

## **AGRI-FOOD SECTOR IN POLAND: THE NEED FOR INNOVATION POLICY SUPPORT**

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### **Abstract**

*The research objective of this paper is preliminary justification of the need to support the transfer of innovations to the food-processing sector. Another objective of the study is also to determine changes in the last period in policies to improve innovativeness and induced by them changes in legislation related to the system of innovation transfer. The basis for the research was studied literature, especially in the field of main stream economics, New Institutional Economics, public choice theory. The empirical material for analysis was the statistical data of the Central Statistical Office (GUS) for the years 2010-2013. The findings show that in the case of food processing sector the efficient policy support in innovation transfer seems to be needful. Conducted research also shows that it is very urgent issue.*

### **Keywords:**

*Innovation policy, food processing, law, fiscal policy*

### **Introduction**

Poland is now a country with a relatively low level of innovation in the economy. According to the report of the European Commission (2014), a synthetic innovation indicator of the Polish economy amounted to 0.279, which put Poland in the group of countries with moderate innovation. In fact, Poland was ahead in terms of innovation to only those European Union countries such as Bulgaria, Latvia and Romania. Reasonable seems to be speculation that one reason for this may be unreliable transfer system of innovation in the sector engaged in research and development to manufacturing and services. The increase innovativeness of the economy is, however, one of the priorities of European Union policy for 2014-2020. Under this policy, Poland should receive from structural funds the amount of EUR 82.5 billion, much of which can and should be used for the development of innovativeness.

Low level of innovation in the economy or its specific sector may be due to market failures that are related to the extent of the occurrence of certain internal structures. This provides grounds to the introduction of various institutional arrangements – e.g. to prepare and implement appropriate policies – supporting the transfer of innovation. When undertaking such initiatives with respect to a particular sector, it is worth to examine whether they are justified by the importance of this sector to the national economy. Another aspect to be considered is the current use of knowledge in the business. It may turn out that the sector does not require state intervention.

Therefore, the research objective of this study is preliminary justification of the need to support the transfer of innovations to the food-processing sector, which seems to be very important for rural economy as well as whole economy of Poland. Another objective of the study is also to determine changes in the last period in policies to improve innovativeness and induced by them changes in legislation related to the system of innovation transfer. Generally, the paper presents the results of the first stage of the research on institutional

determinants of transfer of innovation into economic activity with particular focus on agri-food sector and rural areas in Poland. The basis for the research was studied literature, especially in the field of main stream economics, New Institutional Economics and public choice theory, referring to the question of the importance of knowledge transfer to business. Documentation studies were carried out also in the field of literature consolidating issues related to innovation and process of innovation transfer, the development strategy of determining the directions of the policy and the main acts forming the regulatory environment. Assessment of the importance of food processing and innovation in this sector were carried out using methods of descriptive and comparative analysis. The empirical material was the statistical data of the Central Statistical Office (GUS) for the years 2010-2013. Empirical studies were conducted at the national level.

### **1. Literature review**

When considering the issue of institutional support for the transfer of innovation must be first and foremost in mind the fact that it can be a form of state interference in market processes. From the theory of prosperity, it is clear, however, that the market economy is inherently efficient (Feldman, Serrano 2006 Mas-Colell et al., 1995, Herbener 1997). The existence of a market economy in the European Union should therefore lead to the widespread use of innovation as a source of performance (Aghion, Jarave 2015 Arrow 1962 Thirtle, Ruttan 1987). In this case, support the transfer of knowledge and implementation of new innovative solutions should be superfluous and even leading to deterioration in efficiency. This can in fact be considered as a form of interventionism, which is not conducive to improving efficiency (Ajefu, Barde 2015, Cordato 1980, Grand 1991) – of course if these activities are directed only to a specific group of companies.

