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**ROLA EUROPEJSKIEGO FUNDUSZU ROZWOJU REGIONALNEGO W POLITYCE
WSPIERANIA INNOWACJI MAŁYCH I ŚREDNICH PRZEDSIĘBIORSTW W POLSCE**

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Abstract

The Role of the European Regional Development Fund in the Policy to Support Innovation in Small and Medium-sized Enterprises in Poland

In the market economy, small and medium-sized enterprises have a considerable economic potential. The scope of the social, political and economic functions, such entities play, is wide. Thus, rapid economic growth, increased prosperity and strengthening the competitive position of the country in the international market, largely depends on good economic condition of small and medium-sized enterprises, their investment capacity as well as, increasingly to a greater extent, the ability to develop and implement innovation. As, innovation understood as the implementation of new or substantially improved products, new or modernised methods of manufacturing or advanced solutions of marketing or organisational nature, have become the key factor of an enterprise growth and the tool to gain competitive advantage. In this context, the issues the herein dissertation deals with, pertaining to the European Regional Development Fund as a form of supporting the development of innovation in small and medium-sized enterprises, is crucial not only in view of academic discourse, or the discussion regarding the development of the ways to support innovation amongst Polish enterprises, but also from the perspective of the development of innovative small and medium-sized enterprises in Poland.

Even if small and medium-sized enterprises in Poland contribute to a substantial part of the GDP and create a large number of workplaces, the development and implementation of advanced solutions constitute their considerable weakness. Low innovative capacity of Polish entities, translating into insufficient results in this field - last positions in the rankings for innovation - is determined by a series of negative factors of external and internal nature. Nonetheless, the utmost and most frequent barrier in generating innovation by small and medium-sized enterprises in Poland, is the lack of adequate financial resources. The deficit or poor financial reserves do not allow them to invest in expensive and risky innovation projects from their own resources. Moreover, a limited access to external financing sources is unlikely to stimulate the funding of innovation. A lack or very low creditworthiness, the requirement of high collateralisation of credit, marginal domestic public support or its lack, not to mention venture capital and business angels market, still underdeveloped in Poland, have a negative impact on the creation and maintenance of

investment potential of Polish small and medium-sized enterprises, leading, in consequence, to the limitation of their growth in terms of innovation and creating the innovation gap, not only in comparison with innovation leaders, but also the European Union average. An obvious implication of the low innovation level of Polish enterprises is their poor competitiveness and the limited demand for their products and services, both on local, regional, domestic and international market. Government intervention, in a form of the policy to support innovation in small and medium-sized enterprises, with the aim to change and improve such situation, enjoys an adequate set of legal, economic, financial and other instruments to do so.

When compared to western countries, where the first actions undertaken by governments, having direct influence on supporting the development of economy in terms of innovation, date back to 80's of the 20th century, while in Poland, the policy to support innovation in small and medium-sized enterprises was almost non-existent until the beginning of the 90's, namely until the period of social, economic and political transformation. The intensification of measures undertaken by the Polish government in terms of fostering the conditions for the development of innovative businesses dates back to the beginning of the 21st century, when Poland joined European Union and became responsible for pursuing the objectives of the Lisbon Strategy. Then, a series of government documents to support the growth of small and medium-sized enterprises have been drawn up and new tools have been implemented. At the same time, Poland, obtaining considerable transfers from the European Union budget, became one of the largest beneficiary members of the EU cohesion policy, while small and medium-sized enterprises could obtain funds mainly from the European Regional Development Fund to develop and implement innovation. Absorption of the majority of the funds from the ERDF by small and medium-sized enterprises had the form of non-refundable support within regional and domestic programmes. The most important were: the Sectoral Operational Programme - Improvement of the Competitiveness of Enterprises, implemented in 2004-2006 as well as the Operational Programme Innovative Economy along with 16 regional operational programmes, implemented within the period of 2007-2013. Considering a large number of applications for financial aid, one may state that such form of financial support is most welcomed by Polish businesses. And, that should not be surprising. Subsidies make it possible to increase the value of an innovation project, improve financial standing of a given enterprise and limit the necessity to use debt instruments.

