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ORIGINAL PAPER

PATTERNS OF HUMAN CAPITAL FORMATION

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JEL Classification: J21, J24, O15.

K e y w o r d s: human capital, resource potential, science, education, economic development, investment, labor market.

A b s t r a c t

The main goal of the article is to identify the basic patterns of the formation of human capital (HC). An especially valuable and scarce resource of the modern economy is becoming a creative skilled worker capable of generating ideas, as well as creating and implementing new technological solutions and products.

The development of the economy leads to significant transformations in the generation of resource potential, and changes in the role of individual resources. Human capital begins to play a dominant role in the resource hierarchy. It is the HC that sets in motion the production processes and determines the efficiency of using the entire resource potential.

The methods of aspect analysis and of apperception used in this study made it possible to identify modern patterns peculiar to the formation of human capital in the economy, and to emphasize its objective importance and ability to significantly influence the development of society.

During the research, the authors proved that human capital acquires the status of the main resource in the economy, the quantitative characteristics of the workforce capacity give way to the role of qualitative characteristics, and the development of STP requires a new employee formation to dominate the intellectual component.

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WZORY TWORZENIA KAPITAŁU LUDZKIEGO

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S ł o w a k l u c z o w e: kapitał ludzki, potencjał zasobowy, nauka, edukacja, rozwój gospodarczy, inwestycje, rynek pracy.

A b s t r a k t

Głównym celem artykułu jest identyfikacja podstawowych wzorców kształtowania się kapitału ludzkiego. Szczególnie cennym i rzadkim zasobem współczesnej gospodarki staje się twórczy, wykwalifikowany pracownik, zdolny do generowania pomysłów, tworzenia i wdrażania nowych rozwiązań technologicznych i produktów.

Rozwój gospodarki prowadzi do znaczących przeobrażeń w generowaniu potencjału zasobowego, zmian roli poszczególnych zasobów. Dominującą rolę w hierarchii zasobów zaczyna odgrywać kapitał ludzki, który uruchamia procesy reprodukcji i w największym stopniu decyduje o efektywności wykorzystania potencjału zasobów.

Zastosowane w badaniu metody analizy aspektowej i apercepcji pozwoliły na zidentyfikowanie nowoczesnych wzorców charakterystycznych w kształtowaniu się kapitału ludzkiego w gospodarce oraz podkreślenie jego obiektywnego znaczenia i zdolności do istotnego wpływania na rozwój społeczeństwa.

W trakcie badań autorzy wykazali, że kapitał ludzki zyskuje status głównego zasobu w gospodarce, ilościowe charakterystyki zdolności siły roboczej ustępują roli jakościowych, rozwój STP wymaga pracowników nowej formacji z przewagą składnika intelektualnego.

Introduction

In an industrial type of economy, the main elements of the resource potential are material and financial resources. Primarily these are long-term assets, such as buildings and structures, machinery and equipment, etc. For this reason, investments in long-term assets have served as the basis for increasing the resource potential, but subsequently their growth has slowed and their volumes have decreased. The industrial development of the economy exhausts itself as there are objective limits (obsolescence, depreciation, diminishing of soil fertility etc.) to the use of the potential of material resources. These resources are limited and rare, but human capital continues to grow, primarily by means of new knowledge.

The essence of the transformation of the processes of resource potential generation in the modern economy lies in the fact that land and capital only create conditions for the implementation of economic activity. Economic development becomes possible as a result of the formation and effective use of human capital, which determines the appropriate directions of economic activity, forms the structure of the resource potential and ensures its rational use.

The goal of this research was to identify the main patterns of human potential formation. As a result of the research, the following patterns of human capital formation were revealed:

– significant enhancement of the role of human capital in the structure of resource potential;

– the structure of the labor market is changing: the share of executive and reproductive labor activity is decreasing and the share of intellectual and innovative labor activity is increasing;

– scientific and technical progress requires improving the quality of professional training of employees, accumulating the educational potential of the workforce;

– the processes of human capital formation require increased investment in the systematic development of scientific knowledge, and in both fundamental and applied research.

Analysis and interpretation of results

Pattern 1. The role of human capital in the structure of resource potential is significantly increasing

Changes in the types of economic development of society lead to significant transformations in the structure of resource potential and changes in the value of individual resources. Human capital begins to play a leading role in the resource hierarchy.

Human capital is a complex multifaceted economic category. The analysis of the research has made it possible to identify the structural elements of human capital inherent in an individual (Konstantinov, 2003; Lutokhina, 2008; Vankevich, 2000):

– natural and biological potential (age, state of health, mental endowments, performance level);

– educational potential (educational background, skill level, knowledge of foreign languages, propensity to self-education and self-development);

– sociocultural potential (focus and degree of work motivation, culture of relationships with colleagues, cooperativeness, social and industrial adaptability, ability to cope with stress, specific traits of mentality, professional and geographic mobility);

– moral and ethical potential (responsible attitude to work, degree of discipline, sense of justice, honesty and integrity, moral values, insistence and selflessness);

– creative potential (observancy, analytical abilities, independence of judgment, critical thinking, intellectual curiosity, ability to hypothesize, striving for innovation).

In recent years, among the factors that characterize the labor potential of the population, the national mentality has been emphasized, in particular since the labor mentality reflects the results of the socio-economic, cultural and spiritual development of the people and the country. This also involves the national and religious traditions of the population of a particular country in the field of labor. In this regard, the labor mentality is an important factor in the formation and development of labor potential and its quality (Pashkevich & Lyovkina, 2020).

The generation of human capital, like the accumulation of traditional capital, requires the diversion of funds from current consumption in order to obtain additional income in the future. The most important types of investments in HC include expenses for childbirth and childcare, education, training at work, migration, and acquiring information (Chuiko, 2007).

In a contemporary society, the person, as a bearer of human capital, cannot be an object of market purchase and sale. As a result, the labor market only sets prices for the "rent" of human capital (in the form of wages). Human capital is capable of functioning in both market and non-market sectors, and income from it can take both monetary and non-monetary forms.

However, it should be clarified that there are only a few idea generators, individuals who have the makings of leadership and talent, and are able to organize teams for success. The process of training highly qualified personnel is long and costly. It is easier to lure ready-made talent from countries and regions that do not have adequate employment opportunities, support and employee retention (Gusakov, 2018).

In the industrial economy, the main element of the resource potential is primarily long-term assets. The basis for increasing the resource potential is investment in this type of asset. The development of the economy at this stage is exhausting itself due to the restrictions on the use of the potential of material resources.

The formation of a new post-industrial type of economy was marked by the information revolution of the late twentieth century. This has led to the widespread use of information technology in the real sector. It has been calculated that the dissemination of information using Internet resources is 720 times faster and 330 times cheaper than by the typical postal and telegraph method (Lutokhina, 2008, p. 24).

The essence of the transformation of the processes of resource potential generation in the modern economy is that land and capital only create conditions for the implementation of economic activity. Social and economic development occurs due to the formation and effective use of HC, which determines

the appropriate directions of economic activity, forms the structure of the resource potential and ensures its rational use.

Human capital is reproduced on the basis of the development of science and education in order to produce certain types of goods and services, generate income, improve living standards, and solve the problem of uneven development of industries and regions.

Under modern conditions, human capital as the main resource for creating economic goods is understood as the power of a thoughtful and creative mind, the amount of knowledge, information, experience, qualifications and number of employees.

The basis of human capital is the intellectual constituent. The increasing role and importance of the intellectual component is determined by the following circumstances:

– widespread implementation of knowledge intensive and information technologies in economic processes, which requires expanding the boundaries and deepening the knowledge and skills acquired in the educational process;

– predominance of the importance of qualitative characteristics of the staff over quantitative attributes, which is reflected in the priority of building up mental and creative abilities that require education and initiative;

– transformation of the educational process from the assimilation and memorization of existing knowledge to a deep analysis with creative solutions with regards to socio-economic problems.

The traditional formula of the production function includes three production resources:

$$Q = f(K, L, N) \tag{1}$$

where:

K – capital,
L – labor,
N – land.

In the industrial economy, about 90% of its results were determined by the factors "capital" and "labor". In modern conditions, in this formula, intellectual capital (*IK*) should be put in the first place as a factor that creates knowledge and information, and determines the efficiency of using the resource potential. Afterwards, the formula for the production function in the post-industrial economy takes the form:

$$Q = f(IK, K, L, N) \tag{2}$$

According to American economists, in the second half of the 1990s new knowledge and information generated 75% of the industrial value added to the US economy (Lutokhina, 2008, p. 26). Consequently, in the modern economy, the efficiency of resource potential employment is determined by the level of development of human and, above all, intellectual capital.

Currently, it is not usually the products that ensure the success of the commodity producer, but the processes and technologies for creating these goods that provide the best conditions for the creation and use of resource potential.

In view of this, the world economy is undergoing a transition from its industrial type to a new post-industrial or scientific-informational form. Intellectual labor and innovation are changing the structure of resource potential. Traditional capital (buildings, machines, financial resources, etc.) is giving way to a new form – human capital.

The formation and effective use of resource potential relies on knowledge. Bulk production is ceasing to be the primary source of wealth. The new primary sources of wealth are the industries that produce new knowledge: science, education, and culture. Therefore, the concept of capital, inherent in the industrial paradigm, acquires a new meaning. Human capital, introduced by neoclassical economic theory, comes to the fore. The main elements of HC are competence, qualifications, and the ability to use knowledge and skills. The main factor of economic development is not knowledge itself, but the way in which it is used (Vorobieva, 2008, p. 37; Coleman, 2001; Radaev, 2002; Solodovnikov, 2009, p. 33).

Pattern 2. The structure of the labor market is changing: the share of executive and reproductive labor activity is decreasing and the share of intellectual and innovative labor activity is increasing

The widespread use of knowledge-intensive and information technologies in production changes the qualification requirements for an employee. The qualitative characteristics of personnel come to the fore in comparison to quantitative attributes due to the intellectual component, which requires a high level of education and ongoing professional development.

