Crevoisier, 2000), synthesised in figure 1.

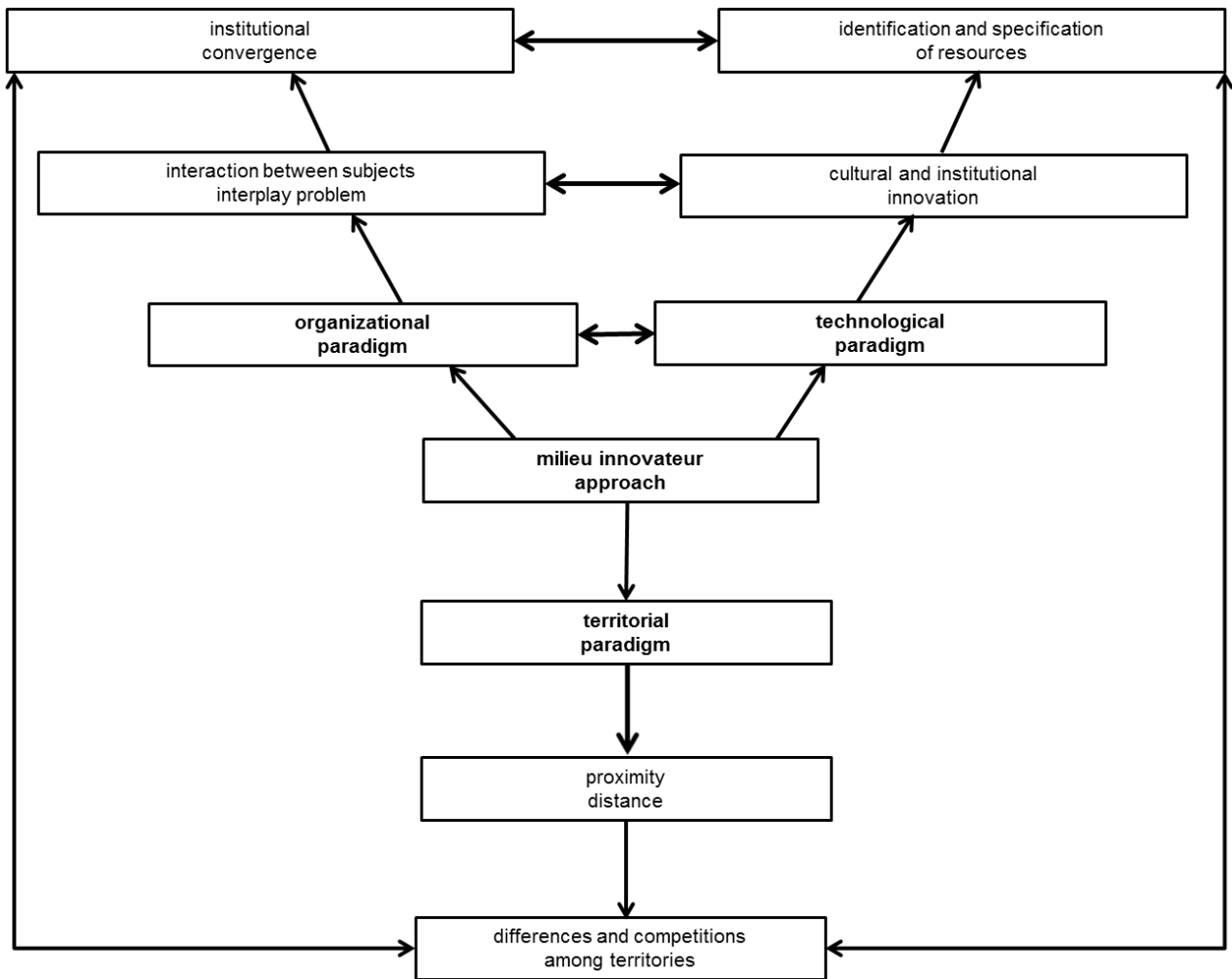


Fig. 1 – Milieu innovateur approach: the three paradigms. Source: Crevoisier (2000).

- technological paradigm explores the relevance of local tacit knowledge and the savoir-faires, in fostering less imitable innovation;
- organizational paradigm focuses on the capability of local actors to organize themselves, through reciprocity links, trust and cooperation;
- territorial paradigm emphasises the territorial differentiation in ability to exploit and valorise local resources.

The three models converges in defining the milieu innovateur. To capture the relevance of the milieu innovateur, it is necessary to analyse, in different territorial contexts, interaction and learning spheres which synthesises organizational and technological paradigms (Maillat *et al.*, 1991).