The importance and contribution of the European Regional Development Fund in terms of increasing the level of the innovation in small and medium-sized enterprises in Poland was the

subject of numerous considerations and papers linked with the discussions devoted to the influence of structural funds on Polish economy as well as Polish small and medium-sized enterprises. Research and reports in this regard were, however, frequently drafted at the request of various government agencies, while their scope was limited solely to one operational programme or covered the European Union structural funds in general. There is a sparse number of analyses run by research and development centres, directly pertaining to the aid originating from the ERDF funds and verifying independently, from an empirical perspective, its real importance in terms of funding innovation in Polish small and medium-sized enterprises along with its role it plays in the reduction of the innovation gap against small and medium-sized enterprises from the EU. Meanwhile, the need to verify the actual role of the financial aid granted under the ERDF funds of the European Union to support innovation in small and medium-sized enterprises as well as to eliminate the innovative gap, takes on particular relevance considering the conditions of programming the future growth of innovation in small and medium-sized enterprises, which is linked with the system of their support with this regard under the government policy, future period of programming the policy of coherence as well as effective spending of public funds. The need is additionally fostered by the fact that Polish enterprises operate within the conditions of internal European market and the processes of globalisation, not to mention the necessity stemming from them to gain competitive advantage based on innovations.

In view of the above, the author decided that it is relevant to run research and answer the question whether the system of funding the innovation-related operations of small and medium-sized enterprises under the ERDF of the European Union in a form of direct aid, fosters the decrease of innovation gap between small and medium-sized enterprises in Poland and those in the European Union. In this context, the major objective of the doctoral dissertation has been deemed to define the importance of direct aid provided to enterprises, originating from the European Regional Development Fund of the European Union in the policy to support innovation in small and medium-sized enterprises in Poland along with its role it plays in the elimination of the innovation gap between small and medium-sized enterprises in Poland and those from the European Union. To achieve it, the learning (detailed) objectives have been formulated, achieved later at subsequent stages of the research. While the research thesis, formulated based on the literature review and the analysis of secondary research, reads as follows:

The European Regional Development Fund of the European Union addressed directly to enterprises is a crucial form of funding innovation in small and medium-sized enterprises in Poland and fosters the elimination of the innovation gap between small and medium-sized enterprises in Poland and small and medium-sized enterprises in the European Union countries.

To prove the accuracy of the thesis, research hypotheses have been defined, and further verified, with the application of properly selected and adjusted research methods – quality, statistical, regression analyses – as well as statistical data and information regarding the issues of innovation in small and medium-sized enterprises in Poland and those in the European Union, the forms of supporting them and the government policy in this regard.

The core research period covers the years 2004-2015. The beginning of this period is then the moment when Poland joined the European Union and thus small and medium-sized enterprises had the opportunity to use financial aid under the ERDF within 2004-2006 programming period and from the financial perspective of 2007-2013. While, the final period of the analysis has been selected in a way so that the effects resulting from the use of the funds, essential for the research, could be visible.

The layout of the doctoral dissertation adheres to research objectives and hypotheses. The paper includes four chapters in total, out of which chapters 1. and 2., are, to a large extent, theoretical, while chapters 3. and 4., mostly focus on the verification and confirmation of the adopted research hypotheses.

The starting point of the doctoral dissertation in question is to illustrate in the first chapter the issue of innovation in small and medium-sized enterprises and the need to support their development in this regard. The chapter refers to various theories-related concepts and trends, namely the classical economics, neoclassical economics, evolutionary economics and the concept by J.A. Schumpeter. The analysis was run separately in view of the issue regarding the development of innovation in small and medium-sized enterprises, which was further complemented with the characteristics of the features of innovative small and medium-sized enterprises along with their strengths and weaknesses, and separately for the theory of supporting innovation in such entities within the government policy applied. Both matters have in common the issue, considered hereinafter, pertaining to modern innovative policy, its objectives and targets as well as the instruments addressed to the group of small-scale enterprises. The identification of the theoretical