According to the calculations of American economists, the share of people working with information in the United States from 1990 to 2000 increased from 17% to 59%, and the share of people working with raw materials decreased from 83% to 41%. In the labor market, there is a cheapening of physical labor and an increase in the cost of intellectual labor. Since the 1970s, education wage surcharges have become widespread. Experts have calculated that each additional year of worker-related education gives an increase in labor productivity by 2-3% (Lutokhina, 2008, p. 30, 31). The implementation of additional payments for education has changed the labor market and the educational system. In order to increase the chances of finding a job and to get a higher salary, people tend to rely on education. Recruiting firms have been developed. They have taken on the function of selecting highly qualified specialists for employers, including those from other countries.

The processes of development in the post-industrial economy has caused deep shifts in the structure of the resource potential. They are set in motion primarily

by changes in the needs of people, the goals of their activities, and the economic and technological basis of society. Fundamental in this context is a paradigm shift in growth priorities, which is that the production of tangible goods is increasing at a slower rate than the production of intangible services. Thus, it can be argued that there has recently been "a cardinal shift towards the production of intangible services and information, with a relative reduction in material production; a transformation of scientific knowledge into a direct production resource, which underlies all significant social innovations; a sharp increase in the importance of professions related to the use of knowledge" (Katsuk, 2004).

Previously, agriculture was one of the main industries in terms of the number of labor resources. Its intensification has led to the fact that the number of people employed in the agricultural sector in developed countries is 1-3% of the total number of employed. According to experts, in the near future the share of people employed in industry will also significantly decrease and will drop to 15% (Chuiko, 2007).

Analysis of the above information allows us to conclude that at present there is a significant reduction in employment in the branches of material production. This is because the level of technology and labor efficiency in the sphere of material production allows a rapid increase in the volume of labor efficiency and allows the creation of a product necessary for consumption by the entire society (Bazyleva, 2006).

Some authors (Makovskaya, 2020) have analyzed modern Belarusian institutions that form the conditions for the behavior of participants in the Belarusian labor market; presented the characteristics of the peculiarities of the functioning of the Belarusian labor sphere through the mechanisms of job search and the spread of employment channels; have studied low-paid employment and the formation of the institution of reserved wages and social risks. However, it is advisable to supplement these studies by including the classification of the labor market by spheres of labor activity (executive-reproductive and intellectual--innovative), which will emphasize significant structural changes towards an increase in the intellectual component.

Pattern 3. Scientific and technical progress (STP) requires improving the quality of professional training of employees, accumulating the educational potential of the workforce

N.G. Nikitenko notes, the main economic resource of the modern economy is knowledge and information that ensure the development of the potential of a person's personality on the basis of the continuity of education and the growth of its scientific intensity. This resource provides an increase in the quality of labor force and the possibility of long-term growth of the organic structure of production, and, consequently, an increase in its intensification

and efficiency on the basis of STP. In a 1963 report to the President of the United States, a special committee of the Office of Science and Technology noted: "The welfare and defensive capacity of the country is now determined not by raw materials, not by mineral and other natural resources, and not even by capital. Knowledge is increasingly becoming a decisive source of economic growth. A country that does not have an education system, the ability to train highly qualified personnel, inevitably lags behind in engineering and technology" (Nikitenko, 2006, p. 107-110).

According to foreign experts, in modern conditions, there have been noticeable changes in the structure of factors that traditionally determine the competitiveness and position of countries in the world market. In the first instance, this refers to a decrease in the importance of cheap raw materials and cheap labor factors and a strengthening of educational inputs.

Improvement in the quality of the labor force determined 14% of the growth in real national income in the United States, and since the most obvious indicator of the quality of the labor force is the level of education, education itself is one of the sources of economic growth in any society. The difference between the average incomes of people of the same age is 3/5 determined by the level of education, and the rest by personal abilities and other circumstances (Dorofeev, 2006).

Transition to a new economy in the late XX and early XXI centuries has caused significant changes in the education system, especially higher education. Such trends are primarily stipulated by the fact that the rate of knowledge renewal has significantly increased. If in the mid-twentieth century knowledge was updated after 7-10 years, now knowledge is updated every 2 years.

A. Marshall noted that the expediency of spending public and private funds on education should not be measured only by its immediate practical results. Such investments pay off by the fact that it opens up much greater opportunities for the masses of people than they usually can provide for themselves. Education provides many people with an opportunity to develop their potential abilities, and the economic benefit from using one major industrial discovery is quite sufficient to cover the costs of education for an entire city, because one such new idea may provide a very significant increase in production capacity (Marshall, 2008, p. 246).

Pattern 4. The key aspect of a qualitatively new process of resource potential formation is investment in the development of a system of scientific knowledge, in fundamental and applied research

Scientific knowledge becomes generally accessible and is mastered with much less effort and resources than those that were spent in their production. They can serve the society for a long period of time. Science is a producer of new knowledge as a specific resource. The level of development of countries

is determined not so much by the availability of natural resources, but by the level of scientific and technical potential, and the efficiency of its use. The basis for the formation of resource potential lies in the level of development of science, in the quality of structures of machines and equipment, in the qualifications of the labor force, and in the adaptability of the management system. Hence, the increase in resource potential depends on the degree of development of human capital, which is the ability to invent, namely via science, the ability to turn scientific knowledge into innovation, specifically via technology, and the ability to competently manage resources.

The efficiency of using the resource potential is decisively determined by the pace and scale of development of priority areas of science and technology, the level of training and qualifications of personnel, the degree of progressiveness of the scientific and production labor equipment, and the volume of investments allocated for these purposes.

The following are highlights of the features characteristic of investments in science and education, and in human capital formation:

– investments in the field of education go both to the reproduction of the intellectual and spiritual potential of society, and to the development of creative abilities, professionalism of each individual, specifically the accumulation of human capital;

– investments in education are spent at a certain time, and pay off within several cycles of the production process, until retraining of workers is needed again in connection with the increased demands of the economy. Consequently, these investments take the form of a turnover similar to the turnover of long--term assets;

– a duration of the period during which investments in human capital are transferred to newly manufactured products should be determined by the period of moral aging of the acquired professional knowledge;

– an educational process presupposes the acquisition of a constantly updated system of knowledge by students, which determines the expanded reproduction of human capital.

Science, like any field of human activity, requires funding. However, as V.G. Gusakov notes, there is a fundamental difference between investments in the development of science and the financing of any production branches. In the latter case, there is a redistribution of resources between industries, which is not related to the growth of the economy as a whole and its efficiency. The development of science leads to a qualitative change in the productive forces (Gusakov, 1998). The total volume of goods may increase in the case of growing production capabilities, which depends on the development of science and the degree of its application.

With this in mind, S.A. Konstantinov (2003) reckons that it is advisable for the state to invest budgetary funds not directly in production, but in the

development of science, since it is the essential factor in increasing production capabilities and determines the growth of not only the volume of production, but also its efficiency.

STP is a breaker of the static equilibrium in the economy, and acts as a source of profit. It creates opportunities for improving the quality of products, and can create different types of products with new consumer properties. Industries where the return on capital is higher attract STP. As a result, there is a redistribution of production resources, and the structure of social production changes.

Scientific and technological progress counteracts the law of diminishing returns, and weakens the dependence of production on the natural factor. The use of new means of production with higher productivity leads to an increase in the volume of production per unit of additional capital spent. The creation of new varieties of plants, animal breeds, and the use of new technology makes it possible to obtain higher agricultural yields and produce animals under natural conditions that were previously considered unfavorable. The use of more productive equipment makes it possible to perform the necessary technological operations in the shortest possible time, which reduces the dependence of agriculture on adverse weather conditions (Konstantinov, 2003, p. 48, 49).

The output of competitive products is ensured through the practical application of the achievements of scientific and technological progress, specifically the innovation activities of human capital.

Conclusion

The conducted research allows us to conclude that human capital has acquired the status of the fundamental resource of the economy.

In the modern economy, the processes of the formation of resource potential are being transformed. Land and capital are the basic conditions for economic activity. Progressive socio-economic development is possible with the generation and effective use of human capital, which determines the appropriate directions of economic activity, forms the structure of the resource potential and ensures its rational use.

In business processes, knowledge-intensive and information technologies are widely used, which increases the qualification requirements for an employee. The qualitative characteristics of the staff come to the fore in comparison with the number of employees due to the intellectual component, which requires a high level of education and regular professional development.

The fundamental difference between investments in the development of science and financing of any production facilities is that they lead to qualitative changes in the productive forces and, above all, to the growth of human capital, as the basis for building up and efficiently using the resource potential of the economy.

On the basis of the studied material, the authors have identified the main patterns of the formation of human capital in the economy:

– there is a significant enhancement of the role of human capital in the structure of resource potential;

– the structure of the labor market is changing: the share of executive and reproductive labor activity is decreasing and the share of intellectual and innovative labor activity is increasing;

– objective requirements for the quality of the labor force imposed by scientific and technological progress are practically embodied by improving the quality of professional training of workers, and accumulating the educational potential of the labor force;

– the key aspect of a qualitatively new process of resource potential formation is investment in the development of a system of scientific knowledge, and in fundamental and applied research.

It should also be noted that it is advisable to continue research in this area, taking into account the informatization of certain spheres of the economy, the mental diversity of people in different countries, the increase in human life expectancy and the formation of new value orientations after the COVID-19 pandemic.

Translated by Authors
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References

Bazyleva, M. (2006). Globalization of the economy as a factor in the development of labor relations. *Agrarian Economy*, *2*, 15-19.

Chuiko, G. (2007). Human capital in the agricultural sector: a view from the standpoint of theory and practice. *Agrarian Economy*, *7*, 21-26.

Coleman, D. (2001). Social and human capital. *Social Sciences and Modernity*, *3*, 122-126.

