Andrew F. Fieldsend[1], Monica-Mihaela Tudor[2], Varga Eszter[1], Violeta Florian[2], Marioara Rusu[2], Biró Szabolcs[1], Vergina Chiritescu[2], Mihaela Kruszlicika[2]

[1] Agrárgazdasági Kutató Intézet, Budapest, Hungary, [2] Institutul de Economie Agrara – Academia Romana, Bucureşti, Romania, Bucureşti, Romania
Corresponding authors: monik_sena@yahoo.com, biro.szabolcs@aki.gov.hu

Innovation in farming and rural areas in Hungary and Romania: its current state and determining factors

Abstract: *Increasing attention is being given to the role of innovation in promoting rural development and sustainable intensification of agriculture. By means of quantitative data and semi-structured interviews with representatives of the main actors in the rural and agricultural innovation chains, this paper compares and contrasts the status and role of innovation among rural actors and farmers in Hungary and Romania. In both countries, many NUTS3 regions are predominantly rural (PR), showing the importance of promoting innovation in agriculture and rural areas. In Hungary the percentage of households in PR regions having subscribed to broadband Internet connection was almost double that of Romania and the selected education and training indicators (both among the general population and among farmers) were also higher. The state of innovation in farming in the two countries is assessed by the interviewees to be weak and it was confirmed that many farmers are either simply followers of innovation, or do not attach importance to innovation. In Romania, foreign/multinational firms/companies are believed to be the major producers of innovation. Although in both countries the state is perceived to have a major role in the mediation of innovation, governmental organisations could do more to improve innovation. It remains to be seen whether the current policy interventions will stimulate an increase in innovation in the two countries.*

Keywords: *sustainable intensification, socio-economic indicators, innovative capabilities, policy interventions*

Introduction

In 2011 the Food and Agriculture Organization of the United Nations (FAO) proposed a new paradigm of intensive crop production, one that is both highly productive and environmentally sustainable (FAO, 2011). This idea of 'sustainable intensification' of agricultural production is now widely accepted, with 'sustainable' including the economic (e.g. profitability of farming), environmental (e.g. minimising unfavourable environmental impacts such as pollution) and social (e.g. maintaining sustainable farming communities) dimensions. In line with this, increasing importance is being attached to the role of innovation in promoting rural development and sustainable intensification in agriculture.

Numerous definitions of innovation appear in policy documents. WB (2006) states that "[i]nnovation is the process by which individuals or organizations master and implement the design and production of goods and services that are new to them, irrespective of whether they are new to their competitors, their country, or the world". Similarly, OECD (1999) defines it as "anything new introduced into an economic or social process" and as "the ability to manage knowledge creatively in response to market-articulated demands and other social needs". It does not matter whether this is new to producers, competitors or the economy. According to OECD (2005), innovation can be a technologically new or remarkably improved product, service, process, a new marketing or management method in the business practice, organisation or external relationship. Based on this definition, product innovation, process innovation, marketing innovation and organisational innovation can be differentiated. Reflecting the view of the European Union (EU), SCAR (2012) uses the OECD's definition of innovation.

Farmers can innovate in different ways. Change can involve farm products, production processes and/or farm organisation and management[1]. In addition to facilitating sustainable intensification, innovation help farmers to expand, change or diversify their marketable output, thereby increasing the profitability of their farms, to free up resources for use in other economic activities, or enhance the provision of important ecosystem services (FAO, 2014). It can be argued that there is a difference between an entirely new, breakthrough innovation and the adoption and/or adaptation of a massively-spread innovation. Farmers can justifiably point out that, when dealing with plants, animals and the weather, they have been innovating and adapting their practices since agriculture began. However, innovations created out of immediate and urgent needs, for example of smallholders or family farmers, frequently from their existing knowledge and without the appropriate resources to grow, have usu-

[1] Innovation is often used as a synonym of a new technology or product, however a new plant variety can be considered as innovative only after its economic, environmental or social benefit for the farmer has been proven in practice.

ally very limited potential to upscale and generate a development change, or lead to transforming the agricultural sector.