foundation of the government policy and activities fostering the development of innovative small and medium-sized enterprises, as well as the presentation of arguments for and against their application, enabled to meet one of the objectives of theoretical considerations in the first chapter. Although the considerations presented therein do not always lead to the same conclusions and indicate different reasons and objectives of the innovation policy, this, however, does not prejudice the fact of undertaking entirely different activities and applying entirely different tools. As in both paradigms, there is a need to complement insufficient resources. The subsequent part of the first chapter was devoted to the issue pertaining to the measurements applied to determine the level of innovation in small and medium-sized enterprises, and further the concept of “innovative gap of small and medium-sized enterprises” was conceptualized and operationalized in a form of indicators illustrating the level of innovation in small and medium-sized enterprises. This way, the issues described in this chapter, constitute the core reference point for further theoretical and empirical analysis.

In the second chapter, the main topic is the policy to support innovation, with special attention to the activities aimed at small and medium-sized enterprises. Thus, in the introduction, the evolution and the process of its implementation at the European Union level, have been presented. As it has been indicated, the innovation policy of the EU has repeatedly evolved over the last half-century, evolving noticeably from *strictly* research-related and technological policy towards supporting the entire innovation process. Initially, the activities in this regard were interpreted narrowly and were of sectoral nature, while today, the area it influences, is far larger and includes far more domains of social and economic life. The development of innovation in small and medium-sized enterprises is currently supported by the European Union in two ways: at the domestic level within the programmes implemented in the EU member countries and addressed solely to the enterprises originating from a given country; and at the union level, within the programmes implemented at the grouping level, addressed to all small and medium-sized enterprises from the European Union. After illustrating the actions taken and programmes implemented by the European Union, further the evolution of innovation-related policy in Poland has been presented along with the description of the legal and institutional determinants as well as the activities to promote innovation in Polish small and medium-sized enterprises. The herein description is complemented by the overview of domestic programmes aimed at increasing the level of innovation in the enterprises and the summary of financial resources allocated for this purpose from public and private funds. This chapter includes also a description of experience in terms of

innovation policy implementation by selected EU countries, namely Sweden, Germany and Czech Republic. Characteristic of the pro-innovation policy in these countries along with the activities aimed at stimulating small and medium-sized enterprises to develop and implement advanced solutions, has constituted a reference point for the comparative analysis of such countries and Poland. It would not be, however, comprehensive if not for presenting further its results in a form of a presentation and evaluating the level of innovation in small and medium-sized enterprises in Poland compared with small and medium-sized enterprises in the European Union. To do this, measures concerning product, process, marketing and organisational innovation in small and medium-sized enterprises were selected, which, because of their broad availability, could be used for further analyses. The evaluation of the status and the level of innovation in Polish small and medium-sized enterprises is useful for at least two reasons. First of all, it remains a crucial part of the research in question and secondly, it is a vital element of the legitimacy of government policy aimed at supporting innovation in small and medium-sized enterprises along with the activities undertaken to this end. It, therefore, constitutes a starting point for the presentation of financial mechanisms supporting this area in a further part of the herein dissertation.

The third part characterises the opportunity pertaining to funding the innovation-related activity of small and medium-sized enterprises in Poland. In the first part of the chapter, emphasis has been placed on the review and description of the support of innovative undertakings, originating from the resources of the European Regional Development Fund and which was aimed at small and medium-sized enterprises in a form of non-refundable aid. The review includes the adopted division into two programme periods, namely the years 2004-2006 and 2007-2013, as well as the operational programmes implemented during the reference period: the Sectoral Operational Programme - Improvement of the Competitiveness of Enterprises, Operational Programme Innovative Economy along with 16 regional operational programmes. A summary of the funds used by small and medium-sized enterprises under the programmes in question has been presented, complemented by their analysis and evaluation. Further, the emphasis has been placed on the presentation of other opportunities offered to small and medium-sized enterprises in terms of modern technology in comparison with the direct support under the ERDF funding. The operations of the European Investment Bank have been described, as well as the support system provided by business angels, venture capital mechanism, bank loans and financial support from national public funds. Concurrently, there has been an attempt made to compare such forms of support with the financial aid in a form of grants from the ERDF. In the last part, constituting a separate part of the chapter,

