INNOVATION, A NEW SOLUTION OF RURAL AREAS

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Fast changes in agriculture can contribute to the increase of productivity and Romania can go on the same path of innovation and development (in terms of agriculture) with Poland. Therefore, the purpose of research is to provide an overview of Romania’s situation in a ranking of European countries where innovation is best capitalize. The last chapter on the paper includes a comparation between Romania and Lithuania regarding the invovation in the rural areas, based on Eurostat data.
The research methodology is based on quantitative research, collecting data from the specific sites and the interpretation of the graphics optained. The result was that the two countries have similar percentages of the indicators measuring innovation and the reason for using empirical methods to produce food and the incapacity to adapt to the marketing demands is represented by the lack of education and information.

Keywords: Agriculture, grants, innovation, innovation barriers, Lithuania, Romania.
JEL Codes: E24, O31, Q55.

1. Introduction

Further, I will analyze Romania's rural performance in the context of innovation revolution, based mainly on the analysis of the problems identified in the post-communist period and the way to reduce them by proposing new innovative solutions. There isn’t a generalized definition of 'rural area', it can be defined in different ways, in demographic, socio-economic, cultural and ecological terms. Basically the rural area is defined as being the opposite of urban space, denoting areas characterized by relatively low density of the population and mainly by agricultural activities.

Innovation is defined as a process of influence that leads to sustainable growth but also to Europe's competitiveness. Being placed in the center of the the EU strategy for economic growth, was created the initiative "Innovation Union" in 2013, that groups the member countries into four groups:

- innovation leaders: Sweden, Germany, Denmark and Finland, all the countries have a much higher performance than EU level;
- innovation followers: The Netherlands, Belgium, Luxembourg, UK, Austria, Ireland, France, Slovenia, Cyprus and Estonia with a performance slightly above the EU average;

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- moderate innovators: Italy, Spain, Portugal, Czech Republic, Greece, Slovakia, Hungary, Malta and Lithuania, with poorer performance than the EU average;
- modest innovators: Romania, Poland, Latvia, Bulgaria have a performance well below than the EU average.

Innovation is the main driver of economic agents competitiveness (Badouin, 1974), especially in a intensely competitive market such as the European one. Is a key concept for the LEADER Community initiative (Liaison Entre Actions de Développement de l'Économie Rural), which aims to support innovative, demonstrative and transferable operations, illustrating new paths to follow for rural development (European Commission).

R. Tournemine (1985) has defined innovation as the implementation of a new product or a significantly improved process. Another definition considers innovation as the overall process of technological and commercial creativity, the transfer of a new idea or concept to the final stage of a new product or process accepted by the market (Hayami, 1985).

T. Ling defines innovation as the manner how new ideas are generated, the way how they lead to changes in organizational or individual practices that add value and how the successful practices are distributed (Ling, 1994).

There is an important difference between invention and innovation as an invention can be considered an innovation only when it is put into practice, in a production activity and is sold on the market.

Starting from the economic theory of J. Schumpeter's, in 1942, have been defined information technology, mechanisms and the factors of the innovation process, arguing that the entrepreneurial spirit and the possibility of obtaining a temporary monopoly profits could stimulate the introduction of new products on the market or reducing production costs. He named this phenomenon "creative destruction", where previous market structure is crushed to make room for a successful innovator. Therefore, innovation can be marginal, radical or technological revolutionary (Schumpeter, 1942). In his theory, J. Schumpeter also mentions about two fundamental factors that create "the innovation infrastructure": the first one is that the "innovation entrepreneurs must have technical knowledge to produce innovative products and legal frameworks that encourage them" and the second one is that "entrepreneurs must have access to funds for financing" (Schumpeter, 1942).

Between 1950 and 1980 predominated the research and development strategies, characterized by a lack of coordination and a collaboration between the decidents of science strategies and the ones of industrial strategies and only in the late 80's switched to the innovation strategy (Larue, 1991). After 1990, new elements have emerged in the science strategies, due to the birth and gradual consolidation of the relations between industry and research institutions and the growth of strategic research.