Over fifteen years ago, OECD (1999) could state (p.9) "[e]nterprises are the main source of innovation". More recently, the innovation systems approach has recognised that innovation is also a social process between different actors. This is linked to the concept of social innovation. Bock (2012) observes (p.57) that "[e]verybody seems to agree that social innovation is important but what exactly is meant by the term often remains unclear". She identifies three main interpretations of social innovation that underline (a) the social mechanisms of innovations (they take place within specific social and cultural contexts and networks of social relations); (b) the social responsibility of innovations (they should take into account 'people and planet' and not only 'profit'); and (c) the innovation of society (where the focus is on changes in social relations, people's behaviour, and norms and values).

Individuals and institutions (and the linkages between them) and the 'enabling environment' (which includes factors such as political commitment and vision; policy, legal and economic frameworks; budget allocations and processes; governance and power structures; incentives and social norms) make it possible to bring new products, processes and forms of organisation into use to achieve food security, economic development and sustainable natural resource management (FAO, 2012). Thus, as Rivera et al. (2006) concluded, "effective knowledge systems for enabling agricultural development generally require (a) a core capacity in public sector technology institutions that (b) promote pluralistic (i.e. sector-wide) research systems and extension services that are (c) strategically aligned in knowledge and information systems that increase coordination [their emphasis] and respond to client demands (d) to advance innovation fostered by a facilitating policy and institutional environment" (p.588). Effective policy interventions for encouraging agricultural and rural innovation are therefore necessary.

In Hungary, the National Rural Development Strategy 2012-2020 (VM, undated) aims for 'viable agricultural and food production' together with the 'protection of natural resources and the environment, and the sustainable use of natural resources'. Romania does not have an equivalent national strategy but the National Rural Development Programme (NRDP) 2014-2020 (MARD, 2014) is addressing the following strategic objectives: 'increase the competitiveness of agriculture', 'sustainable management of natural resources and climate change' and 'balanced rural development, reducing economic and social disparities between different areas of the country'. Both approaches are consistent with the idea of sustainable intensification. The specific objectives are listed in Table 1.

Table 1: Specific objectives of the Hungarian National Rural Development Strategy 2012-2020 and the Romanian National Rural Development Programme 2014-2020

Hungary	Romania
• Encouraging employment growth; • Balanced and diverse agricultural and forestry production structures; • Local food production and food markets; • Restoration of local power generation; • Strengthening of local rural communities including improvement of demographic indicators; • Conservation of biological diversity.	• Employment growth in agricultural sector; • Workforce rejuvenating in rural environment; • Restructuring of small and medium farms; • Improving the economic performance of farms and processing sector; • Adaptation of agricultural infrastructure to mitigate climatic change effects; • Strengthening local development through the LEADER approach.

Sources: VM (undated) and MARD (2014).

The EU has implemented several rural and agricultural innovation-related programmes and initiatives. The LEADER approach that was designed to mobilise and deliver rural development in local rural communities (EC, 2006) depends heavily on the above-mentioned social process between different actors for its effectiveness. More recently, in order to foster competitive and sustainable farming and forestry through innovation, the European Innovation Partnership 'Agricultural Productivity and Sustainability' (EIP-Agri) has been established to bring together farmers, scientists, advisors, enterprises and others in farmer-driven multi-actor project-based partnerships or 'Operational Groups' (OGs). Topics for OGs can include environmental and social, as well as economic innovation (EC, 2012). In the current programming period, Hungary plans to establish 70 OGs (ENRD, 2015a) and Romania expects to set up 24 (ENRD, 2015b).

In view of the increasing importance attached to agricultural and rural innovation in the national and European policy agendas, this paper compares and contrasts the current state and role of innovation among rural actors and farmers in Hungary and Romania. It attempts to identify the determining factors of the introduction, acceptance and diffusion of innovation in the two countries and, from this information, advance some ideas on how the efficiency and effectiveness of innovation in agriculture and rural areas can be improved.

Methodology

Key indicators

To provide a socio-economic and socio-technical context of innovation in the two countries, identifying similarities and differences between them, the main features of agriculture and rural areas in Hungary and Romania were compared via an analysis of key indicators for the period 2005-2010. Two sets of indicators were selected:

- *The main socio-economic characteristics of rural areas*[2], so as to give a general overview of the rural areas that are addressed by AKIS;
- *Innovative capabilities*[3], i.e. the subset of the competences/capabilities which allow the rural actors to access and benefit from innovation sharing.