The economic literature indicates, however, the existence of market failure (Stiglitz 2004), which is a source of inefficiency. Therefore, we can believe that imperfect competition, asymmetric information and other market failures are limiting to a certain extent the use of innovation as a source of efficiency. An example of this is large diversity of innovative economies of the European Union (European Commission 2014) and the fact that the policy of support for the transfer of innovation not always causes an adequate growth of economic innovation (European Commission 2013). In practice, the country's economic growth – at least in the short term – is not necessarily due to the transfer of knowledge to industry and services sectors. Its source may be the low price of labour factor, the availability of cheap raw materials and favourable conditions on the world market (Kasperkiewicz 2008). According to Kasperkiewicz (2008), Polish economic growth in recent years has also resulted primarily from the use of these factors. Underestimation of the importance of knowledge transfer has led, however, to maintain, and even the rise of the technological gap between Poland and the most innovative economies of the European Union.

Limited use of knowledge as a factor of development and economic growth may concern the entire national economy and its individual sectors (Consortium Europe INNOVA 2011, Pavitt 1984, Malerba et al. 1997). All sectors, including food processing sector, are exposed to it. One of the main reasons for limited innovation is existing structural conditions of a particular sector in a particular state. It can be exemplified by the implementation of organizational innovations related to new methods of human resource management in Serbia (Ratković 2015). According to Ratković (2015), the implementation of these innovations was conditional upon both the size of the company and form of ownership. The specificity of the structure of the food industry in Poland (Mroczek 2014) may also condition the specific institutional arrangements for promoting innovation transfer. The

specific structure of the sector can be a barrier to the transfer of innovation to be taken into account when planning policy of support for this process.

The internal structures of a particular sector are tied to a certain extent market failures. Example may be the unreliability of competition and information asymmetry. The severity of specific market failure is linked in turn to the degree of utilization of knowledge as a factor of efficiency improvements. This in turn may lead to institutional changes in the area of knowledge transfer, as exemplified by various policies oriented to support this process. Currently, one of the main trends of dealing with the role of the institution is the New Institutional Economics. With reference to the relationship between competition and knowledge transfer one of the leading representatives of this trend, namely North (2005) states that "... companies, political parties, and even higher education institutions in the face of competing organizations must strive to improve efficiency." According to the author muffled competition limits the motivation of organization to invest in new knowledge and, consequently, does not cause sudden institutional changes. On the other hand, strong competition accelerates institutional changes. In these considerations, the author concludes, therefore, that the cause of improvement of the effectiveness is generally the competition, and the measure for this is raising the level of knowledge.

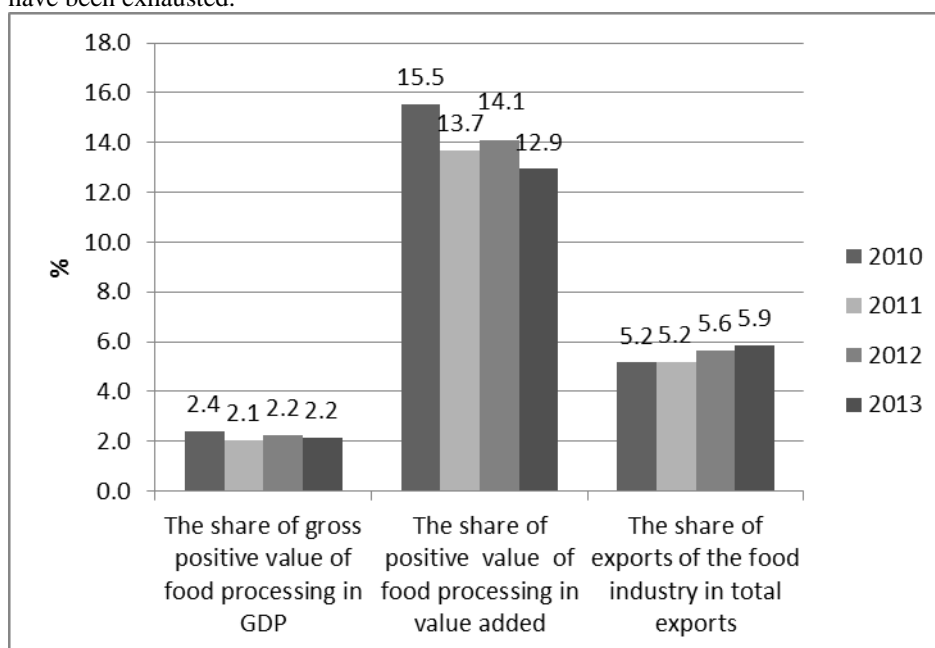
Assuming the occurrence of dependences indicated by North it can be said that the support of the transfer of knowledge, e.g. by pursuing specific policies should take into account the competitive environment in which the organization operates, i.e. the company. If competition is negligible, the support for entrepreneurship through subsidizing the transfer of knowledge can bring marginal results, because companies will not be motivated to use it. Whereas the opposite effect will be in a highly competitive environment. From the above relationships, it also appears that some policies to support economic activity, as a form of assistance that utilize transfers of funds to selected companies, can cause the elimination of competitive companies in the long term to limit the willingness to invest in new knowledge, due to the lack of sufficient competition. So designing institutional support for the transfer of innovation should be taken into account the interactions that may occur between the hitherto functioning forms of business support, and the new – that should be considered for public support for transfers of innovation. Under certain conditions, however, policies may complement each other. Such a situation appears when in the conditions of zero competition financial transfers will contribute to the creation of new businesses, which will motivate existing businesses to improve efficiency, e.g. by implementing new innovative solutions. Institutions supporting the transfer of knowledge could then make a big difference for those companies that cannot cope with its acquisition on market principles. The consequence may then form an even more competitive environment. The scale of this support and the conditions, under which it is granted, however, should be defined in such a way as not to eliminate companies from the market using a particular policy.