While certain economists can maintain the idea that the new findings are the result of inspiration that randomly occur, but without a strong connection with physical reality, D. Hayami and T. Rutter, in 1985, empirically verified their own theory of induced innovation and have shown that they have a direct connection with economic conditions. They asserted that searching for new innovations is an economic activity that is strongly affected by economic conditions. New innovations are more likely to
occur in response to the deficit and economic opportunities. Therefore, the lack of labor force will induce saving technologies of labor force. Ecological techniques are likely to be related to the imposition of strict environmental regulations. The dripping irrigation and other water-saving technologies are likely to be developed in places like Israel and California desert, where water constraints are required. Similarly, food shortages or high prices of basic agricultural products will probably lead to the introduction of a new variety with high yield like perceived changes in consumer preferences can provide the context of new innovations that change the quality of the product.

According to the European Commission Communication COM 688/1995, innovation consists in:

- renewing and broadening the range of products, services and associated markets;
- the establishment of new production, supply and distribution methods;
- changes introduction in management, work organization, working conditions and staff training.

The objective of the Lisbon Strategy, established in 2000 and applied from 1 December 2009, was that the European Union to become by 2010 the most efficient and competitive economy in the world, focusing on innovation. EU innovation strategy is built around five priorities (Balezentis, 2012):

a) people should start to innovate;

b) triggering innovation in organizations;

c) the creation and application of knowledge;

d) applying innovation in order to meet the social and global challenges;

e) improving the management and implement the innovation policies.

Lisbon European Council conclusions focused on the research and innovation efforts at community and national level but also on creating an innovation friendly environment; they demonstrated that innovation policy should be designed in a comprehensive framework to promote innovation capabilities in a comprehensive way by creating a strong connection between research, industry and entrepreneurship.

This phenomenon of migration has been so analyzed and studied by the economists that they have almost forgotten the positive effects, namely retromigration. A lot of people working in other countries send money to their families left in the country or, in many cases, those who go abroad to work, at some point, they return to their country after they have managed to raise a sum of money. The positive effects of remittances are on private investment and consumption and the elasticity of consumption is much higher than for foreign direct investment.

For example, in Romania, if I compare the FDI (foreign direct investment) and capital market inflows, remittances are one of the least volatile sources of external income. The purpose of the paper is to provide an overview of Romania’s situation in a ranking of European countries where innovation is best capitalize. If the second chapter is focused on identifying the main barriers in the way of Romania’s agriculture innovation, using as data sources the European Commission reports, the third chapter contains a comparison between Romania and Lithuania, based on Eurostat date, regarding several innovation indicators of the agricultural sector.
Also, the main objective of my article is to measure innovation in the Romanian rural areas (using certain indicators in the third chapter) and in the same time to point out that the lack of information and education is the real reason for the Romanians incapacity to adapt to the marketing demands. A secondary objective is methodological and I will make some comments on the indicators used in the rural innovation analysis and the concerned methodologies.

The research methodology is based on quantitative research, collecting data from the specific sites, making charts, and the interpretation of the obtained results.

The added value of the research is my own calculation of the GDP growth rate, for Romania and Lithuania, for the past six years, using Eurostat data.

2. Romania in the context of innovation revolution – the barriers and its implications for development

This chapter contains a brief overview of the main problems faced by agriculture in Romania since 1990 and the European Commission's opinion on identifying and reducing them by proposing new innovative solutions. Also, here are highlighted the existing barriers of innovation and I explained what stopped Romania to have the same direction in terms of innovation and development (regarding agriculture) with Poland. A very important factor in this regard is represented by the public sector percentage in Poland in 1989 (about 58%) as opposed to Romania, which reached a level greater than 98% (I could say that the private sector was almost non-existent, being approximately 2%).

The condition of rural areas was one of the major research topics during the past two decades, both in terms of the significant weight that the rural population has in the overall population, and socio-economic issues related to living conditions in the rural environment. The main problems for Romanian rural area in the post-communist period can be divided into three major categories of strongly correlated factors:

a) the agriculture overrepresentation and the poor development of non-agricultural activities in the rural economy;

b) the agricultural underdevelopment and its poor productivity;

c) low level of development for most rural areas and poor formal education of the population.