Dorofeev, A.F. (2006). Methodological approaches to the development and reproduction of the personnel potential of the agro-industrial complex. *Bulletin of the BSAA*, *4*, 10-13.

Gusakov, V.G. (1998). *Strategy and tactics of forming an effective agrarian market economy.* Minsk: Science-research Institute. Institute of Economics and Inform, APK.

Gusakov, V.G. (2018). Human capital – the main factor of increasing competitiveness. *Nauka i Innovatsii*, *1*, 4-9.

Katsuk, O.A. (2004). *Methodology for researching employment in the context of the formation of a postindustrial economy.* Tambov: Tambov State University.

Konstantinov, S.A. (2003). *Factors and reserves for increasing the efficiency of agriculture in Belarus (theory, methodology and practical aspects).* Minsk: Institute of Agrarian Economics of the National Academy of Sciences of Belarus.

Lutokhina, E.A. (2008). *Creative laborology (beginnings of innovation).* Minsk: Acad. ex. under the President of the Republic.

Makovskaya, N.V. (2020). *Modern features of the functioning of the labor market in Belarus.* Mogilev: Moscow State University named after A.A. Kuleshov.

Marshall, A. (2008). *Fundamentals of Economic Science.* Moscow: Eksmo.

Nikitenko, P.G. (2006). *Noosphere economy and social policy: strategy of innovative development*. Minsk: Navuka.

Pashkevich, O.A., & Lyovkina, V.O. (2020). New quality of the labor potential of the agricultural industry: preconditions for the formation. *Bulletin of the BSAA*, *1*, 5-11.

Radaev, V.V. (2002). The concept of capital, forms of capital and their conversion. *Economic Sociology*, *2*, 21-30.

Solodovnikov, S.Y. (2009). *Social potential of the Republic of Belarus: theory, methodology, practice*. Minsk: Navuka.

Vankevich, E.V. (2000). *Economic relations of employment: patterns of development and regulation*. Minsk: BSEU.

Vorobieva, E.M. (2008). *Intellectual resource of modern economy and problems of its reproduction in the Republic of Belarus*. Minsk: GIUST BSU.

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ORIGINAL PAPER

SELECTED BENEFITS AND THREATS ARISING FROM INTERNET USE BY HOUSEHOLDS AND ENTERPRISES IN POLAND WITH RESPECT TO THE COVID-19 PANDEMIC

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JEL Classification: D10, O33.

K e y w o r d s: Polish households, Polish enterprises, internet, impact of COVID-19 pandemic.

A b s t r a c t

The internet has revolutionised the world over the past half of a century, and the COVID-19 pandemic has contributed to an increase in its importance. Although the global network brings with it more advantages than disadvantages, its existence also causes certain threats which have an impact on the life of Polish households and operations of Polish enterprises. This paper is theoretical and empirical in nature. Its aim is to explore the relationship between the internet and the COVID-19 pandemic, i.e. the time household members spend online. The impact of the two factors on survival in the market was examined in the case of enterprises. Moreover, the subjectively most important benefits and threats arising from the global network consumption in the opinion of the business entities mentioned above were illustrated. According to the respondents, facilitating communication is the main advantage of the internet (33.33%), whereas the spreading of hate on the internet is the major threat associated with its use (24.17%). The main benefit derived from the global network resources by enterprises is the possibility of obtaining raw materials from the most profitable sources (28.40%), whereas the major threat identified by them is that a negative opinion published on the internet can weaken the financial standing of a company or even make it disappear from the market (55.56%). Nearly 60% of household members found themselves spending

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more time online during the COVID-19 pandemic. Nearly 94% of the entrepreneurs who use the internet in running their businesses admitted that it helped them to keep their business in the market during the pandemic.

WYBRANE KORZYŚCI I ZAGROŻENIA WYNIKAJĄCE Z UŻYTKOWANIA INTERNETU PRZEZ POLSKIE GOSPODARSTWA DOMOWE I PRZEDSIĘBIORSTWA W ASPEKCIE PANDEMII COVID-19

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S ł o w a k l u c z o w e: polskie gospodarstwa domowe, polskie przedsiębiorstwa, Internet, wpływ pandemii Covid-19.

A b s t r a k t

Internet niemal w pół wieku zrewolucjonizował świat, a pandemia Covid-19 przyczyniła się do jeszcze większego wzrostu jego znaczenia. Z istnieniem sieci globalnej wiąże się zdecydowanie więcej zalet niż wad, niesie ona jednak również pewne zagrożenia, w znacznym stopniu oddziałujące na życie polskich gospodarstw domowych i funkcjonowanie przedsiębiorstw. Artykuł ma charakter teoretyczno-empiryczny. Jego celem jest poznanie zależności między Internetem a pandemią Covid-19, tj. czasem spędzanym w sieci w przypadku polskich gospodarstw domowych, natomiast w kwestii przedsiębiorstw – wpływu tych dwóch czynników na utrzymanie się firm na rynku. Ponadto subiektywnie zobrazowano najistotniejsze korzyści i zagrożenia wynikające z konsumpcji sieci globalnej w opinii podmiotów gospodarczych. Zdaniem ankietowanych wiodącą zaletą Internetu jest ułatwienie komunikacji (33,33%), a nadrzędne zagrożenie stanowi upowszechnienie się hejtu (24,17%). Zasadniczą korzyścią, jaką czerpią przedsiębiorstwa dzięki zasobom sieci globalnej, okazała się możliwość pozyskiwania surowców z najbardziej opłacalnych dla nich źródeł (28,40%), a za najpoważniejsze zagrożenie przedsiębiorcy wskazali to, że negatywna opinia opublikowana w sieci może osłabić kondycję finansową firmy lub nawet doprowadzić do jej zniknięcia z rynku (55,56%). Blisko 60% przedstawicieli gospodarstw domowych pod wpływem pandemii Covid-19 zaobserwowało u siebie wzrost czasu spędzanego sieci. Prawie 94% przedsiębiorców korzystających w prowadzeniu swojej firmy z Internetu przyznało, że miał on wpływ na utrzymanie się ich firm na rynku w dobie pandemii.

Introduction

The invention of the internet began the information revolution. The rapid development of technology and a convergence of data processing methods resulted in the electronic economy, accompanied by the economic processes in the virtual network, which resulted in such new concepts as e-trade, e-marketing, e-education, and e-administration (Flaga-Gieruszyński *et al.*, 2017, p. 5). The evolution of these new concepts has brought about many new changes in Poland and around the globe.

The real world then started to move to the virtual world. The propagation of internet resources has contributed to a range of socio-cultural changes (Tomin *et al.*, 2020, p. 5) and a revolution in the lifestyle of society, its mindset, ways of spending free time and transformations in enterprise operation. Although a considerable part of the society still regards the global network mainly as a source of entertainment, its importance is much greater, as the development of the resources has brought about a range of changes in the lives of two out of three types of economic participants – households and enterprises (Milewski & Kwiatkowski (Eds.), 2018, p. 30). This has contributed to a transformation of consumer behaviours, changes in enterprise productivity and marketing, the creation of virtual products, the modernisation of distribution methods, and the creation of new professions in the labour market; including innovative fields of study in Polish universities.

In 2004, 26% of Polish households had access to the internet, with every third household having this privilege in 2006 (*Społeczeństwo informacyjne w Polsce…*, 2008, p. 118), and 90.4% in 2020 (*Społeczeństwo informacyjne w Polsce…*, 2020, p. 132). This increase was not as great in the case of enterprises, as 89% had access to the internet in 2006 (*Społeczeństwo informacyjne w Polsce…*, 2008, p. 63), and over 98% of them had access to broadband internet in 2020 (*Społeczeństwo informacyjne w Polsce…*, 2020, p. 77). However, the use of internet resources and their potential in organisational development has changed dramatically, and the digital transformation has accelerated during the COVID-19 pandemic.

The study methodology and characteristics of the study populations

The objective of this study was to identify the relationship between the global network and the COVID-19 pandemic, i.e. the time spent on the internet by Polish household members, and the effect of these factors on Polish enterprise survival in the market. An opinion was also acquired from two business entities on the greatest internet benefits and threats resulting from its use.

The empirically applied descriptive study (Apanowicz, 2002, p. 33-37) was conducted by means of an online survey in August 2020. The study included 120 members of Polish households and 100 entrepreneurs. The respondents belonged to various age groups. The factors taken into account included the place of residence, sex, education, professional status and the monthly net income. Regarding the enterprises, the type of business activity with respect to its size was taken into account.

The impact of COVID-19 on the time spent on the internet by members of Polish households

The emergence of the global network has revolutionised the world, with a consequent range of changes in the sphere of human lives (Królewski & Sala, 2016, p. 39). Nowadays, even a short interruption in internet access is a cause for concern. This study has shown that 111 people (92.50%) of the examined population profited from the internet on a daily basis and the pandemic affected the time of network use (Fig. 1). In the opinion of nearly 60% of the respondents (59.17% – 71 people), their activity in this regard has increased. This was probably a consequence of the restrictions, such as those concerning meeting family and friends and shutting down entertainment facilities, which resulted in more time being spent at home. This activity was decreased only in the case of 5.00% of the respondents (six people), whereas a little more than one out of four household members (26.67% – 32 people) said that they had not noticed any change in the amount of time spent on the global network. The other individuals (9.17% – 11 people) could not identify a correlation between the COVID-19 pandemic and the time spent on the Internet.

The internet is addictive. The specialist literature under analysis distinguishes six phases of the evolution of this threat: fascination, discomfort reduction, regulation of emotional states, disorientation of human contacts, discomfort resulting from lack of network access and the phase of emerging personal adversities arising from the pathological use of the medium (Panasiuk & Panasiuk, 2017, p. 68-70). Warning signs of internet addiction include regular network consumption at the expense of other interests or of meetings with peers, signs of aggression if access to the global network proves impossible and not caring about relations with one's family or friends (Woronowicz, 2009, p. 476). Up to 73.33% of the Polish household members (88 people) taking part in the study confirmed that they could abstain from consuming network resources for several days at the most, with such time not exceeding several hours in the case of 15% of the study population (18 people).