## **2. The economic importance and innovativeness of food processing**

### **2.1 The economic importance of food processing**

The study confirmed to a certain extent the importance of food processing for the Polish economy. Generally importance of this sector is primarily due to the fact that it allows the use of domestic raw materials produced in agriculture. However, the gross value added produced in this sector in 2013 reached nearly PLN 36 billion. It is over 2% of Polish GDP (Figure 1). The share of manufacturing in gross domestic product, however, maintained since 2010 at a relatively constant level. Since 2010 a downward trend in the share of the food processing in industry value added is shown (Figure 1). In the analyzed period, this

decline amounted to 2.6 percentage point. This may to some extent indicate that opportunities for further development based on the existing structure of production factors have been exhausted.

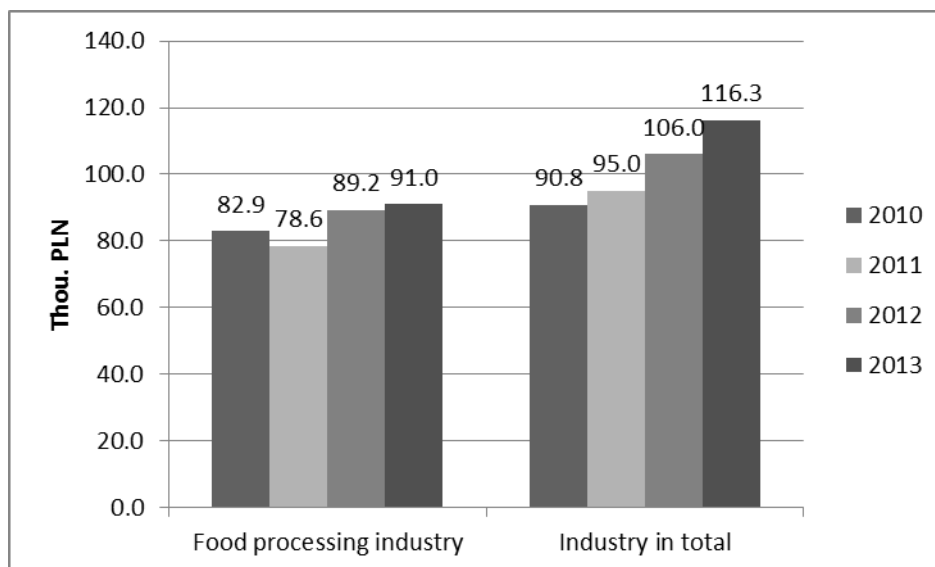


Source: Calculations based on statistic data from the Central Statistical Office.