According to the European Commission, the main problem of the rural places and especially of the agriculture, in the future, is not only how to produce more but how to do it in a more sustainable way. These problems will not be solved without a powerful stimulant for research and innovation and particularly by linking the researchers, farmers and other stakeholders; therefore, we can accelerate the pace of technology transfer from science to farming practice and the science can obtain from the agricultural sector a more systematic feedback on practice needs. The European Innovation Partnership entitled "The productivity and sustainability of agriculture" aims to offer an working interface between agriculture, bioeconomy, science and other disciplines at the regional, national and EU level. This partnership will also ser-
ve as a catalyst for increasing the actions effectiveness related to innovation, supported by rural development policy and research and innovation in the European Union.

There have been identified two main objectives for this European Innovation Partnership: promoting productivity and efficiency of agriculture (reversing the recent trend of diminishing productivity gains by 2020) and the sustainability of agriculture (guaranteeing the functionality of soils at a satisfactory level by 2020). In the way of implementation and innovation development in rural areas, I identified several barriers that I have presented briefly in the following lines.

The first cause of blocking innovation in Romania’s rural sector was represented by the absence of integrated strategies and also a precise direction for agriculture; this made that Romania’s route to be totally different compared to other Eastern European countries.

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The best example is Poland because 27 years ago, in 1989, the only Eastern European country that could be compared with Romania regarding the size of the economic disaster was Poland. The Hungarians were already experimenting the capitalism for decades, in Yugoslavia the war had not begin yet and, despite inflation, the economy was still working, Czechoslovakia was far away from being ruined and Bulgaria was relatively stable. But the two biggest countries in the region, Poland and Romania, were down and the paths that they were supposed to have were totally different.

Polish agriculture is one of the most successful models in the European Union, managed to overcome the difficulties related to the poor quality of the soil (characterized by a high content of sand, double in Poland than the EU average – 60.8% versus 31.8%) and well below EU average productions. Poland’s solution for the bad agricultural premises was the industrialization and specialization in certain fields in which now ranks among the world leaders (cultivation of rye, potatoes and apples, raising pigs and milk industry). Also, Agricultural Property Agency played a major role in the systematization of the agricultural properties who took over and redistributed through a complex scheme, the properties of the former state farms toward private property. The agency took over 3.7 million hectares from the state farms, in number of 1666 and had an average surface of 2260 hectares and directed them to the private sector.

A second cause is the weak budgetary financing system. Agriculture in Romania, as an important branch of the national economy requires considerable financial resources for reorganization and modernization. During the transition to a market economy, Romania has pursued a policy of privatization and reorganization of agriculture, frail support of agricultural production due to limited budgetary resources and the liberalization of trade in agricultural products.

Financing agriculture from the state budget is ensured in redistributing the collected revenues from the economic agents and population, by branches and sectors, according to the strategic priorities and economic and social needs. Thus, the focus is not on innovation and development, but more on maintaining the amount of agricultural production.

Changing ownership structure of the land led to the creation of millions of small family farms, producing with an extremely low yield, especially for self-
consumption. Agricultural production had a domestic support, which take various forms:

- coupons for farmers (in 1997–2000), according to the arable land they own, for the acquisition of inputs and production services;
- individual farmers exemption from income tax.

Pre-accession period (2004–2006) was marked by changing the policies for agricultural budgetary support. Schemes Grant were geared more for social protection being considered certain "controlled" criteria (most of the amounts allocated from the state budget were aimed more to maintain the capacity of agricultural production, for the establishment of certain categories of crops) and not actions for increasing the efficiency and farmers yield, for investments, innovation and development.

Another barrier against innovation is the lack of trust in the international institutions support due to the poor training of state institutions responsible for European funds but also deficient informing of the population on what means "European funds".

Rural development policy complements and accompanies the Common Agricultural Policy and aims to strengthen and diversify the economy of rural communities. This policy is based on an integrated multisectoral approach to the rural area. The main instrument for financing the EU agricultural budget for rural development goals is, since 2007, the European Agricultural Fund for Rural Development (EAFRD). EAFRD funding is based on a different allocation from the annual budget and includes pre-financing, interim payments and final payments.