subsequent stages of an enterprise development cycle have been characterised while taking into consideration the opportunity related to innovative projects' funding. The issue of capital gap, occurring in Poland, in terms of funding innovation in small and medium-sized enterprises, has been addressed. Its existence is a result of the influence of a series of mutually overlapping factors, including, *inter alia*, information asymmetries, high risk, and large costs of innovative ventures. In Poland, the capital gap is considered as one of the key barriers hindering growth of small and medium-sized enterprises and restricting the implementation of innovative projects by such entities. Under the conditions of the capital gap's existence, not yet fully developed capital market - business angels and venture capital - the difficulties in terms of bank loans obtainment and the limited support from national public funds, the ERDF resources, obtained in a form of non-refundable aid, may be the chance for small and medium-sized enterprises in Poland to develop and implement innovations. As, the fund gives the enterprises, at different stages of their growth, the opportunity to fund innovation projects of various types and scale. The issues presented in this chapter along with the analysis of the ERDF funds used by small and medium-sized enterprises in a form of direct aid, constitute the basis for the analyses presented in the following chapter.

The fourth chapter includes the empirical analysis of the importance of direct support from the European Regional Development Fund in view of funding innovation in small and medium-sized enterprises in Poland and its role in limiting the size of innovation gap between small and medium-sized enterprises in Poland and small and medium-sized enterprises in the European Union countries. Due to the complexity of the research issue, the empirical part has been divided into several stages. In the beginning, there is a description of the subject-matter, timeframe, and geographical scope of the research as well as the presentation of the research methods applied. Further, the results of the comparative analysis of the measurement and the disparities in the level of innovation of small and medium-sized enterprises in Poland and of those in the European Union countries, have been presented within the timeframe of 2004 and 2014. Further, based on the results obtained, there has been an analysis made, which allowed to verify the hypothesis related to the reduction of the innovation gap between small and medium-sized enterprises in Poland and those from the EU countries, existing in the year 2014 against the year 2004. A further part of the chapter is devoted to the issues and analysis of convergence phenomenon existence – in the first stage, of beta type, while in the second, of sigma type – namely the similarity of the level of innovation of small and medium-sized enterprises in Poland and those of the European Union. In the last part, however, the results of the analysis of the dependence between the amount of the funds from the

ERDF used by small and medium-sized enterprises in Poland and their level of innovation, have been presented, which allowed to verify the last hypothesis. The conclusions from the research carried out have been presented in a separate – last – part of the herein paper.

The considerations included in the third chapter, allow to conclude the correctness of a part of the first hypothesis, pertaining to the difficulties which Polish small and medium-sized enterprises face in terms of financing innovation performance with the funds from external sources, namely banks, high-risk funds, business angles, EBI Group and domestic public aid. In this context, one could further state that non-refundable aid from the ERDF funds is an important form of funding the innovation-related projects of Polish small and medium-sized enterprises. However, to define the actual importance of this type of aid, is problematic. Amongst the available instruments, grants proved to be most popular, however, the research show that, despite a large ERDF allocation, small and medium-sized entrepreneurs, most frequently, financed innovative ventures from their own funds. This possibly resulted from numerous mistakes made at the stage of programme preparation, as well as during their implementation. The depleting allocation for particular operations, essential in terms of innovation in SMEs, resulted in their suspension or fast completion, while the gap thus created, was not complemented by any other compensating activities. Some of them have not been accompanied by other activities and mechanisms which could continue or support individual stages of innovation-related activity induced by such operations. Also, frequently, entrepreneurs had to deal with amendments introduced to the regulations, not very transparent and clear conditions for participation as well as delays in the payment of the refunds. It is also difficult to quantify the actual participation of the ERDF funds granted to small and medium-sized enterprises for innovation-related projects in a form of non-refundable aid in the total value of financial aid addressed to such entities under various instruments launched for this purpose. It was also problematic to separate fully the public financial aid from the national funds. The data obtained - particularly until 2011 - pertaining to the aid from national resources, *de facto*, referred both to the financial aid originating fully from national funds as well as the domestic aid constituting the addition to the financial aid from international funds - most frequently from the European Union funds. Therefore, it proved to be impossible to make a reliable comparative analysis of the sources of funding innovation in SMEs in a form of domestic public funds and the support from the ERDF funds. Therefore, there are no grounds to fully confirm the correctness of the first hypothesis.