The coronavirus pandemic changed the frequency of online shopping by Polish households. A little over half of the respondents (50.83% – 61 people) reported

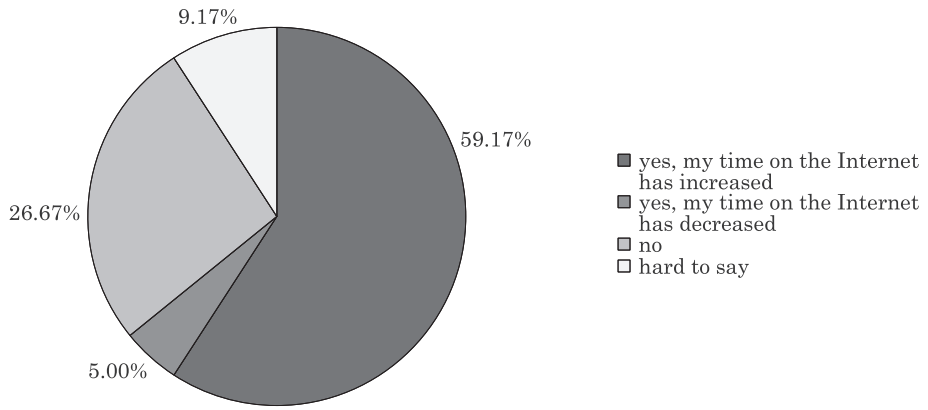

Fig. 1. Opinions of Polish household members on the effect of the COVID-19 pandemic on the time they spent on the Internet
Source: based on the author's studies.

doing such shopping more often, whereas 9.17% of the respondents (11 people) could not give a definitive answer to this question. The others (48 people) did not reduce their regular shopping compared to the time from before the pandemic. According to the report prepared by the International Group of Financial Reporting at KPMG, the largest increase in the frequency of online shopping by members of the Polish society is observed in food and medicines, followed by cosmetics (*Nowa rzeczywistość: konsument…*, 2020, p. 5). The shopping method is affected to the greatest extent by price, convenience and safety. According to studies, discounts and promotional offers have an advantage over a diverse product offer in the case of food shopping, whereas the opposite is true for non-food shopping (*Nowa rzeczywistość: konsument…*, 2020, p. 13).

The results show that members of the public use mobile phones to consume network resources because of their convenience and easy accessibility. This was the answer given by 94.17% of the respondents[1] (113 people). The group of household members that usually used a laptop to use the internet was nearly 20 p.p. lower (75.83% – 91 people). Further places are occupied by: a desktop computer (26.67% – 32 people), a tablet (20% – 24 people), a smartwatch (9.17% – 11 people) and a game console (8.33% – 10 people). Other responses included a TV set (8.33% – 10 people). An e-reader proved to be a niche device for internet use among the study population (3.33% – 4 people).

The appearance of the internet had a positive impact on the quality of life in Polish households – that opinion was expressed by 77.50% of the respondents (93 people). Less than 7% of the respondents (6.67% – 8 people) found the impact to be negative, whereas the others (15.83% – 19 people) could not decide whether it was positive or negative.

[1] A question in which more than one answer could be selected.

Benefits of internet use as seen by members of Polish households

As the internet becomes increasingly common, geographical barriers are no longer important in quick information exchange, regardless of whether the exchange is interpersonal or uses voice only (Łysik & Machura, 2014, p. 15, 16). This study confirmed this because "facilitating communication" was mentioned by the respondents as the most easily observable benefit from internet use (33.33% – 40 people). All types of communicators, like Gadu-Gadu or Tlen several years ago, and Messenger or WhatsApp now, are helpful in this regard.

Social development is an essential part of growth, as it has an impact both on people's competitive advantage in the labour market and on the companies they work for. The knowledge of the transforming socio-economic environment is of particular value (Kłos & Szura, 2013, p. 218, 219). Millennials, i.e. people born in the 1980s and 1990s, are the first generation which, owing to the internet, does not need intermediaries to improve their qualifications. Easy access to knowledge increases one's chances for a better-paid job in future and for improvement of the quality of life (Kisiel, 2016, p. 89). A little more than 17% (17.50%) of household members (21 people) saw this advantage as supreme. There are internet websites where one can get certificates valued in the labour market, e.g. in online courses. Importantly, participation in many of them is free of charge. One of the examples based on the author's own experience is the website of the Polish Agency for Enterprise Development, where one can participate in courses providing basic knowledge of marketing, law, management and finance.

Internet resources give society an opportunity to quickly acquire information from around the globe (15.83% – 19 people). A little over 8% of the respondents (8.33% – 10 people) see the global network mainly as a form of entertainment, e.g. by watching films. The same number of people are of the opinion that it enables their passions and interests to evolve. Other important benefits provided by the global network include the possibility of shopping from home (5.00% – 6 people), handling administrative affairs and online banking (3.33% – 4 people). Some answers also identified the internet as an opportunity for earning an additional income for the home budget, as a means for establishing new contacts, as a way of learning about people's opinions on a product before its purchase, on a seller, and as a way of saving money owing to price comparison sites, e.g. ceneo.pl. According to some respondents, the significance of all the advantages is the same, or the internet is a source of knowledge with regards to doing something in a simple manner.

Threats arising from internet use in the opinion of Polish household members

New information technologies are often a challenge for older generations, but for millennials they are an essential part of their lives. A presence in the network is a complement to the real world for them (Kisiel, 2016, p. 88). This carries with it some threats. According to the study findings, the spread of internet hate is the most common of them (24.17% – 29 people). Using the global network often has a negative impact on interpersonal relations (20% – 24 people). This is because millennials prefer sending text messages to communicating by voice. They sometimes even feel anxious before a telephone conversation and consider it too time-consuming.

Nearly every user can be the author of content published on the internet, which is why such information is not always true. For nearly 16% (15.83% – 19 people), this disadvantage was a major threat of the global network, and for 15% of the respondents (18 people), the problem was that not all information is verifiable and that it spreads rapidly, even if it is not true. It can have negative consequences on many levels, particularly when a person observes some disease symptoms and makes use of pseudo-expert advice available on the internet instead of seeing a real doctor. A little over 13% of the respondents (16 people) saw the risk of addiction as the supreme threat. Other disadvantages associated with the use of the global network included deterioration of one's health, especially one's eyesight (5% – 5 people), and a tendency to violate copyright laws (4.17% – 5 people). According to several respondents, publishing fake news deliberately and the time-consuming nature of using the internet were the most important threats, or all threats were equally dangerous.

The relationship between the internet, COVID-19 and the survival of Polish enterprises in the market

Regardless of their size, the presence of enterprises on the internet facilitates consolidation of their competitive advantage and improves their market position, which is extremely important in the consumer market. They use all forms of internet marketing to reach all potential customers around the globe (Felipa, 2017, p. 41-47). Although the contemporary world is based on modern information technologies (Królewski & Sala, 2016, p. 39), nearly one-fifth of the entrepreneurs (19 people) taking part in this study admitted that they did not use the internet for their business activities. This may be a consequence of the fact that a considerable share of the respondents lived in small towns with a population of under 10 thousand, and the approach to operating a firm in such places differs from

that in big cities. Over 80% of the participants in a further part of the study[2] admitted that they used the internet at least once a week for purposes related to their business activities, and 48 people (59.26%) did it every day. The most frequently used devices were: a telephone (39.51% – 32 people), a laptop (37.04% – 30 people), a desktop computer (22.22% – 18 people) and a tablet (1.23%).

The coronavirus pandemic and the related restrictions brought about a demand shock felt by enterprises. Enterprises in some industries were forced to shut down temporarily. Others had to face a decrease in demand for their goods or services and, consequently, a decrease in financial liquidity (Klepacki, 2021, p. 7-21). As a countermeasure, 32% of the firms (in particular the trade and service sector) chose to intensify the use of digital platforms or even to start using them (*COVID-19 Business Pulse…* 2020, p. 11-16). It was confirmed in many industries that firms that did not operate on the internet were doomed to oblivion (Frąckiewicz, 2006, p. 11). Up to 93.83% of the respondents (76 people) admitted that the internet helped their firms to survive in the market at that time, and, in consequence, they were then asked about the type of contribution (Tab. 1). It enabled a change in the form of contact with customers[3] (64.47% – 49 people), modification of the methods of sale of the goods or services on offer (57.89% – 44 people), advertising and promoting the business despite the fact that the firm was shut down (23.68% – 18 people), launching new products (30.26% – 23 people), or it facilitated switching to another industry (11.84% – 9 people).

Table 1

The impact of the internet on the survival of Polish enterprises in the market during the COVID-19 pandemic*

Item	Number of answers	Percentage [%]
It facilitated a change in the form of contacts with customers	49	64.47
It facilitated a change in the method of sales of products/services on offer	44	57.89
The enterprise was shut down during the pandemic, but the internet facilitated its advertising and promotion	18	23.68
It facilitated quick development and launching new products (e.g. e-books, online courses)	23	30.26
It enabled quick switching to a different industry	9	11.84
Other	9	11.84

* A question in which more than one answer could be selected.
Source: based on the author's studies.

2 The remaining questions in the questionnaire were addressed to entrepreneurs using the internet in their business activities, which is why 81 people who gave a positive answer to this question accounted for 100% of the population regarding further questions.

3 A question in which more than one answer could be selected.

Other answers were related to an increase in the demand for services of the firm, its development, change of the form of work or with creating this activity (11.84% – 9 people).

A little more than 90% of the entrepreneurs[4] (90.12%) were of the opinion that the global network made enterprise operation considerably easier. The other respondents were of different opinions or were unable to give a definitive answer.