Interaction sphere includes the analysis of institutions, functional interdependencies and cooperation among local actors; learning sphere translate into the attitude to innovate. To catch the two logics, it is necessary to individuate an adequate set of variables combining them.

3. Materials and methods

A comparison among the propensity to innovate on behalf of farms located in a rural district and farms outside of it will be proposed. Considered farms are all in the province of Rieti, in Lazio region (Italy) and are characterised by the same degree of rurality concerning the territory where they operate. In the same

province, a rural district has been recognized by Lazio Region in 2007, the *Rural District of Rieti Mountains*. To analyse processes of farm innovation, a questionnaire has been proposed to a sample of farms; the survey is divided up in four parts, concerning general information, the specific presence of milieu innovateur through the interaction and learning spheres, other information about rural territory (for example, if the farm take part to other institutional organization, like integrated territorial initiatives, or chain integrated projects, etc.). Sample has been extracted through a self-weighting sampling plan: it includes 387 farms, 58% answered the questionnaire. Key questions of the survey concern detection of interaction and learning spheres: first one encodes organizational paradigm, while the second encodes technological one.

In relation to **interaction sphere** we have included some questions, through which investigate relationships that directly or indirectly farm can activate. In this perspective three types of interaction are relevant:

a) direct interaction

- participation to organizational organisms (cooperatives, producers association, etc.);
- computing equipment;
- formal and informal relations activated by farms, aiming at:
 - exchanging information;
 - innovating;
- channels of information;
- participation to integrated food chain projects;

b) induced interaction

- localisation in areas where integrated territorial projects work;
- localisation in areas where local action groups work;
- localisation in areas where other territorial projects work;

c) district interaction

- farms located in district area or outside of it but in area with same degree of rurality.

Within **learning sphere**, following variables have been extracted:

- a. adhesion to protected trademarks;
- b. adhesion to protection Consortia;
- c. introduction of innovation or changes in farm activity.

The answers collected in a data set are processed through statistical software (SPAD), through a multivariate analysis (multiple correspondence and cluster analysis).

4. Results

4.1. Farms' structural characteristics

A first analysis is based on a comparison of the structural characteristics of farms in region Lazio (table 1) and in the province of Rieti (table 2, 3, 4) in the last two census. Between the two census of 2000 and 2010 there has been a drastic reduction in the absolute number of farms, with a percentage decrease of 48,7%. The reduction in number of farms is linked to a less reduction in utilised agricultural surface (-11%); as a consequence an increase of average dimension of farms emerge.

Table 1: Total farms – Years 2010 and 2000.

Region	Farms		Absolute variations	% var.	UAA		Absolute variation	% var.
	2010	2000			2010	2000		
Lazio	98.026	191.205	-93.179	-48,7	648.472,52	721.051,18	- 72.578,66	-11,0

Source: Istat (2010).

Tables 2, 3 and 4 illustrate more detailed data concerning province of Rieti, where is located the examined rural district. In particular, farms of the province are then articulated by district farms and farms outside the district. More than half of farms disappeared during the period 2000-10, with a sensible percentage of dropped farm in district area (-63%), as compared to off-district area (-43%). On the other side, the decline of both utilised agricultural area (UAA) and total agricultural area (TAA) is smaller. Accordingly, a process of land readjustment emerges, more intensive in district area.

We can say that the process of land consolidation proves robust in the district territory.

Table 2: Total farms in district area and extra-district area (Rieti) – 2010 and 2000.

Partition of farms in province of Rieti	Farms 2010	Farms 2000	Absolute variations	% var.
District farms	3.275	8.778	-5.503	-62,69
Off-district farms	5.939	10.427	-4.488	-43,04
Total farms	9.214	19.205	-9.991	-52,02

Source: Istat (2010).

Table 3: UAA for farms in district area and extra-district area (Rieti) – 2010 and 2000.

Partition of farms in province of Rieti	UAA 2010	UAA 2000	Absolute variations	% var.
District farms	63.786,84	74.288,87	-10.502,03	-14,14
Off-district farms	24.521,90	30.605,58	-6.083,68	-19,88
Total farms	88.308,74	104.894,45	-16.585,71	-15,81

Source: Istat (2010).

Table 4: TTA for farms in district area and extra-district area (Rieti) – Years 2010 and 2000.

Partition of farms in province of Rieti	TAA 2010	TAA 2000	Absolute variations	% var.
District farms	134.016,06	138.300,13	-4.284,07	-3,10
Off -district farms	35.048,85	43.288,72	-8.239,87	-19,03
Total farms	169.064,91	181.588,85	-12.523,94	-6,90

Source: Istat (2010).