The rationale behind the choice of the first set of indicators is reasonably self-evident. Measuring innovation capability per se is not easy as there is no consensus on its definition (Zawislak et al., 2012) so, as proxies, the second set of indicators was selected to encompass (a) information channels, (b) educational levels and (c) age profiles:

- *The percentage of homes having subscribed to broadband Internet* is a measure of access to an important information channel (Bótáné Horváth et al., 2015);
- *The educational structure of the rural labour force* shows whether this indicator represents an opportunity or a threat to the development of non-agricultural entrepreneurial initiatives. The implementation of economic activities that require a higher level of training can be facilitated by a higher educational level in the rural labour force; on the contrary, a low educational level is associated with a reluctance to innovate (Bougrain and Haudeville, 2002; Gray, 2006);
- *The structure by age of farm managers* reflects the *potential innovating capacity* in a given area. A younger age structure is associated with greater willingness to accept innovation, to internalise new ideas of business management, new technical and technological procedures and to generate innovative ideas due to greater openness towards risk assumption (Jung and Ejermo, 2014). Openness to innovation also stems from the fact that young people usually have higher educational capital compared to older people and their social independence permits them a much higher mobility;
- *Structure of farm managers by their agricultural training level* reflects their ability to access and use innovations with a high-tech level, new farm management tools, etc.

Interviews

Semi-structured interviews were conducted face-to-face or by telephone (and in one case by email). This method allowed us to study the assumptions, values and experiences of the project team members, project participants or external

[2] Percentage of population resident in predominantly rural (PR) NUTS3 regions; percentage of land area accounted for by PR NUTS3 regions; average population density of PR NUTS3 regions; average GDP per inhabitant in PR NUTS3 regions cf. other regions; employment by sector in PR NUTS3 regions cf. other regions; unemployment rate in PR NUTS3 regions cf. other regions; average utilised agricultural area (UAA) per farm; average standard output per farm; number of farms and their economic size profile in terms of number of farms and share of UAA occupied.

[3] Percentage of homes having subscribed to broadband Internet in PR NUTS3 regions cf. other regions; Educational level and participation in adult education and training in thinly-populated NUTS2 regions; age profile of farm managers; agricultural training level of farm managers.

parties; and at the same time to encourage reflection. The interviewer stimulated the interviewee to examine issues (such as the barriers in the existing system or the interrelationships) in greater depth. The main topics covered during the interviews were derived from Biró et al. (2014) and are listed in Table 2.

Table 2: Main topics covered during the interviews

Topic
• A brief description of the interviewee's organisation or farm; • Interpretation of innovation and knowledge sharing, assessment of innovation performance; • Determining factors of the introduction, acceptance and diffusion of innovation; • Innovation activities of the interviewee's own organisation, business or farm; • Tools to encourage innovation; • Comments on any other topics considered to be important.

Source: own composition.

The interviewees were selected to represent the main actors in the rural and agricultural innovation chains (see Fieldsend et al., 2015 for details) although, in line with our previous experience that most farmers in Hungary and Romania behave as followers in innovation, no individual farmers were interviewed. The interviewees were already known to the researchers to be experts in the topic and, in several cases, to have knowledge of the environmental and social sustainability of agricultural innovation as well as its economic sustainability. The interviews were carried out in June, July and August 2014. Each interview took approximately 1.5-2 hours and was recorded with the permission of the interviewee.

The Romanian interview results were processed via the following steps: categorisation, contextualisation, metaphorical substitution, formal analysis and structural analysis. The 'framework' method described by Brunt (1997) was used by the Hungarian researchers. This involves five stages: familiarisation, identifying a thematic framework, indexing, charting, and mapping and interpretation. It was agreed between the two research teams that the two methodologies were essentially compatible.

Results

Comparative analysis of key indicators

Comparisons between the status of rural areas in Hungary and Romania are hampered by the fact that national data sets are not always compatible. EU level data are often available only at NUTS3[4] (or even NUTS2) level, and many such regions are composed of both rural areas and urban centres. However, we could make the following comparisons.