Benefits of internet use as seen by Polish entrepreneurs

Skilful use of the internet helps enterprises to accomplish their main objective – profit maximisation (Milewski & Kwiatkowski (Eds.), 2018, p. 30). The global network facilitates market research, identification of consumer needs and the target group, obtaining raw materials from the most profitable sources, addressing advertisements to potentially interested groups, observing the effectiveness of promotional campaigns and actions at the stage of developing an innovative product. Internet advertising is more cost-effective not only because it is cheaper but also because its target group can be identified more precisely (Felipa, 2017, p. 47). Internet resources facilitate measuring the effectiveness of advertising campaigns, for example with the click-through rate (CTR), conversion rate (CR) and the bounce rate (Mazurek (Eds.), 2018, p. 317, 318).

In the opinion of 23 of the respondents (28.40%[5]), the ability to obtain raw materials from the best sources is the supreme advantage of the internet. Easy enterprise promotion is nearly as beneficial (25.93% – 21 people), and it is followed by an ability to carry out an advertising campaign without large financial resources (4.94%). An offer from an advertising firm in the contemporary world is not sufficient. Winning potential customers' trust and building relations with them is an important element of effective marketing and internet resources are extremely helpful in this regard. Proper segmentation increases marketing effectiveness and brings profit to enterprises (Leiva & Kimber, 2020, p. 42). Product promotion by influencers is a particularly effective form of advertising (van Driel & Dumitrica, 2021, p. 68).

Sales of goods in such large amounts and on such a large scale (18.52% – 15 people), with potential customers being found around the world (12.35% – 10 people), was never possible before the global network became widespread. The other respondents saw a streamlining of communication with recipients and opportunities for acquiring knowledge essential for running a business as the most significant benefits from using internet resources.

[4] A question addressed to the entrepreneurs (81) using the internet in their business activities.
[5] A question addressed to entrepreneurs (81) using the internet in their business activities.

Threats posed by the internet in the opinion of Polish entrepreneurs

Creating the internet contributed to many changes in the nature of goods production and trade. It is estimated that the fourth industrial revolution that is currently taking place is going to bring even more changes in this regard, mainly through the development of the Internet of Things. It is also going to bring about an increase in its volume with a simultaneous cost decrease (Rymarczyk, 2021, p. 105, 106). The development and propagation of modern technologies are essential for global transformation (Stroiko *et al.*, 2021, p. 102, 103), but they also pose many threats to Polish enterprises.

The propagation of the global network is contributing to an increase in unfair competition practices. According to the study, one such activity was regarded as definitely the most serious threat arising from the existence of the internet. One should note that the respondents feared subjective negative opinions about their enterprises, because they could result in a loss of customers or even bring about the company's bankruptcy (55.56%[6] – 45 people). The spread of dumping (12.35% – 10 people), the growth of the "grey market" (6.17%) and more frequent copyright violations (4.94%) were regarded as less significant threats. According to the other respondents, internet use is not associated with any threats.

Conclusions

Internet development has brought about many changes in all areas of human life and in the way that enterprises operate. The coronavirus pandemic has contributed to the acceleration of the digital revolution. This entails many benefits but also numerous threats. According to experts, this process is not going to slow down in the very near future. The following conclusions have been drawn from the experimental results:

1. According to 33.33% of the household members participating in the study, facilitation of communications is the major benefit of internet use. Entrepreneurs see an opportunity to acquire raw materials from the best sources as such a benefit (28.40%).

2. Polish households indicated the growing spread of internet hate as the greatest threat of the global network (24.17%). From the point of view of enterprises, it is definitely the fact that publishing a negative opinion, which may not be authentic, creates a risk of losing financial liquidity or may even force the firm to shut down (55.56%).

[6] A question addressed to entrepreneurs (81) using the internet in their business activities.

3. In the opinion of 77.50% of the respondents, popularising the internet has had a positive impact on the quality of life in Polish households. A little more than 90% of the entrepreneurs admitted that the global network considerably helped the operation of their firms.

4. The COVID-19 pandemic contributed to an increase in the internet activity of over 59% of the Polish household members participating in the study. The frequency of online shopping also increased. For nearly 94% of entrepreneurs who used the global network in their business operations, it helped them to ounteract the negative effects resulting from the pandemic-related restrictions, for example, by changing the methods of contacting customers (64.47%).

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References

Apanowicz, J. (2002). *Metodologia ogólna*. Gdynia: Wydawnictwo Diecezji Pelplińskiej „Bernardinum".

COVID-19 Business Pulse Survey – Polska. (2020). World Bank Group & PARP. Retrieved from https://www.parp.gov.pl/component/publications/publication/covid-19-business-pulse-survey--polska (18.05.2021).

Driel, L. van, & Dumitrica, D. (2021). Selling brands Chile staying „Authentic": The professionalization of Instagram influencers. *Convergence – The International Journal of Research into New Media Technologies*, *27*(1), 66-84. https://doi.org/10.1177/1354856520902136.

Felipa, P.B. (2017). Marketing + internet = e-commerce: oportunidades y desafíos. *Revista Finanzas y Politica Economica*, *9*(1), 41-56. http://dx.doi.org/10.14718/revfinanzpolitecon.2017.9.1.3.

Frąckiewicz, E. (2006). *Marketing internetowy*. Warszawa: Wydawnictwo Naukowe PWN.

Kisiel, P. (2016). Millenialsi – nowy uczestnik życia społecznego? *Studia Socialia Cracoviensia*, *8*(1), 83-94. http://dx.doi.org/10.15633/ssc.1876.

Klepacki, B. (2021). *Kierunki oddziaływania pandemii Covid-19 na społeczną i ekonomiczną sytuację kraju z uwzględnieniem logistyki*. In T. Rokicki (Ed.). *Wybrane zagadnienia logistyki – poziom ogólny, transport, dystrybucja, łańcuchy dostaw, logistyka miejska*. Warszawa: SGGW.

Kłos, A., & Szura, J. (2013). Szkolenia jako forma aktywizacji zawodowej bezrobotnych na przykładzie Powiatowego Urzędu Pracy w Jarosławiu. *Nierówności Społeczne a Wzrost Gospodarczy*, *34*, 218-234. Retrieved from http://cejsh.icm.edu.pl/cejsh/element/bwmeta1.element.desklight--ea9c39a6-beb4-4712-8e23-43412842fb3d (22.05.2021).

Królewski, J., & Sala, K. (Eds.). (2016). *E-marketing. Współczesne trendy. Pakiet startowy*. Warszawa: Wydawnictwo Naukowe PWN.

Leiva, R., & Kimber, D. (2020). Revisiting Consumer-Responses Models: Are Suitable for Post--Millennials? *Communication & Society*, *33*(4), 33-45. https://doi.org/10.15581/003.33.4.33-45.

Łysik, Ł., & Machura, P. (2014). Rola i znaczenie technologii mobilnych w codziennym życiu człowieka XXI wieku. *Media i Społeczeństwo. Medioznawstwo, komunikologia, semiologia, socjologia mediów*, *4*, 15-26. Retrieved from https://www.wir.ue.wroc.pl/info/article/WUT296e-820e0dd14886a9831dc7c4b61447/Rola+oraz+znaczenie+technologii+mobilnych+w+codziennym+%C5%BCyciu+cz%C5%82owieka+XXI+wieku (18.05.2021).

Mazurek, G. (Eds.). (2018). *E-marketing. Planowanie, narzędzia, praktyka*. Warszawa: Wydawnictwo POLTEXT.

Milewski, R., & Kwiatkowski, E. (Eds.). (2018). *Podstawy ekonomii*. Warszawa: Wydawnictwo Naukowe PWN.

Nowa rzeczywistość: konsument w dobie COVID-19. Jak zmieniły się zwyczaje zakupowe Polaków w czasie koronawirusa? (2020). KPMG. Retrieved from https://home.kpmg/pl/pl/home/insights/2020/09/raport-nowa-rzeczywistosc-konsument-w-dobie-covid-19-jak-zmienily-sie-zwyczaje-zakupowe-polakow-w-czasie-koronawirusa.html (15.05.2021).

Panasiuk, K., & Panasiuk, B. (2017). Uzależnienie od komputera i Internetu – wybrane problemy. *Colloquium Wydziału Nauk Humanistycznych i Społecznych AMW*, *1*, 59-84. Retrieved from http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.desklight-fb7cdc89-3972-4de0-ac3b-3ebc3e524116 (22.05.2021).

Rozkrut, D. (2017). *Zjawiska i procesy kształtujące rozwój społeczeństwa informacyjnego i gospodarki cyfrowej w Polsce.* In K. Flaga-Gieruszyńska, J. Gołaczyński, & D. Szostek (Ed.). *E-obywatel E-sprawiedliwość. E-usługi*. Warszawa: Wydawnictwo C.H. Beck.

Rymarczyk, J. (2021). The impact of industrial resolution 4.0 on international trade. *Entrepreneurial Business and Economics Review*, *9*(1), 105-117. https://doi.org/10.15678/EBER.2021.090107.

Społeczeństwo informacyjne w Polsce w 2020 r. (2020). Warszawa: Główny Urząd Statystyczny. Retrieved from https://stat.gov.pl/obszary-tematyczne/nauka-i-technika-spoleczenstwo-informacyjne/spoleczenstwo-informacyjne/spoleczenstwo-informacyjne-w-polsce-w-2020-roku,1,14.html (14.05.2021).

Społeczeństwo informacyjne w Polsce. Wyniki badań statystycznych z lat 2004-2006. (2008). Warszawa: Główny Urząd Statystyczny. Retrieved from https://szczecin.stat.gov.pl/publikacje-i-foldery/nauka-technika/spoleczenstwo-informacyjne-w-polsce-wyniki-badan-statystycznych-z-lat-2004-2006,4,3.html?contrast=black-yellow (14.05.2021).

Stroiko, T., Nazarov, L., & Danik, N. (2021). Transformation of economic processes on the basis of digitalisation. Baltic *Journal of Economic Studies*, *7*(1), 102-106. https://doi.org/10.30525/2256-0742/2021-7-1-102-106.