4.2 Multivariate analysis

Multivariate analysis allows firstly to individuate a reduced set of variable as synthesis of the starting variables, through multiple correspondence procedure; the following cluster analysis permits to build homogeneous groups of farms.

The multiple correspondence analysis identified 3 main factors explaining 40% of total variance:

- *1 factor*: interaction and learning (PIMI - Presence of Innovative Millieu). The first factor synthesises both logics which generate milieu innovateur: interaction and learning logics.

- *II factor*: Only Induced and District Interaction (OIDD). The second factor can be attributed to the logic of interaction, in the induced version synthesised by the presence of a local action group (LAG) in the territory.
- *III factor*: Only Direct Interaction (ODIN). The third factor expresses the logic of direct interaction due to a climate of informal exchange among farmers and other local actors.

The ensuing cluster analysis identified 2 macro-cluster: the **first macro-cluster** includes 70,7% of total farms; here reduced logics of interaction and learning prevail. This macro-cluster in turn decomposes into two clusters, where the belonging to either a local action group or a district does not produce any incentive to innovation and change in farm activity:

1. *Presence of just induced interaction induced with no changes (27,8%);*
2. *Presence of district interaction by district, with no change (42,9%).*

In the second **macro-cluster** we find the remaining farms 29,3%; this group is higher propensity to innovation: in fact, it is possible to discover the presence of one or both logics there is only one logical or both, and this is further broken down into four clusters:

3. *request for advisory services (3,5%);*
4. *high interaction, no learning (4,4%);*
5. *informal interaction and learning (4,4%);*
6. *full logic of interaction and learning (milieu innovateur) (17%).*

Cluster 1 - LIIL (Logic of Induced Interaction - LAG, 63 farms, 27,8%).

It is characterized by the farms belonging to the LAG but operating outside the district area, classified as intermediate rural area of the RDP. Membership in the LAG provides access to formal and informal exchange among farms, even if that does not produce any change in farms activity.

Cluster 2 - LIID (Logic of Induced Interaction - District, 97 farms, 42,9%).

The second cluster is characterized by a logic of partial interaction, due to the farm localisation in district area; however, as in the previous case, that does not give higher chance to innovate. Besides, horizontal relations are absent and there are no traces of “marshallian atmosphere”.

Cluster 3 - CONS (Consulting, 8 farms, 3,5%).

In the third cluster lies a small proportion of farms characterized by face-to-face relationships, particularly with agronomists. There are no other innovative strategies or relational goods.

Cluster 4 - BOIN (BOost INteraction, 10 farms, 4,4%).

In the fourth cluster, farmers have relationships with institutions, according to formal logics: main institutions of reference are advising organizations and associations of producer or cooperatives. The adhesion to associative organisms do not boost towards innovation.

Cluster 5 - ILIL (Informal Interaction Logic and Learning, 10 farms, 4,4%).

First traces of marshallian signs are evident in the fifth cluster, where a logic of informal interaction prevail: the farmers have relationships with other farmers but do they not introduce changes, due to their high cost.

Cluster 6 - MILI (MILieu Innovateur, 38 farms, 4,4%).

In the sixth cluster, farms operate in a milieu innovateur. We find here variables that explain both the logic of direct and induced interaction, but also the presence of logical learning, synthesis of the innovative paradigm, through learning. Are these farms located in the district? As we will see in the next table, they don't: that means the district does not show any positive impact on the diffusion of innovations.

To confirm what seem a paradox of the rural governance, table 5 lists the farms of the sample, divided up into cluster and territorial localisation (district and off-district). All farms that are in the first cluster are located outside the district, in the second and third cluster, more than half of the group farms fall in the rural district, in the fourth business are equally divided into the two groups; the cluster with the higher presence of *milieu innovateur* include lesser percentage of district farms.

Table 5: Farms location into the clusters and into the area.

Clusters	Localisation in the district (%)	
	District area	Extra-district area
Cluster 1 - LIIL	-	100,00
Cluster 2 - LIID	70,10	29,90
Cluster 3 - CONS	62,50	37,50
Cluster 4 - BOIN	50,00	50,00
Cluster 5 - ILIL	40,00	60,00
Cluster 6 - MILI	34,21	65,79

The subsequent qualitative positioning map is obtained by crossing interaction (x axis) and learning (y axis) logics (Fig.2). helps to understand the distribution of farms by reference to the logic of the milieu innovateur adopted.