[4] Unless otherwise stated, 'region' is used in a sense of a NUTS3 level region.

The importance of predominantly rural[5] regions in the two countries in 2012 (the most recent comparable data at the time of writing) was similar. In Hungary, 46.6 per cent of the population was resident in such regions, which occupied 66.3 per cent of the land area. The equivalent figures for Romania were 45.5 and 59.8 per cent. The population densities (75.4 and 71.3 inhabitants per km^2 in Hungary and Romania respectively) of predominantly rural regions in the two countries was also similar (Table 12 in EC, 2013).

National data from 2011 (again, the most recent comparable data) show that in Hungary the average GDP per inhabitant in predominantly rural regions was EUR 7,206 (cf. EUR 7,535 in intermediate regions and EUR 21,873 in Budapest). A much larger gap in economic performance existed between predominantly rural (EUR 4,331) and intermediate regions (EUR 5,793) in Romania, while the value for Bucureşti was EUR 15,516.

In 2011, the breakdown in employment by sector (NACE Rev. 2) in predominantly rural regions of Hungary was as follows (intermediate region data are shown in parentheses): primary sector: 11.5 (8.9) per cent; secondary sector: 37.4 (33.2) per cent; and tertiary sector: 51.0 (57.9) per cent. The equivalent data for Romania were as follows: primary sector: 38.9 (29.7) per cent; secondary sector: 28.0 (31.1) per cent; and tertiary sector: 33.1 (39.3) per cent (EC, 2014). In contrast to Hungary, where the primary sector accounts for only around 10 per cent of employment outside Budapest, it continues to account for around 40 per cent of jobs in the predominantly rural regions of Romania although it should be noted that most jobs are not represented by employees (with full or part time working contract). The majority of the Romanian population working in agriculture are family members working or self-employed on their own farm.

According to Eurostat data, in 2012, 10.8 per cent of the population aged between 20 and 64 in predominantly rural regions of Hungary was unemployed, compared to unemployment rates of 11.6 and 9.3 per cent in intermediate and predominantly urban regions respectively[6]. Unemployment rates in Romania were notably lower but were higher in predominantly rural regions (7.3 per cent) than in intermediate regions where the figure was 6.9 per cent.

In 2010 the average utilised agricultural area (UAA) per farm in Hungary was 8.6 ha, an increase from 6.4 ha in 2005. Similarly, the average standard output (SO) had increased from EUR 6,866 to EUR 9,086. By contrast, the average

[5] In 2010, the European Commission adopted a new NUTS3 level typology of predominantly rural, intermediate and predominantly urban regions, based on a variation of the previously used OECD methodology. This is described at http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Urban-rural_typology and is used by EC (2013).

[6] Since 2011, public workers in Hungary have been accounted for as regular employees.

UAA per farm in Romania in 2010 was almost unchanged from 2005 (3.4 ha cf. 3.3 ha) while average SO had increased only from EUR 2,471 to EUR 2,700. These data are also taken from the Eurostat database.

Also in 2010 there were 534,020 farms in Hungary, of which 65 per cent had an economic size of less than EUR 2,000 SO while more than 30 per cent of the UAA was occupied by farms that were EUR 500,000 SO or more in size (Figure 1). Farms of an economic size of less than EUR 2,000 SO accounted for 73 per cent of the 2,816,460 Romanian farms, but these occupied over 20 per cent of the UAA. Farms of EUR 250,000 SO or more accounted for approximately 20 per cent of Romanian UAA, cf. 40 per cent in Hungary.

In conclusion, predominantly rural regions are prominent in both countries, but in Hungary the level of GDP is almost double. Employment in intermediate and predominantly rural regions is different: in Hungary, the tertiary sector is predominant while in Romania the primary sector recorded the highest values. However, unemployment is lower in Romania. Also, the farm structure is notably different between the two countries: the average size of farms in Hungary is approximately 2.5 times higher. Romania is characterised by a more pronounced polarisation between large and small farms than is Hungary.