Tomin, V.V., Erofeeva, N.E., Borzova, T.V., Lisitzina, T.B., Rubanik, V.E., Aliyev, H.K., & Shuaipova, P.G. (2020). Internet Media as Component of Information and Communication Environment in Electoral Process: Features and Tools. *Online Journal of Communications and Media Technologies*, *10*(3), 1-7, e202011. https://doi.org/10.29333/ojcmt/7932.

Woronowicz, B.T. (2009). *Uzależnienia. Geneza, terapia, powrót do zdrowia*. Warszawa: Wyd. Edukacyjne PARPAMEDIA.

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ORIGINAL PAPER

SELECTED MANAGEMENT CONCEPTS IN SUPPLY CHAINS

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Abstract

Supply chain management is considered a complex process that can lead to errors, conflicts, or a breakdown of cooperation. In chain creation, it is important to organize and rationalize the network of interconnections to which the assumptions of concepts, such as lean manufacturing, agile manufacturing, and resilient supply chains, can be applied. For this reason, the aim of the research presented in the study was to attempt to identify how selected management systems in supply chains can influence the improved functioning of enterprises in a vulnerable condition and in the contemporary challenging situation. The starting point for consideration was to define the concept of a supply chain, lean manufacturing, agile manufacturing, and resilient supply chains, and to indicate the benefits of using the selected concepts. For this purpose, foreign and domestic literature was used. The result is a description, analysis, and criticism of the different systems in relation to the supply chain.

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WYBRANE KONCEPCJE ZARZĄDZANIA W ŁAŃCUCHACH DOSTAW

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Słowa kluczowe: wyszczuplona produkcja, zwinna produkcja, odporny łańcuch dostaw, zarządzanie produkcją, logistyka produkcji.

Abstrakt

Zarządzanie łańcuchem dostaw jest uznawane za skomplikowany proces, który może prowadzić do powstawania błędów, konfliktów lub rozpadu współpracy. Istotne w tworzeniu łańcuchów jest uporządkowanie oraz racjonalizacja sieci wzajemnych powiązań, do których można odnieść założenia takich koncepcji, jak: *lean manufacturing*, *agile manufacturing* oraz *resilient manufacturing*. Z tego względu celem badań przedstawionych w opracowaniu była próba wskazania, jak wybrane systemy zarządzania w łańcuchach dostaw mogą wpływać na poprawę funkcjonowania przedsiębiorstw w warunkach zagrożenia oraz współczesnych wyzwań. Punktem wyjścia rozważań było zdefiniowanie pojęć: łańcuch dostaw, *lean manufacturing*, *agile manufacturing* oraz *resilient manufacturing*, a także wskazanie korzyści płynących z zastosowania wybranych koncepcji. W tym celu skorzystano z literatury zagranicznej oraz krajowej. Rezultatem tych działań jest opis, analiza oraz krytyka poszczególnych systemów w odniesieniu do łańcucha dostaw.

Introduction

In the rapidly developing economy of the XXI century, enterprises engaged in production or services are facing many challenges presented to them not only by consumers, but also by the market and geopolitical conditions. Regarding the manufacturing or service activities of enterprises, there are more and more threats and disruptions (this is particularly evident in the case of the coronavirus pandemic from 2020) (Morley, 2020). In the conditions of increasingly intense global competition between enterprises, more and more advanced methods have been sought to enable them to gain a higher position. For this reason, entrepreneurs must make the right decisions and change their operating strategies to maintain their position in the market. According to the considerations of Chaberek (2011, p. 11; 2014, p. 4-6), no activity of enterprises is possible without

the provision of appropriate resources, specifically, without the appropriate logistics services. Citing the above considerations, the objectives of the logistics service can be defined as 5R, which provides: the right resources in the right place, at the right time, at the right cost and in the right amount (Chaberek, 2011, p. 11; 2014, p. 4-6; 2020, p. 35-38). Therefore, all the basic processes of enterprises (production or service) must be supported by the logistic processes. Therefore, these activities are so important in gaining a competitive advantage, especially in the situation of threats in the market, that disruptions in demand and other factors may disturb the activities of enterprises. In this context, reference should be made to the functioning of supply chains (consisting of a commodity chain and a logistics chain), which are responsible for the smooth flow of goods from producers to end customers. The supply chain (SC) can be defined as a set of activities related to the flow and transformation of products and information from the moment of extracting raw materials to delivering the final goods to the customer (Chaberek, 2011, p. 41-43). In this situation, it should be mentioned that the definition of the supply chain should contain more detailed information on the commodity chain and the logistics chain as components of SC. The concept of the commodity chain refers to the total flow of goods. This includes goods in the economy from supplying entities, through production entities, and through distribution entities (Świerczek, 2012, p. 33). The goods chain is thus supported by a logistics chain, which should provide support in accordance with essential logistics. In other words, logistics processes should function in accordance with the idea of logistics (Chaberek, 2011, p. 39).

Effective management is related to the use of various concepts, methods and techniques supporting the organization of activities and decision making. Changes taking place in the economy favor the emergence of new management strategies, which are also adapted to supply chain management. In the literature on the subject, certain trends are indicated in this area, including lean management, agile management or resilience to interference (e.g. Vonderembse *et al.*, 2006; Pisarek, 2018). In view of the above-mentioned, the aim of the study was to characterize three selected concepts that can be used in supply chain management; specifically, Lean Manufacturing, Agile Manufacturing and Resilient Manufacturing. An attempt was made to indicate the essence of selected concepts and the benefits of their application in the management of supply chains in the changing operational conditions of enterprises.

Methodology

The study has a descriptive character. It focuses on selected aspects of management throughout the supply chain, their characteristics, and the benefits of their application. The theoretical description is based on the use of foreign and domestic literature, its criticism and analysis. Additionally, scientific

databases were searched according to the subject of the study to better match the literature review to the presented content. An extensive web-based review was also performed to obtain better information on the benefits of applying different forms of management. Based on the collected literature, a description, analysis, and criticism were made, and then conclusions were presented based on the entire article.

Lean manufacturing

The concept of lean manufacturing (LM) in the modern economy is an important issue concerning enterprises. This is in relation to the pillars of sustainable development, which include economic, environmental, and social aspects (Varela *et al.*, 2019). In enterprises, it is an important tool of the business strategy that enables them to maintain a competitive position (Wahab *et al.*, 2013, p. 1292-1298). The concept was developed in Japan after the Second World War, when most enterprises wanted to maintain high-quality production with limited resources (Bhamu & Sangwan, 2014, p. 876-940). An early adopter of the concept was Toyota Motors, which introduced an automated and flexible production system into its production in the process of producing products of high volume and variety (Sharma *et al.*, 2018, p. 4678-4683). Subsequently, other manufacturers adopted the LM concept focusing on the elimination of waste in the production halls.

Today, lean manufacturing is widely accepted and used by companies to improve overall efficiency. Bhamu *et al.* (2012, p. 288-306) recognize the following as LM goals: quick response to customer requirements, quick delivery times, as well as the efficient and economic production of high-quality products. Muluget (2021, p. 1432-1436) lists the following as the main goals of lean manufacturing: increasing productivity, improving product quality, reducing inventories, shortening lead times, and eliminating production waste. Kainuma and Tawara (2006, p. 99-108) and Bevilacqua *et al.* (2017, p. 769-794) add that the elimination of all unnecessary sources of process losses is aimed at reducing costs, improving efficiency, increasing flexibility, and maximizing the value generated for customers. Berente and Lee (2014, p. 417-433) argue that lean manufacturing is an innovative change. Pettigrew *et al.* (2001, p. 697-713) add that change is episodic and revolutionary, or incremental and evolutionary. Biazzo *et al.* (2016, p. 237-260) suggest that LM offers gradual rather than radical changes. As indicated by Ghobadian *et al.* (2020, p. 457-468), companies using the lean manufacturing concept strive to gradually reduce the amount of waste by introducing structural changes, modifying, or introducing new processes. Pettigrew *et al.* (2001, p. 697-713) additionally mention routine and technological changes. Browning and Sanders (2012, p. 5-19) emphasize that the LM concept

in its present shape works best in enterprises where the demand for products is high, and the process variability is small and can be controlled. Olhager and Prajogo (2012, p. 159-165) confirm that the concept works best for forecast-based mass production. When implementing the LM concept, enterprises should be based on five principles: identifying value, mapping value streams, creating flows, establishing a pull system, and striving for perfection (Tortorella *et al.*, 2021).

There are many tools and practices used in the concept of lean manufacturing (Shah & Ward, 2007, p. 785-805). Jasti and Kodali (2015, p. 867-885) list 26 tools and practices used in LM, while Marodin and Saurin (2013, p. 6663-6680) identify 37 of them. Table 1 describes 12 selected lean manufacturing tools that have been developed to maximize the use of production capacity, reduce cycle

Table 1

Characteristics of selected lean manufacturing tools

Tools	Characteristics
Quality circles	creating a group of employees whose aim is to analyze processes in terms of quality improvement
Kaizen	the Japanese philosophy promotes continuous improvement because of continuous effort and commitment of employees
5's	5's (selection, systematics, cleaning, standardization, self-improvement), a tool used to create and maintain a well- organized and safe work position
Cause and effect diagram	a tool for the graphical illustration of the factors affecting the issue, combined with a storm drain to reach the primary cause of the identified problem
Fmea	the method aimed at the prevention of the effects of defects, which may occur in the stage design and the stage production
Poka-Yoke	method of preventing malfunctions derived from mistakes
SMED	the method of rapid changeover, the shorter the time, the smaller the losses in anticipation of the changeover and machine settings
Just in time	a management method to reduce work in progress and inventory levels in production and warehouse processes
Kanban	it consists in organizing the production process in which each organizational unit produces exactly as much as it is needed at a given moment, while limiting excess stocks and shortages, as well as reducing production and storage space. A maximum and stable production quantity is determined, and the production rate is kept constant
DMAIC	DMAIC (Define, Measure, Analyze, Improve, Control), engineering quality based on the data used in order to streamline processes
Time and movement study	the technique efficiency of the business, combining study time (monitoring time required to complete each phase of activity in the place of work), the study of motion (observe the steps taken by the worker in order to perform actions)
Value Stream Mapping (VSM)	a graphical tool that allows you to visualize and analyze important elements of production processes, making it possible to improve the continuity of material and information flow processes

Source: own study based on Palange and Dhatrak (2021).

times, and increase the value of the product (Sundar *et al.*, 2014, p. 1875-1885). Kolla *et al.* (2019, p. 753-758) emphasize that the effective use of tools depends on their appropriate selection, authenticity of the collected data and employee involvement. Particular attention was paid to Kanban. It should be noted that it was designed as a just-in-time tool. Ohno (1988) described his inspiration as Kanban, or "pull production", which has become the hallmark of the Toyota Production System. Hopp and Spearman (2004, p. 133-148) add that its goal is to prevent overloading the entire production system while maintaining high production rates and volumes.