The objectives of the CAP (market orientation of farmers, getting rewards for agricultural activity, maintaining the essential characteristics of rural sector) aimed to establish a connection between the environment, rural development and sustainable agriculture by developing individual farms. To accomplish these goals are used several funding mechanisms:

- Single Farm Payment Scheme;
- Cross-compliance (conditionality rules);
- Modulation of support or financial discipline.

Hence the innovation has been placed in the center of EU strategy on economic growth and creation of jobs, the EU member states are strongly encouraged to invest 3% of GDP in R & D (research and development) by 2020 (1% of public funds, 2% of private investment), which is estimated to generate 3.7 million jobs and would lead to an annual growth of EU GDP by 800 billion euros.

The initiative "Innovation Union" directs Europe’s efforts (and its cooperation with countries from outside the EU) to address greatest challenges nowadays: energy, food safety, climate change, aging population. The EU is working to create a single European research area, enabling the researchers to work in any country in the EU and within the cross-border cooperation to be supported and encouraged.
3. The analysis of innovation indicators - Comparison between Romania and Lithuania

This last chapter contains a comparison between Romania and Lithuania regarding the innovation of rural areas, analyzing indicators such as agricultural GDP and GDP growth rate but also total agricultural factor productivity and expenditure on agricultural research and education.

Measuring innovation is a very difficult task. Since the performance of an innovation system in the agricultural field affects the overall performance of the agricultural area, sectorial performance measurement is vital for evaluating a system of innovation. Table 1 contains a set of performance indicators of the agricultural sector, which are influenced by the innovation performance (World Bank Report, 2015).

Table. Indicators of Innovative Outcomes in the Agricultural Sector

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<td>Expenditure on agricultural research and education</td>
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a) Agricultural GDP

Evaluating the agricultural performance in Romania and Lithuania, in terms of GDP, we can see that, currently, both have a similar percentage in overall GDP.

![Figure 1. GDP (in billions of euros)](image)

If for Romania, the share of agriculture in GDP has dramatically declined by more than 13 percentage points (reaching now to be 4.5% but in the early 90s it had a share of 18%), in Lithuania, the decline is not so dramatic but it is still significant (the agriculture currently has a share of 3.5% compared to the 90s when it owned a percentage of about 10%).
An explanation of this fact is that Romania is a developing country and it has a considerable proportion of industry and agriculture. Lowering the share of agriculture the last two decades came simultaneously with the increasing contributions from industries and services.

**b) GDP growth rate**

![GDP growth rate (in billions of euros)](image)

Analyzing Romania and Lithuania from the perspective of the GDP growth rate over the past few years, it follows that, even if currently they have similar growth rates, in the years following the economic crisis (2010–2012), the two countries had different directions.

While in 2011, in Lithuania the economic crisis did not have strong effects (with a GDP's growth rate of 6%), Romania has experienced plenty of these effects (GDP growth was 1.1%). But starting from 2013, Romania had a positive and constant evolution. While the medium salary doubled, the purchasing power of Romanians increased only by 33%. Regarding the medium salary, Romania has increased by 237% (in 2005 it was 774 RON and the end of 2015 it was 1833 RON), our country is the second lowest in the EU in terms of power purchase, which is revealed by the European Commission statistics. A Romanian consumes goods and services half, compared to the European average and it is bad too in terms of Gross Domestic Product per capita (GDP per capita), the main indicator of purchasing power. However, the Eurostat data show that the inflation rate reached a minimum of 0.6% in 2015, while the unemployment rate remained steady, around 7%.

In Lithuania, significant rate of GDP growth site was possible due to austerity measures since 2011, measures such as reducing public spending by 30%, VAT increase from 18% to 21% and even increasing income tax from 15% to 20%.

**c) Total agricultural factor productivity**

It is well known that Romanian soil is very fertile. Even so, the Eurostat data shows that before joining the U.E., the productivity in agriculture was a quarter of the U.E. average. At this moment, the productivity in agriculture is not very high, being
three times smaller than the U.E. average. From this point of view, high dynamic of investments is justified by the revamping need and agricultural sector efficiency.