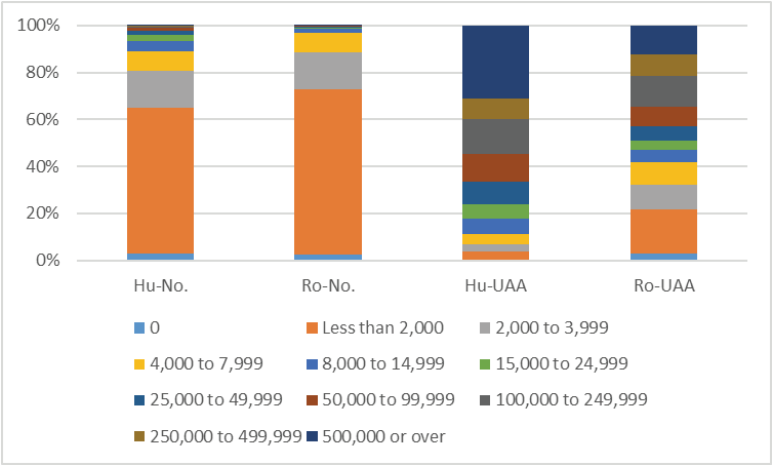

Figure 1. Farm structure by economic size (Standard Output) categories in Hungary (Hu) and Romania (Ro), 2010 (% total no. of farms and % total UAA)

Data source: Eurostat.

Innovative capabilities

In Hungary in 2012 the percentages of households having subscribed to broadband Internet connection were 60, 69 and 76 in predominantly rural, intermediate and predominantly urban regions respectively, while the equi-

valent percentages for Romania were 36, 70 and 70 (Table 88 in EC, 2013). Take-up increased tremendously in both countries between 2008 and 2010; for predominantly rural regions the increase was 25.1 and 30.3 percentage points in Hungary and Romania respectively. However, predominantly rural regions still lag behind intermediate regions and predominantly urban regions, especially in Romania.

In the same year, 72.1 per cent (Table 92 in EC, 2013) of the population aged between 25 and 64 from thinly-populated NUTS2 areas in Hungary had at least an upper-secondary level of education (ISCED level 3) and the share of adults participating in education and training in the same year was 1.9 per cent (Table 93 in EC, 2013). In Romania, the levels of both indicators were lower: 58.5 and 0.5 per cent respectively. Over the period 2007-2012 the evolution of these indicators was contradictory between the two countries. While the share of people with an upper-secondary diploma in thinly populated areas increased by 2.8 percentage points in Hungary, in Romania it decreased by 0.7 percentage points (Table 92 in EC, 2013). Throughout the five-year period the level of participation in life-long learning activities decreased in thinly populated areas of Hungary (-0.5) and slowly increased in Romania (0.1) (Table 93 in EC, 2013).

According to Eurostat data, over the period 2005-2010 there were contrasting trends in the age profile of farm managers in Hungary and Romania (Figure 2). Especially noticeable in Hungary was that the percentage of farm managers aged 45-54 dropped from 38 to 30, while that of farm managers aged 55-64 increased from 27 to 32. In Romania the percentage of farm managers aged 35-44 increased from 13 to 21 per cent, while a big fall, from 35 to 26 per cent, was evident in the number of farm managers aged 65 and above.

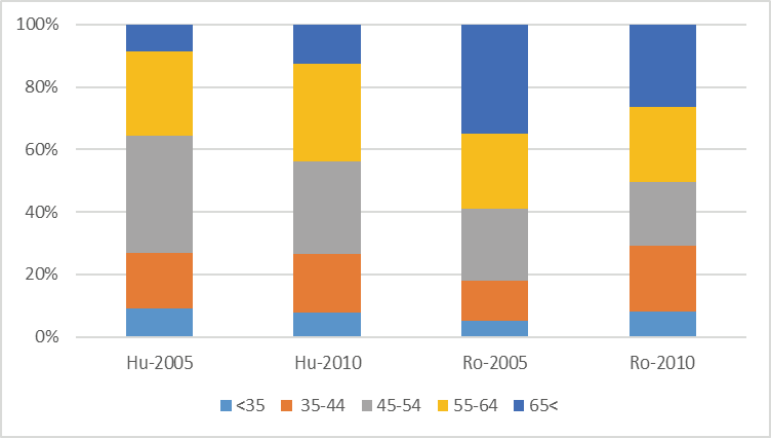

Figure 2. Age profile of farm managers in Hungary (Hu) and Romania (Ro) in 2005 and 2010 as a percentage of total farm Standard Output

Data source: Eurostat.