During the Polish accession to the European Union, Polish small and medium-sized enterprises were characterised by a far lower level of implementation of innovations than similar

entities from the European Union countries (average value), thus resulting in the innovation gap between them. Originally, it stemmed from a long-term technological autarky present in Poland in the second half of the 20th century. The lack of the ability and opportunities of absorbing the effects of technological progress and innovation generated by a global economy, mostly, advanced solutions in the domain of microelectronics, biotechnology and nanotechnology, resulted in innovation-related delay of Polish enterprises and further the domestic economy. New management environment and new opportunities, e.g., in a form of access to structural funds were to lead to the innovation-related promotion of Polish small and medium-sized enterprises, and subsequently reduce the distance between them and the innovation frontier. The research carried out in chapter 4. show, however, that during the period of 2004-2014, this was not the case. Despite the fluctuations observed, there is no visible, long-term tendency of Polish entities to narrow the innovation distance against the European Union. Therefore, one may not assume as correct the statement that in 2014 the innovation gap between small and medium-sized enterprises in Poland and small and medium-sized enterprises in the European Union was reduced comparing to year 2004. This means that the second hypothesis should be rejected. Moreover, no phenomenon of innovation level convergence of such entities could be observed. Small and medium-sized enterprises in Poland have not shown faster pace of innovation growth, as compared to small and medium-sized enterprises of the European Union. Neither, a reduction of the dispersion of the level of innovation in such enterprises, occurred. On the contrary, while econometric modelling, the existence of divergence has been proven. Therefore, the hypotheses (third and fourth), pertaining to the existence of convergence, both of beta as well as sigma type - of the level of innovation in small and medium-sized enterprises in Poland as well as in small and medium-sized enterprises of the European Union in 2004-2014, have been rejected.

Admittedly, a bright spot on the firmament of the policy and the system, supporting innovation in small and medium-sized enterprises in Poland, was the cohesion policy and the structural funds provided under it, however, the situation of Polish businesses in terms of innovation development and implementation has hardly improved. Despite considerable transfers of the ERDF funds, Polish small and medium-sized enterprises still show large dependence from knowledge and innovation transfers from abroad and are characterised by a high innovation delay compared with the European Union average. The research has shown that the correlation between the growth of innovation of Polish small and medium-sized enterprises and the growth of the ERDF funds absorbed by such entities was small and referred to the alternative assuming a lack of time lag of the

effects of the funds spent. On the other hand, taking into account the opportunity in terms of the results of the influence of the ERDF funding on SMEs in one- or two-years' delay, such correlation did not exist or was negative. Therefore, a positive confirmation of the fifth hypothesis would not be accurate.