**Fig. 1 The importance of food processing for the Polish economy in years 2010-2013**

The processing of domestic raw materials, a significant role in the creation of Polish GDP and declining share in the added value of the industry is already some evidence to justify the institutional support for transfer of innovation in the food industry. However, the importance of this industry in the Polish economy much more indicates its achievements in terms of exports. Analyses show that in 2010-2013 exports of this sector accounted for over 5% of total exports in the economy and it showed an upward trend. This means that Polish food processing industry is competitive on the international market. It is also able to improve its competitive position. Foreign net trade of food processing is growing steadily. In 2013, this industry exports exceeded imports of more than 60%. In the case of the entire national economy, in the analyzed period, there was a negative balance of foreign trade. These relationships emphasize the important role played by agri-food industry in Poland. Food processing industry also plays an important role in shaping the labour market in Poland. The sector employs about 400 thousand people, representing about 16.5% of all those working in the industry. The share of food processing in employment is therefore higher than the share of value added. This phenomenon can be seen on one hand as positive because the food industry produces relatively more jobs and to some extent, more than other sectors it contributes to reducing unemployment. On the other hand, such relations testify to the lower labour productivity. This is confirmed by further studies (Figure 2), which indicates that labour productivity measured in terms of gross value added per 1 employee was lower in the food processing than in the industry in general. In addition, in 2010-2013, growth in labour productivity in the food industry amounted to PLN 8.1 thousand, while in industry up to PLN 25.5 thousand. The growth rate of labour

productivity in food processing was so much lower. This in turn is another prerequisite to the conclusion that the development of this sector to a lesser extent, based on the implementation of new, innovative production technologies, and the basis of this development are still low labour costs.



Source: Own calculations based on statistic data from the Central Statistical Office.

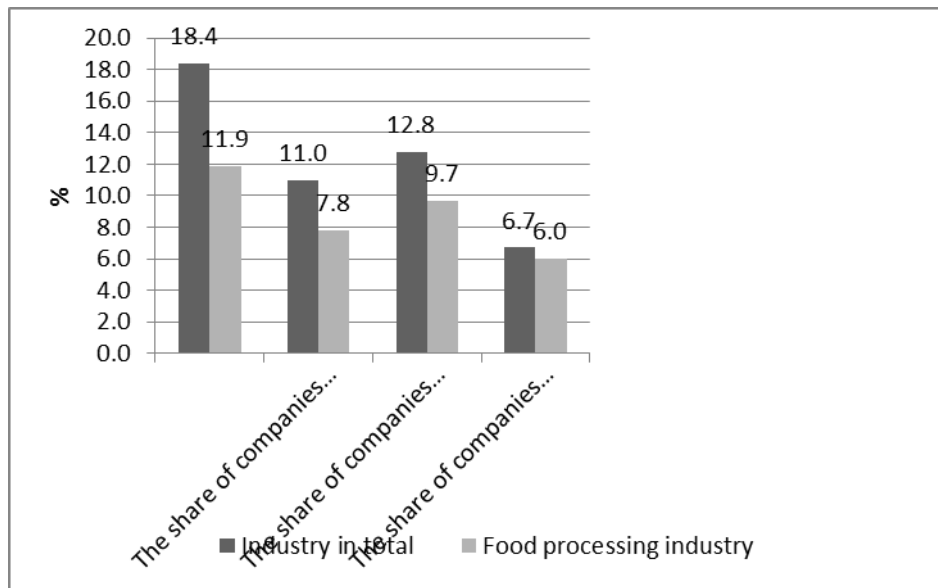
**Fig. 2 Gross value added per 1 employee in 2010-2013**

## 2.2 Innovativeness of food processing

The food industry is a very important sector for the Polish economy, especially due to its competitiveness on international market. It seems, however, that it owes its success primarily to low labour costs, and no innovative solutions. This is confirmed by studies in the field of industrial innovation (Figure 3). The research shows that only less than 12% of enterprises engaged in food processing in 2011-2013 has been introducing any innovation. Throughout the industrial sector such enterprises was 6.5 percentage points more. In the agri-food industry was relatively fewer companies than in the whole industrial sector, for both product innovation and process. Differences in the implementation of different types of innovation, however, were developed at a similar level. This means that the improvement in innovation of agri-food processing can be associated with significant changes in both the technology used in production and organization of the production process. This observation is confirmed by the fact that only 6% of companies in this sector both implemented the considered types of innovation.