Figure 3. Agricultural training level of farm managers in Hungary (Hu) and Romania (Ro) in 2005 and 2010 as a percentage of total farm Standard Output

Data source: Eurostat.

Contrasting trends over time between the two countries were also evident in the agricultural training level of farm managers (Figure 3). In Hungary the percentage of farmers with full agricultural training fell from 65 in 2005 to 42 in 2010. In Romania over the same period the percentage of farmers with full agricultural training increased slightly from 12 to 13.

In conclusion, fewer households in predominantly rural regions are connected to broadband Internet, but the numbers are increasing in both countries. The shares of people with higher education and training are higher in Hungary. In terms of structure by age of farm managers, in Romania, there is an increase in the share of young farmers; in Hungary the older farmer group is increasing.

Interview results

Most interviewed actors in Romania and Hungary define 'innovation' as a novelty that helps to solve an existing problem, to improve a product or a service, to increase the economic performance of a product or process etc. Among governmental actors in Romania there is an overlap between the meaning of the 'innovation' concept and the 'transfer of knowledge'. This particular problem was not noted in Hungary, although the importance of knowledge transfer in promoting (disseminating already existing) innovation is widely acknowledged.

The interpretations of the 'innovation' concept are generally of secondary importance to the evaluations of the benefits that the respective organisations might have if they implement the innovation process. 'Generating money' and 'high value added' are examples. The interpretations of the investigated actors represent instrumentalisations of the innovative process, resulting from their institutional attributes.

In Romania, the potential direct beneficiaries of innovation (farming company, farmers' cooperation cluster) and the innovation diffusers generally consider that it is the foreign/multinational firms/companies (agricultural input manufacturers and suppliers) that produce innovation, while also ensuring the efficient transfer of necessary knowledge for its implementation The same actors also valorised the role of the market in the process of innovation creation. Similarly, the interviewees also believe that innovation and its implementation can be put into practice only by foreign companies, and that the large and medium-sized farms in Romania are the beneficiaries (territorial government entity, farmers' cooperation cluster, farming company).

Most Hungarian interviewees assessed the state of innovation in the country's farming and food industries to be very poor. Many farmers are focusing on immediate issues such as the weather during harvest, blue tongue and markets (e.g. the Russian embargo on fruit imports) and do not see innovation as a solution to these problems. Other farmers, however, are able to focus on innovation because their businesses are secure. Unlike in Romania, multinational companies are not seen as being such clear leaders in innovation, but their important role is tacitly recognised by many of the interviewees.

In Romania the role of the state in generating innovation is positively valorised by actors from the public sector (research organisations and regional governmental organisations). They consider that the state has the role of mediating innovation at territorial level by facilitating the meeting between the innovation suppliers and the final beneficiaries, through fairs, exhibitions, information caravans, etc. In Hungary the state is also expected to provide an appropriate (enabling) environment for innovation and to part-finance innovation.

In Romania, the hierarchy of organisations/institutions that mediate innovation is headed by the *multinational companies that manufacture and supply inputs*. They are followed by the *universities and research institutes, research stations* and different institutions that represent the Ministry of Agriculture and Rural Development: territorial entities with administrative functions (county agricultural directorates, town halls), and entities with agricultural and rural development support functions (*development agencies, agricultural payments agencies, advisory agencies*).

In Hungary. the *Chamber of Agriculture* is now responsible for all farm advisory services in Hungary so has a major role in mediating innovation. The important role of *producer organisations* is also recognised. Many other organisations similar to those listed above for Romania are active in Hungary but it is difficult to rank them in order of importance.

The main disturbing factors of innovation dissemination in Romania differ according to the perception of interviewed actors, namely:

- The *innovation offices/agencies* consider that there are several different factors that hinder innovation transfer, namely lack of finance, fear of novelty, lack of information, legislation, state;
- The *farming companies* believe that the disturbing elements lie in the state institutions, financial scarcity and the non-functional relationships existing between the farmers and the state in particular;
- The *research organisations, governmental entities and cooperation clusters* consider that the farm and farmer characteristics (absence of agricultural education and of vocational training, economic farm size) generate significant obstacles in the process of innovation diffusion and acceptance.