The use of the lean concept in supply chains is aimed at achieving efficiency and effectiveness in this aspect. It concerns inter-organizational relations and the creation of processes in each of the links. The main effect of lean manufacturing, which is believed to be the basis for creating a lean supply chain, is to refine the relationship between the links of the chain. As a result, the delivery takes place in the shortest time, at the lowest cost, and the offered product is of the highest quality (Kruczek & Żebrucki, 2011, p. 355-364). The concept of lean manufacturing allows considering the processes implemented in an enterprise from the point of view of material and information flows (Kruczek & Żebrucki, 2011, p. 355-364). Sustainable implementation of lean manufacturing is possible by closely linking the principles of logistics with the methods of managing the quality level in the entire activity of the enterprise, as well as between enterprises. Ciesielski (2006) claims that the LM concept uses the best and most consistent application of logistic principles of thinking and acting. Ciesielski and Długosz (2010) add that LM is considered a new manifestation of logistics, especially in relation to situations that are characterized by a high degree of complexity and dynamics of information and material flows. Flow control methods such as Just in Time, the theory of constraints and TQM are widely used throughout the entire chain. However, it is difficult to use: 5S, Kaizen and TPM methods (Ciesielski & Długosz, 2010). Ciesielski and Długosz (2010), Sołtysik (2003) and Wincel (2004) list four stages of implementing the lean concept into the supply chain management process:

– supply chain selection – identifying the chain that will be optimized, setting a reference target, and correlating with chain performance, defining potential first-tier suppliers, planning the scope of cooperation, describing the value stream, determining how each supplier participates in shaping the stream (the procedure is repeated for first- and n^{th} degree recipients); to measure effectiveness: individual cost, delivery time, quality, or a combination of these measures;

– assessment of the current state of the chain – assessment of each supplier and recipient of the first level and the leader (considering previously established benchmarks), compilation and comparison of the changes taking place, carrying out calculations and comparisons for n^{th} level suppliers and customers; the results form a macro description of the effectiveness of the processes carried out in the supply chain;

– defining activities – creating a future state project; the project contains a list of possible measures to be taken to improve the results, proposals should be developed by all participants in the chain;

– introducing changes – developing a plan for introducing projects that improve efficiency, implementing projects, measuring, documenting changes compared to the goals of improving efficiency; changes should be communicated periodically.

Lean manufacturing is all about developing and using a holistic approach to shaping the supply chain. Decisions made based on the LM concept include structural problems (the location of individual chain elements and their placement in the flow structure) and coordination problems (they include establishing partnerships, inventory level planning, production planning, and the scope of information sharing) (Ciesielski & Długosz, 2010). The effects of applying the lean approach in supply chain management relate to the organization of the structure and improvement by streamlining the flows in terms of sections and the entire supply chain.

Agile manufacturing

The constant changes taking place in the economy and society increase the complexity and uncertainty of the functioning of enterprises and pose new challenges to them. The growing expectations of more and more demanding customers in terms of product quality and price, as well as order fulfillment time and delivery flexibility, force enterprises to create value in cooperation with the customer, to increase the ease of adapting to the changes taking place and the speed of response to customer needs (Sajdak, 2013, p. 203). Investing resources in improving efficiency and focusing on continuous improvement of internal work processes will therefore in many cases be insufficient. Agile manufacturing (Ramesh & Devadasan, 2007) may be the answer to such changing conditions in the functioning of enterprises, which is meant to help enterprises become more competitive and prosperous in a demanding environment where changes are unpredictable and continuous (Dowlatshahi & Cao, 2006; Gunasekaran *et al.*, 2017). The concept comes from 1991, when it was described by the so-called Agility Forum, a joint initiative of the US government, industry, and academia. The forum was established to develop a long-term strategy by which American producers could cope with global competition (Ren *et al.*, 2003; Thilak *et al.*, 2015).

There are many definitions of agility in the literature on the subject. According to Shankarmani *et al.* (2012, p. 31-37), it is a readiness to respond to immediate changes in the size and volatility of demand. Moradlou and Asadi (2015, p. 31-44) emphasized that agility is related to the ability to ensure customer satisfaction, constant preparation for market changes, appreciating

information and establishing a virtual enterprise. In the opinion of Dahmardeh and Banihashemi (2010, p. 178-184), an agile producer is an organization with a broad vision for the new order of the business world and with the ability to deal with turbulence as well as to capture beneficial aspects of business. Pan and Nagi (2013, p. 969-983) noted that agile manufacturing creates the boundary between the organization and the market, and that an agile enterprise behaves like a leader, develops affordability, and professionally anticipates changes.

At the strategic level, four key areas that characterize an agile enterprise can be identified (Goldman *et al.*, 1995, p. 59-67):

– customer enrichment – an agile enterprise is one that is perceived by its customers as enriching them in a significant way; this requires a quick understanding of the unique requirements of an individual customer and providing them with a satisfactory product;

– cooperation – inter-organizational and intra-organizational, cooperation with suppliers, establishing virtual relationships with competitors;

– organization – enabling development in conditions of change and uncertainty; flexible, flattened organizational structure allowing for quick configuration of human and physical resources;

– paying attention to human resources, information, and technologies – perceiving employees as extremely valuable assets of the company, placing emphasis on education, training, and empowerment, supporting the entrepreneurial attitude.

Agility in the context of supply chain management consists of the ability to quickly deliver personalized products with unique features to the market in order to maintain a competitive advantage in a changing environment (Ambe, 2010, p. 5-17). An agile supply chain requires flexibility and adaptability, as well as an appropriate flow of information supported by advanced ICT technologies[1].

For the chain to be agile, it must have four practical features to which they belong (Hoek *et al.*, 2001, p. 126-148; Kisperska-Moron & Swierczek, 2008, p. 217-224):

– market sensitivity – obliges us to quickly respond to customer requirements;

– virtual integration – requires companies to exchange information and knowledge rather than inventory;

– process integration (process integration) – suggests that network companies delegate basic production modules among themselves based on their relative competences;

– networking integration – requires that enterprises in the supply chain have a common identity, which may include involvement in agile practices, structure compliance, information architecture compliance and cooperation competences.

[1] The importance of advanced technologies in the case of logistics is described in more detail in the publication Wieczorek (2020).

According to Braunscheidel and Suresh (2009, p. 119-140), agility can be measured based on interdependent dimensions of supply chain maturity, such as business partnership, complementary resource competence, knowledge transfer, and effective leadership. Blome *et al.* (2013, p. 1295-1318) emphasized that an agile supply chain increases the operational efficiency of an organization and is a prerequisite for achieving agile production. Muralidar (2015, p. 145-159) mentioned that some of the agile manufacturing benefits include: short time to market, rapid development of new products, fast order fulfillment, low volumes, low quantities, large selection of products, configurable components, fast deliveries from suppliers, short lead times, short cycle times, highly flexible processes, highly flexible machines and devices, use of advanced CAD/CAM, quick changeovers, and qualified employees.

The agility concept works best in unpredictable environments where the demand for diversity is high and the demand is fluctuating, while the lean concept is best used in environments with high volume, low diversity, and predictability (Tab. 2). Ambe (2010, p. 5-17) believes that lean is needed to build agility. Many authors (e.g., Mason-Jones *et al.*, 2000, p. 4061-4070) emphasize that these two concepts can complement each other, and it is possible to combine them using the advantages of both paradigms (the leagile concept).

Table 2

Lean and agile strategies comparison

Characteristic	Lean strategy	Agile strategy
Objective	cost minimization	customer service level maximization
Typical products	mass goods	fashion goods
Market demand	predictable	changeable
Product differentiation	small	big
Product life cycle	long	short
Customer priority	price	availability
Profit margin	low	high
Dominant costs	production costs	marketing costs
Consequences of stocks depletion	agreeable and delayed in time	immediate and variable
Logistics orientation	waste elimination	customers and markets
Cooperation with partners	fixed and long-term	fluent clasters
Key measures	effect measures, e.g., efficiency and costs	ability metrics and customer satisfaction
Process organization	work standarization, norms compliance	self-discipline-based operator's autonomy
Logistics planning	regular	prompt reaction

Source: own based on Ciesielski (2011).

Resilient Manufacturing

Growing customer expectations regarding product personalization, maintaining a high level of timely deliveries and other requirements make enterprises face a tough challenge to meet these types of requirements. In addition, regardless of whether a given enterprise operates in the production or service industry, they are more and more often disturbed by various types of phenomena, both natural and man-made (e.g., a shortage of appropriate resources, or inadequate information transfer in supply chains). Activities aimed at assessing the company's susceptibility to the occurring disturbances and their possible mitigation led to the achievement of production resilience. This type of resilience can be achieved by implementing measures to return from an undesirable state to a desired state (Kusiak, 2020). Production activities in such a case should be supported by a comprehensive approach to ensure full understanding and modeling of resistance. The full scope of the elements building resilience include: energy, resources, physical processes, transport, communication, productivity, and others (Kusiak, 2019). These elements may prove that a given company will operate within the framework of resistant production, thus creating resilience within the supply chain within which it operates.