If we compare Romania (that has an agricultural production of 15.5 billion euros) with the former communist states, only Poland is better ranked (with a production of 22.5 billion euro) while Bulgaria (3.8 billion) and Hungary (7.5 billion euro) have a weaker productivity than Romania.

Regarding Lithuania, labor productivity growth has also been boosted by the changing structure of the economy. But the Lithuanian economy did not evolve along the classical textbook path of an agricultural economy becoming industrial and, in a later stage, moving into services. As part of the Soviet Union, Lithuania was a semi-industrial economy, dominated by large, low-value-added factories, some of them became obsolete and during the past decade were replaced by smaller and more dynamic manufacturing branches.

With three-quarters of its labor force employed in agriculture, Lithuania’s agriculture still occupy a special role in the Lithuanian economy. By 1990, Lithuania reached roughly one-fourth of the U.S. labor productivity in agriculture.

Lithuanian agriculture remains inefficient by Western standards. Most small farmers do not have the capital or resources to acquire new equipment and few of them utilize new forms of fertilizer and soil-management techniques. In the early 2000s, agricultural production decreased by 4.3 percent but the access to new technology have slowly increased the efficiency of some farms (mainly the larger operations). It should be noted that the rise in agricultural production since 2004 has been significant after Lithuania’s accession to the EU. The support obtained from the EU and national budget stimulates agricultural production, while increasing the value added and income. Support funds are sufficient not only to maintain the farm incomes, but also to give more for investment purposes.

d) Expenditure on agricultural research and education

For the agricultural development, funding is needed for education, research and new technologies. Since agriculture in Romania is still in the stage of subsistence, these funding measures are meant to be a tool for the development of Romanian rural sector and for achieving a sustainable and prosper rural economy.

Romania's contribution for agricultural research, at the moment, from the state budget is 2.81% of GDP. But Romania does not receive money only from the state budget. In fact, a large part of the financings come from European funds for agriculture grants. For 2016, Romania received from U.E. more than 7.6 billion euros for agriculture. However, Romanian agriculture has not been developed as it should been because 30% of these European subsidies were directed to the social protection rather than onto equip farms.

Lithuania receives more from the European funding than it contributes to the EU budget (the money received from U.E. reach up to 1.6 billion euros) and the ones from the state budget about 8% of GDP is directed to development and innovation in agriculture (about 0.3 billion euros).
Actually, the agriculture is the only policy funded almost entirely by the EU. That is why it represents a large proportion of the EU budget. It is also less costly for EU countries as a whole than implementing 28 different national policies. The common agricultural policy has undergone a major reform, whereby its share of the EU budget has fallen from 70% in 1985 to around 40% today and is set to continue falling to 33% in 2020. A new reform which went into force in 2014 further strengthens European agricultural competitiveness, making it more environmentally friendly and reducing the gap for countries like Lithuania that receive less money than the EU average.

4. Conclusion

1. Romania has a privileged position in terms of agricultural resources. Following the analysis of the factors that have hindered the development of agriculture, I can conclude that there was a strong reason for which Romania and Poland did not have the same path of innovation (in terms of agriculture), represented by the share of public sector in the two countries. This was the main reason for which Romania is considered to be a modest innovator, with a degree of innovation far below than the EU average in a ranking conducted by the European Commission.

2. In the same ranking, countries such as Great Britain, Sweden and the Netherlands are considered to be the most innovative countries, which are the strongest economies of the U.E.

3. Barriers against innovation such as lack of a unitary strategy, heightened by the weak budgetary financing or lack of confidence in support of international institutions, made Romania not to establish a clear and good direction for agriculture.

4. The performance of an innovation system in agriculture affects the overall performance of the agricultural field, sectorial performance measurement is vital for evaluating a system of innovation.

5. Making a comparison between Romania and Lithuania, I noticed that the two countries have similar percentages in the total GDP but in terms of GDP growth rate it follows that, even if currently they have similar growth rates, after the economic crisis (2010–2012) the two countries had different. Also, the lack of education and information has as consequence the usage of empirical methods to produce food and the incapacity to adapt to the marketing demands, the farmers hoping that the public interventions (subsidies) will help them to be profitable or worse, to survive.

References


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Summary


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