

Financing of innovation activity in individual farms in the Łódź region

Summary

Key words: *individual farms, degree of innovativeness, innovation activity, sources of financing, capital structure, diversity of financing, Łódź region.*

Individual farms have to be effectively managed. Nevertheless, to guarantee a perspective competitive position on the market they have to not only work efficiently but make an investment decision. In the contemporary economy innovation has more significance for the development of farms.

Innovativeness in agriculture has to include its specific features, mainly biological and spatial nature of production. Agricultural activity, like no other, is fraught with high risk, which results from changing weather conditions, pests, diseases and the fluctuating prices of agricultural products. Therefore every innovation action in a farm is characterized by a much higher risk of failure than in other economy sectors.

Building a competitive advantage by increasing the degree of innovativeness, is not possible without capital, which will guarantee the finance in the whole innovation process. Subject literature provides information on the main sources of financing, which farms apply. The most often used are: self-financing, loans and European funds. The constraint of the capital structure in farms arouses interest especially in the that current financial market offers products which are dedicated to agriculture, i.e. operating lease, leasing loan or factoring financing. An additional facilitation for farmers is the personalisation of loan repayments to the production cycle in the farm.

Due to the difficulties described, the innovation activities of Polish farms has not been sufficiently researched to this day. The research conducted was limited to the identification and the range of innovation activity, without detailing determinants of its development, including financial conditions. Because of research diversity, it is difficult to unequivocally set out the state of innovativeness in Polish farms.

The main barrier of innovation's implementation in agriculture is financing, which is underlined by authors in their publications. Three major sources of financing used by farmers have been identified: self-financing (own funds), loans and European funds. Surveys do not indicate an unequivocally reason for that issue, also do not raise the problem of financial

determinants. Taking into account financial opportunities dedicated to agriculture, it is interesting how farmers select sources of financing.

This thesis attempts to fill the research gap, complements the previous surveys in the field of agriculture innovativeness and also introduces novelty in the form of identification of financial determinants. However the dissertation is primarily the attempt to broaden knowledge in the field of the *pecking order theory* of capital structure.

The main objective of the dissertation is the identification of determinants of the financial choice for innovation activity in individual farms in the Łódź region. Achieving the main objective will facilitate the implementation of specific objectives:

- to present the variety of defining innovation including its specificity in agriculture;
- to determine the conditions and financing types of innovation activity in individual farms;
- to present the research methodology for innovativeness in agriculture at various levels of aggregation;
- to evaluate the condition of innovativeness in individual farms in the Łódź region;
- to identify sources of financing of innovation activity in individual farms including farmer's financial knowledge.

In foreign literature, the innovation activity of farms is determined most often by economic size, type of production, farmer's education and age. It has been proved that bigger farms or farms that produce for heterogeneous markets are likely to adopt innovation earlier. Also the type and economic size are the main factors which determine product and process innovation. It was also demonstrated, that younger farmers who manage more productive farms, are more likely to adopt innovation.

Based on domestic and foreign literature study the minor diversity of finance in individual farms may be indicated. Rare domestic research defines sources of financing of innovation activity in farms. If the range of analysis of innovativeness concerned financial aspects, their structure was the same for investment activity. In most of the analysis, the financial choice was determined by the structural variables of the farm (like economic size, type of farm, the area of land).

Based on the authors' objectives, it was decided to broaden the range of structural variables. Currently it includes: economic size, type of farm, VAT settlement system, incomes, innovation outlays and the diversity of innovation expenditure. Additionally the

financial choice was conditional on individual farmer's characteristics, which include: the age, experience and education.

Taking into consideration the arguments presented, the main hypothesis of the dissertation is as follows: *the diversity of the financial instruments for innovation activity in individual farms in the Łódź region is determined by structural variables of the farm.*

Because of the specificity of conducted research and connection between finance and innovation activity, it was necessary to broaden the range of analysis and to formulate four specific hypotheses:

H1: Crop farming conduces the innovation activity of individual farms.

H2: The degree of innovativeness of individual farms increases with their economic size.

H3: The diversity of innovation outlays is determined by the financial choice of individual farms.

H4: Farmer's individual characteristics significantly affect the financial choice of innovation activity in individual farms.

In order to verify the main and specific hypothesis of the dissertation, several statistical and econometric methods have been applied, i.e. statistical significance tests (Mann-Whitney test, Kruskal-Wallis test, ANOVA), logistic and linear regression. All calculations were performed using a software package for statistical analysis (PS Imago 5.0).

The structure of the thesis includes: three theoretical chapters and one empirical. Chapter one attempts to present the chosen specific features, which characterises farms in Poland. Then, discussion about the defining of innovation and its barrier in agriculture was conducted. Chapter two begins from the indication of the main barriers in the sources of financing in agriculture. In this part of the thesis, the financial instruments available on the market have been reviewed. Alternative financial models, used abroad, have been also characterised. Chapter three includes a review of international research methodology of the innovativeness in agriculture and also literature study in the field of innovation activity in farms. Chapter four (key for the thesis) provides results of questionnaire interviews, carried out on individual farms from Łódź region. In this chapter, farms have been characterised. Based on the received results of research, the structure of the financing of innovation activity has been estimated. Chapter four includes statistical and econometric analysis, whose goal was to identify the main factors determining the choice of financial instruments for innovation activity.