Hungarian interviewees identified numerous factors that they believe disturb the transfer of innovation. For example:

- The *innovation offices/agencies* (*bridging organisations*) believe that Hungarian entrepreneurs are waiting for others to do something for them, awareness and cooperation are low, and that there is no demand for development;
- *Businesses and farmers' organisations* point to a lack of resources (technology and capital), lack of information, competence and knowledge, an unskilled workforce, and the 'black' economy. Interestingly, one interviewee suggested that financial support is used by businesses to keep up with competitors but it holds back innovation;
- *Research organisations* and *public institutions* believe that multinational companies innovate but there is no demand on small farms. The gap between research topics and practical problems is too big to encourage innovation transfer.

Hungarian interviewees mainly feel that *governmental institutions* could do more to improve innovation. The grants system (together with related measures such as tax relief, employment support, innovation vouchers and venture capital) is considered to be potentially a key driver, but not presently very effective. One interviewee suggested that LEADER Local Action Groups should operate as [rural] development agencies.

Discussion

Our quantitative data illustrate the political, economic and social importance in both countries of the need to increase innovation activity in agriculture and rural areas. Almost 50 per cent of the population of each country lives in predominantly rural NUTS3 regions and the economic performance of these regions, in terms of GDP per inhabitant, is relatively low. The primary sector is an important source of rural employment in both Hungary and Romania.

Indicators for farm size, age and educational levels of farmers and the rural population, and broadband Internet penetration show that the potential for innovation in rural areas should not be underestimated. Although in terms

of numbers, small farms predominate in both countries, farms with Standard Output of EUR 15,000 or more account for over 80 per cent of UAA in Hungary and over 50 per cent of UAA in Romania (Figure 1). These are real, commercial farms that produce for the market. In Hungary in terms of SO, around 70 per cent of farmers have at least basic training (better educated farmers should be more amenable to absorbing new information), although the figure for Romania is little more than 20 per cent (Figure 3). By the same measure, around 60 per cent of Hungarian farmers are aged under 55, cf. around 40-50 per cent in Romania (Figure 2). Thus, there are not negligible percentages of younger, educated farmers in both countries. In the wider population, over 70 per cent of the working age population from thinly-populated NUTS2 areas in Hungary have at least an upper-secondary level of education, although in Romania the figure is a little under 60 per cent. The percentages of households in predominantly rural NUTS3 regions subscribing to broadband Internet connection is lagging in both countries, but take-up is increasing rapidly.

The state of innovation in farming merits a less positive assessment in both countries. The opinion of the interviewees is that many farmers in both countries behave as followers in innovation, as already demonstrated in Hungary by Biró et al. (2014). Although the concept of innovation is widely understood, the confusion among government actors in Romania between 'innovation' and 'transfer of knowledge' implies that transferring knowledge between actors (such as from a machinery supplier to a farmer) is sometimes mistaken for genuine innovation in agriculture. This is probably linked to the view that multinational companies (input manufacturers and suppliers) are the leading drivers of agricultural innovation in Romania. By contrast, although their contribution is significant, such companies are not perceived as playing the leading role in Hungary. In both countries, the farm advisory services have traditional structures that are dominated by the public sector.

Although in both countries the state is perceived to have a major role in the mediation of innovation, interviewees believe that governmental organisations could do more to improve innovation. The current measures encouraging innovation are associated with those from the Romanian NRDP 2014-2020 (MARD, 2014): *vocational training and knowledge diffusion* (M-111), *modernisation of agricultural holdings* (M-121) and *supporting semi-subsistence agricultural holdings* (M-141). Knowing these measures shows that the actors are aware of the possibilities provided by the state institutions on one hand, and of the limited support provided by the public programmes for agricultural and rural innovation on the other. A similar set of EU measures will apply in Hungary although it is not yet clear how much funding will be allocated to them. The National Innovation Office used to publish calls and disburse grants (from Hungarian government sources) from the Research, Technology and Innovation Fund for different topics including agriculture. However, the government sector related to innovation is undergoing major restructuring and there are presently no open calls. It remains to be seen whether these interventions will stimulate an increase in innovation in the two countries.

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