The study shows that food processing is not only less innovative, but also reluctant to take cooperation for the acquisition and implementation of innovative products and processes. Less than one in five innovation active companies of this sector undertook any cooperation for the implementation of innovations. Throughout the industrial sector such enterprises was 6.5 percentage points more. Equally, food processing companies are reluctant to make use form of clusters to improve its level of innovation. The percentage of such enterprises in 2011-2013 amounted to only 7% and was lower than the industry average by more than 5 percentage points. What emerges is a need to diagnose, in the course of further research, the causes of limited cooperation between business and the environment. Identifying these

causes, occurring both in the companies and institutions belonging to the environment, in confrontation with applicable law and the policies to improve innovation in the economy should consequently be able to increase the efficiency and effectiveness of government involvement in economic processes, especially occurring in the agri food sector.



Source: Own calculations based on statistic data from the Central Statistical Office.

**Fig. 3 Innovative activity of enterprises in 2011-2013**

### 3. Policies for transfer of innovation

The relationship between law and politics are usually bi-directional. Conducting a specific policy must in fact take into account existing legal requirements. However, the policy may also imply making certain adjustments in the area of the existing legal solutions. These relationships are reflected also in respect of the policy to support the transfer of innovations to the Polish economy, including the food-processing sector. Considering the institutional conditions of this transfer should be, however, firstly considered the priorities of this policy, both at EU level and at national level. Implementation of the solutions proposed under this policy had already resulted in some changes in the existing law and should expect further adjustments in this area.

Improvements in innovation in recent years have gained great importance not only in Poland but throughout the European Union and has become one of the priorities of a common policy. It is expressed primarily in the Europe 2020 growth strategy. In consideration of the need to raise the level of innovation in the economy, the European Union defines the primary objective, which is increasing spending on R&D to 3% of GDP. This objective should be considered justified, but that support will be focused not only on the stage of development of innovative solutions, but also their transfer and implementation. The development strategy of Poland also includes the growth of economic innovation as a separate objective. In Poland is not expected the increase in expenditure on R&D to 3% of GDP, as in the Europe 2020 strategy, but only a "substantial increase in spending", which is quite imprecise term. However, it is expected to take measures to increase demand for innovative solutions among entrepreneurs.

Among the instruments that are geared to achieving this objective are mentioned:

- tax instruments,
- loan guaranties,
- revolving instruments,

In addition, this strategy involves the development of the financial market enhancing innovativeness. A special role will play:

- capital funds,
- loan or guarantee funds,
- leasing companies.

In connection with the implementation of the objectives of these development strategy aimed at improving innovation in the economy, some steps have already been made in aligning legislation. This is reflected in the Act of 25 September 2015 on the change of certain acts in relation to the promotion of innovation (Journal of Laws 2015). This Act amends for conducting research and development activities and implementation of its effects, particularly in relation to:

- The Act of 26 July 1991 on income tax from individuals (Journal of Laws 1991);
- The Act of 15 February 1992 on corporate income tax (Journal of Laws 1992);
- The Act of 4 March 2005 on National Capital Fund (Journal of Laws 2005).

In the acts on income tax have been introduced definitions of scientific, research and development activities. Moreover the importance of these acts in the context of innovativeness improvement results primarily from the fact that private individuals, both physical and legal, may deduct the eligible costs of R&D activities from their taxable income. However, this is only selecting those costs in the maintained accounting records and that they meet the eligibility conditions. According to the Act, these costs include:

- receivables from social insurance, in part financed by the contribution payer, if these claims and premiums affecting workers in order to carry out research and development activities;
- purchase of materials and supplies directly related to their research and development activities;
- expertise, opinions, advisory services and equivalent services, and the acquisition of research results, provided or performed under contract by the scientific unit;
- payable use of scientific-research equipment used exclusively in the research and development;
- depreciation write-offs of fixed assets and intangible assets used in research and development activity, with the exception of passenger cars and structures, buildings and premises which are separately owned.