Pursuant to the above, the thesis formulated mainly based on the secondary research results and literature study, has not been proven. Thus, one should not state that the support from the ERDF of the European Union in a form of grants addressed to small and medium-sized enterprises constitutes an important form of funding innovation in such entities and contributes to reducing the innovation gap between small and medium-sized enterprises in Poland and the same group of enterprises in the European Union countries. Financial aid from the ERDF was not able - particularly due to the errors made during the stage of programming and implementing such activities - to be of significant impact and to have a constant positive influence on the development of innovation in Polish small and medium-sized enterprises. The scope of its intervention - conditioned by stringent and not that transparent rules of granting the aid, excessive bureaucracy and irrelevant amount of allocations - was not a sufficient stimulus for the growth of the number of innovations developed and implemented by such enterprises. Frequently, individual activities financed from the ERDF have not been supported by national programmes, while the depleting allocation has not been accompanied by any mechanisms compensating the closure of a given activity, namely government initiatives and programmes. Concurrently, practically no instruments have been implemented which would facilitate small and medium-sized enterprises to apply for support under the programmes implemented by the European Committee – union programmes. A lack of consistency in terms of programming the system of supporting innovation in small and medium-sized enterprises, unfortunately leads to discontinuity of the policy for the development of innovation in such entities. As a matter of fact, institutional growth in terms of supporting innovation in SMEs was noticeable along with the improvement of the quality of work of public bodies in this regard, nonetheless, over-developed and “vague” administration structure, involved in managing the policy supporting innovation in small and medium-sized enterprises, was not conducive to its proper coordination.

The research carried out in the herein dissertation and the conclusions drawn based on it, may constitute a basis for further research focusing on the policy supporting innovation in small and medium-sized enterprises along with the instruments applied for this purpose – particularly, programmes funded from the ERDF – as well as the phenomenon of innovation gap between

businesses. In view of future research, one may consider the following findings as crucial: 1) identification of theoretical basis and arguments for supporting innovation in small and medium-sized enterprises by the state (chapter 1.); 2) conceptualisation of the term “innovation gap of small and medium-sized enterprises” as well as its operationalisation in a form of indicators illustrating the level of innovation in small and medium-sized enterprises (chapter 1.); 3) characteristics of the union, and later Polish policy supporting innovation in small and medium-sized enterprises (chapter 2.); 4) comparison – along with the characteristics – of the policy and mechanisms for supporting the development of innovation in small and medium-sized enterprises in selected European Union countries (chapter 2.); 5) defining and presenting the opportunity of funding the innovation-related activity of small and medium-sized enterprises from the European Regional Development Fund within the period of 2004-2013 along with the presentation of the most crucial financial instruments of the policy supporting innovation-related activity of small and medium-sized enterprises in Poland (chapter 3.); 6) defining and comparing the size of the innovation gap between small and medium-sized enterprises in Poland and small and medium-sized enterprises in the European Union within the period of 2004-2014 (chapter 4.); 7) translation of the equation, applied to calculate the economic convergence, into the level of innovation in enterprises as well as studying the convergence of beta and sigma type between the level of innovation in small and medium-sized enterprises in Poland and the level of small and medium-sized enterprises in the European Union countries (chapter 4.); 8) defining the correlation between the use of the European Regional Development Fund by small and medium-sized enterprises in Poland and their level of innovation (chapter 4.).

Despite quite a vast scope of research carried out, individual issues have appeared in the doctoral dissertation, which, due to the limited framework of the paper, could not be fully elaborated. A limited access to the data or their lack as well as not that lengthy research period, have been the reason behind the fact that the dissertation lacks the analysis of the effectiveness of the aid researched as well as other government and commercial mechanisms funding the development and implementation of innovations by small and medium-sized enterprises. The empirical scope of the dissertation has covered the tools supporting innovation in small and medium-sized enterprises, financed from the ERDF funds. At the same time, the research shows that the current influence of the ERDF funds asserted to small and medium-sized enterprises in a form of grants was not significant enough to increase their level of innovation and thus to narrow the innovation distance against the remaining EU countries, which, in turn, would result in the elimination of the innovation

gap between them. As indicated in chapter 2., in the EU countries, the system supporting the development of innovation in small and medium-sized enterprises, becomes widely popular, based on a wide scope of government initiatives and programmes along with commercial mechanisms. They may - instead or together with the ERDF grants - potentially play a crucial role in the policy to support innovation in such entities. Concluding, there is a need in Poland to change the attitude towards supporting innovation in small and medium-sized enterprises and the role of the ERDF in this regard, which could be supported by the increase of funds for the development of innovation-related operations of SMEs and the preparation of a comprehensive system, including various instruments of the policy to support innovation in small and medium-sized enterprises.