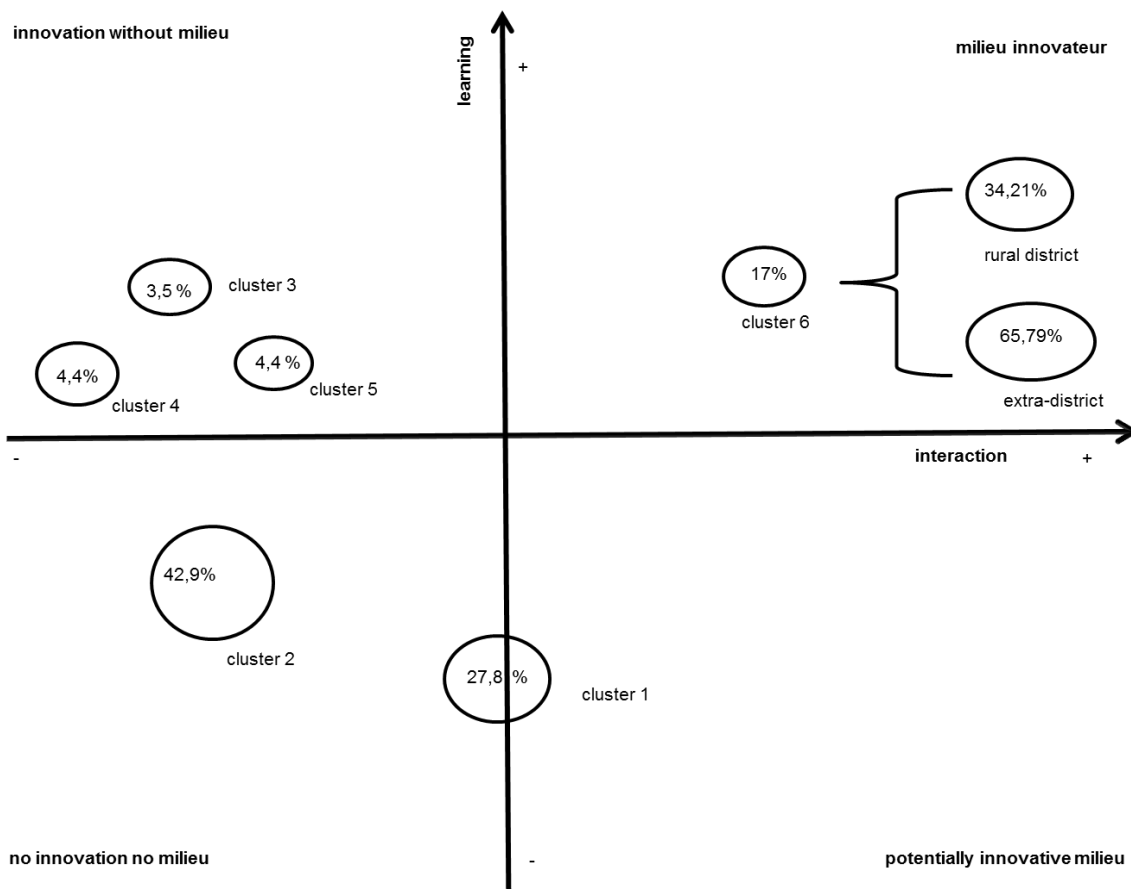


Fig. 2 – Positioning map of clusters.

In cluster 6 (which includes 17% of total farms surveyed) where we identify the logic of the milieu innovateur, only 34,21% of companies fall in the district, the remaining percentage 65,79% is located outside the district: it is verified, then, that membership in the district is not a discriminant for innovation; introduction of change in farm activity is surely supported by the interaction sphere, but it is indifferent to the district logics. This brings us to say that we could be in presence of a failure of rural governance.

4. Conclusion

The attempt to propose a new approach for the analysis of rural innovation could be seen as a good starting point to offer an heterodox investigation of a complex research topic. Milieu innovateur perspective reveals its utility in catching the possible dimensions which interfere and condition innovative trajectories. A second important element of our paper originates from empirical results: the sensation is that we could be in presence of a failure of rural governance. In fact, on the one side, the individuation of a rural district is revealing of dynamic areas, where local interdependencies foster rural innovation, change in farm activity and trajectories towards an integrated rural development. On the other side, our research has demonstrated it is not the case: innovation trajectories have no connection with territorial farms' localisation. As a matter of fact, district farms show lesser propensity to innovate, while off-district farms innovate with higher intensity. Our impression is that, with few exception of excellence, rural district is becoming a tool to accommodate political instances instead of being a real device for the governance and development of rural areas.

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