The amount of eligible costs must not exceed:

- 30% of those costs in respect of social security contributions;
- in relation to other costs:
  - 20% of the total amount – if the taxpayer is a micro-, small or medium-sized enterprise within the meaning of the provisions on freedom of economic activity,
  - 10% of the total amount – in the case of other taxpayers.

The act thus reduces the tax burden for companies conducting research and development activities. It also creates better conditions for entrepreneurs operating in the business environment. Companies conducting research and development may in fact deduct from their taxable income the cost of consulting services related to the study. Despite the not

very strong emphasize the involvement of the private sector in research and development in national development strategies; introduced system of tax incentives can expect an increase in its role in the innovation process. There are not introduced such incentives for private companies, which could be involved in the process of commercialization of the results of these studies. It would be advisable, however, because not all of these companies will be in a position to disseminate the results to the extent necessary business profitability.

Relevant for action to improve the innovativeness of the economy, including food processing and the broader economic activity in rural areas should also be changes in the National Capital Fund. The legislature defines the primary goal of the Fund as "to support the economic policy of the Council of Ministers in stimulating the economic development of a state based on innovation and competitiveness of the economy". Achieving this goal are to serve among others the following instruments:

- providing financial assistance to entrepreneurs and investors as defined by separate laws, either directly or through equity funds, to which the National Capital Fund provides financial support;
- make investments in businesses by taking issued by them in shares, warrants, bonds or participating as a shareholder in companies operating in the form of partnerships;
- granting of loans, guarantees and sureties as defined by separate regulations;
- creating or co-creating capital funds;
- provision of services related to the management of the investment portfolio and risk management;
- act as an entity implementing financial instruments or fund of funds,

The National Capital Fund can guarantee the availability of repayable financial instruments for the innovation transfer process. Of course, the condition will be adopted specific provisions in the criteria for granting assistance, which will take into account the high risk of investing in innovative solutions. Repayable instruments should, however, help to improve the effectiveness of these investments. However, they will eliminate innovation with the highest level of risk. In order to make the transfer of the most advanced, innovative solutions to business, which did not receive the repayable support because of the level of risk, can be used non-repayable financial support in the form of subsidies or grants. It should be noted, however, that the use at the same stage of innovation transfer of the same criteria for access to the different instruments will result in competition between these instruments. The repayable instruments have an advantage in this competition.

## **Conclusions**

The research objective of presented study was preliminary justification of the need to support the transfer of innovations to the food-processing sector. First the paper should answer the research question that this sector is very important for rural economy as well as whole economy of Poland. Furthermore the objective of the study was also to determine changes in the last period in policies to improve innovativeness and induced by them changes in legislation related to the system of innovation transfer.

According to persisting economic theories each policy is a form of the interventionism, which disturb market processes. Usually it is justified by government failure, which leads to the inefficient resource allocation. Therefore policy measures should be as much market-friendly as possible. In the last period we observe the evolution in policy measures focused on innovativeness improvement. Both EU policy measures and national ones are more oriented on the utilisation of repayable financial instruments than on the support in the form



of direct subsidizing of economic activity linked to the innovation transfer. It seems to be right way to increase the efficiency of EU and national policy.

In the case of food processing sector the efficient policy support in innovation transfer seems to be needful. Conducted research also shows that it is very urgent issue. The high input in GDP and positive balance of foreign trade justify the importance of this sector for Polish economy. Food processing creates also a lot of jobs for rural people. But the reason of its success is still low labour cost – not the innovativeness of products and processes. It can be the barrier of its development or even defeat in the long run. Reached findings lead also to the formulation of questions for further research, i.e. what are the appropriate policy measures to induce innovativeness improvement in food processing sector, which will be efficient and acceptable and do we really need to create a new set of measures or we can introduce the solutions existing in other EU and non-EU countries.

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