The aspect of resilience can also be directly applied to the supply chain. In its general meaning, it defines the possibilities of the supply chain to deal with various changes that may occur in the market (Wieland & Wallenburg, 2013, p. 301). In the literature, this type of supply chain is referred to as a *Resilient supply chain* (*What is a...*, 2020). In principle, they should be, in accordance with their name, resistant to any anomalies, breakdowns or other problems that may result from changes in the current operating conditions or disturbances in the flow of the commodity chain or logistic chain (being in a service relationship to the former) (Stavros & Epaminondas, 2012, p. 922-924; Negri *et al.*, 2021, p. 5, 6). When this aspect is referred to a manager, it concerns taking actions to limit or reduce the negative impact of the potential occurrence of a disruptive factor (Boin *et al.*, 2010, p. 1-6). From the perspective of a third (observer) person, it is possible to fully determine the efficiency of Supply Chain after a crisis. Specific actions can be implemented before the emergence of a crisis or in response to it (Välikangas, 2010, p. 19).

Achieving resilience in the case of supply chain management is now tantamount to not only the ability to reduce risk, but above all to some forms of risk management, which should lead to a better positioning of enterprises in relation to their competitors. This may even lead to gaining some advantages by using disruptions. In reference to material science, resistance (can also be referred to as elasticity) is the ability of a material to recover its original shape after deformation. In the case of enterprises (especially those in production), this skill refers to the ability to deal with disruptions, e.g., the speed of recovery to a normal level of performance (in relation to production, services, etc.) (Michelman, 2007).

According to Michelman (2007), it is possible to achieve resistance on three main levels. One of the planes concerns „excesses". In theory, it is possible to create a resilient enterprise by creating excess at different stages of the supply chain through, for example, additional inventory, low production capacity or signed contracts with different suppliers. However, this form of action is limited only to temporary and very costly solutions that cannot be used over a longer period. It is therefore clear that this type of solution should be avoided by focusing on other types of supply chain management (e.g., *Toyota Production System*), where the production efficiency activities of enterprises are demonstrated by maintaining low levels of inventory and delivering the product of the required quality in a timely manner. Meanwhile, redundancy will limit the company's ability to achieve such performance.

The second level is flexibility that will allow firms to withstand significant disturbances and give a better response time to fluctuations in market demand. The actions a company can take are (Michelman, 2007):

– standardization of production processes involving the use of similar elements, parts, and assembly designs in different factories, which allows for possible quick relocation of production in the event of a disruption;

– the use of simultaneous and not sequential processes in the areas of product development, production, or distribution, which will allow for faster recovery of operations after market disruptions;

– using postponement in such a way that products are finalized only at the last stages of the supply chain when a specific demand for a given product occurs, which will enable better customer service while reducing the costs of maintaining finished goods in the warehouse;

– adjusting the procurement strategy to the current relationship with suppliers, primarily by knowing business partners thoroughly in order to detect a potential problem or in order to rely on them in a situation that requires assistance. (In a situation where the company does not have close links with suppliers, it should have an extensive supply network that will build its resilience and enable dynamic reactions to the situation in the markets).

On the third level, the focus should be on cultural changes. Corporate culture may be the factor that may determine that a given enterprise quickly reverts to its core form of operation after the occurrence of disruptive factors. Such activity manifests itself through (Michelman, 2007):

– constant communication between employees in such a way that they remain aware of the company's goals and how the company should operate, so that when disruptions occur, employees have the knowledge to make appropriate decisions;

– dispersing the causative power in such a way that teams or individual employees can take appropriate action in a hazardous situation or to prevent the occurrence of this hazard, e.g., during the production process;

– employees' passion for their work, consisting of showing their employees a sense of a higher idea in the performance of their duties and not only in performing "repetitive processes";

– awareness of the occurrence of disruptions, consisting in the fact that resilient enterprises, because of the occurrence of disruptions, seek motivation for innovative and improving activities to better cope with them in the future.

The actions listed are examples that can be undertaken by enterprises. It should be emphasized that the benefits of building "resilient" organizations by creating these types of supply chains are significant. These types of enterprises will not only be able to withstand disruptions, but also gain a competitive position by getting ahead of their competitors as part of a better response to disruptions (Arora *et al.*, 2020).

Summary

The basic activity of production and service enterprises requires appropriate logistics services, including the efficient flow of goods and information, which is ensured by the supply chain. Applying the principles described in concept development to supply chain management can bring many benefits. The lean approach focuses on reducing waste and losses, increasing efficiency, reducing costs and increasing the speed of delivery with the best possible quality. Applying lean in the supply chain allows you to organize the structure and streamline flows. As part of agile, the ability to quickly respond to changes in customer demand and requirements, adapting to external conditions, as well as appropriate information flow and cooperation becomes key. An agile supply chain allows you to improve the efficiency of an organization and leads to the achievement of agile production. The resilient aspect concerns the ability to deal with various changes and disruptions that may occur in the market, the ability to reduce risk, and even gain some advantages by using disruptions. A resilient supply chain is characterized by greater flexibility and the ability to create new connections, learn, and collaborate. The presented directions of changes in the approach to management in supply chains are related to their adaptation to the increasingly demanding operating conditions, which are a consequence of processes taking place in the economy, including increased competition, technological changes, or growing consumer requirements. It is worth noting that apart from the concepts indicated above, the literature on the subject also includes references to a closed-loop supply chain or green logistics. It should be remembered, however, that none of the methods is universal, and the legitimacy and effects of its application depend on the current market situation, as well as the internal conditions of the enterprise. Individual concepts should be treated as complementary, which can create synergy effects.

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References

Ambe, I.M. (2010). Agile supply chain: strategy for competitive advantage. *Journal of Global Strategic Management*, *4*(1), 5-17. https://doi.org/10.20460/JGSM.2010415835.

Aroa, S., Böhm, W., Dolan, K., Gould, R., & McConnell, S. (2020). *Resilience in transport and logistics*. Retrieved from https://www.mckinsey.com/business-functions/operations/our-insights/resilience-in-transport-and-logistics (28.04.2021).

Berente, N., & Lee, J. (2014). How process improvement efforts can drive organisational innovativeness. *Technology Analysis and Strategic Management*, *26*(4), 417-433. https://doi.org/10.1080/09537325.2013.851376.

Bevilacqua, M., Ciarapica, F.E., & De Sanctis, I. (2017). Lean practices implementation and their relationships with operational responsiveness and company performance: an Italian study. *International Journal of Production Research*, *55*(3), 769-794. https://doi.org/10.1080/00207543.2016.1211346.

Bhamu, J., & Sangwan, K.S. (2014). Lean manufacturing: literature review and research issues. *International Journal of Operations & Production Management*, *34*(7), 876-940. https://doi.org/10.1108/IJOPM-08-2012-0315.

Bhamu, J., Shailendra Kumar, J.V., & Sangwan, K.S. (2012). Productivity and quality improvement through value stream mapping: a case study of Indian automotive industry. *International Journal of Productivity and Quality Management*, *10*(3), 288-306. https://doi.org/10.1504/IJPQM.2012.048751.

Biazzo, S., Panizzolo, R., & De Crescenzo, A.M. (2016). *Lean management and product innovation: a critical review*. In A. Chiarini, P. Found, & N. Rich (Eds.). *Understanding the Lean Enterprise*. Switzerland: Springer. https://doi.org/10.1007/978-3-319-19995-5_11.

Blome, C., Schoenherr, T., & Rexhausen, D. (2013). Antecedents and Enablers of Supply Chain Agility and its Effect on Performance: A Dynamic Capabilities Perspective. *International Journal of Production Research*, *51*(4), 1295-1318. https://doi.org/10.1080/00207543.2012.728011.

Boin, A., Kelle, P., & Whybark, D.C. (2010) Resilient supply chains for extreme situations: Outlining a new field of study. *International Journal of Production Economics*, *126*, 1-6. https://doi.org/10.1016/j.ijpe.2010.01.020.

Braunscheidel, M.J., & Suresh, N.C. (2009). The Organizational Antecedents of a Firm's Supply Chain Agility for Risk Mitigation and Response. *Journal of Operations Management*, *27*(2), 119-140. https://doi.org/10.1016/j.jom.2008.09.006.

Browning, T.R., & Sanders, N.R. (2012). Can innovation be lean? *California Management Review*, *54*(4), 5-19. https://doi.org/10.1525/cmr.2012.54.4.5.

Chaberek, M. (2011). Praktyczny wymiar teorii logistyki. *Roczniki Naukowe Wyższej Szkoły Bankowej w Toruniu*, *10*, 209-217. Retrieved from http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.ekon-element-000171209797 (28.04.2021).

Chaberek, M. (2014). Theoretical, regulatory and practical implications of logistics. *LogForum Scientific Journal of Logistics*, *10*(1), 3-12. Retrieved from https://www.logforum.net/pdf/10_1_1_14.pdf (28.04.2021).

Chaberek, M. (2020). *Ład logistyczny w gospodarowaniu*. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego.

Ciesielski, M. (2006). *Logistyka w biznesie*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Ciesielski, M. (Ed.). (2011). *Instrumenty zarządzania łańcuchami dostaw*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Ciesielski, M., & Długosz, J. (Ed.). (2010). *Strategie łańcuchów dostaw*. Warszaw: Polskie Wydawnictwo Ekonomiczne.

Dahmardeh, N., & Banihashemi, S.A. (2010). Organizatinal Agility and Agile Manufacturing. *European Journal of Economics, Finance and Administrative Sciences*, *27*, 178-184.

Dowlatshahi, S., & Cao, Q. (2006). The Relationships among Virtual Enterprise, Information Technology, and Business Performance in Agile Manufacturing: An Industry Perspective. *European Journal of Operational Research*, *174*(2), 835-860. https://doi.org/10.1016/j.ejor.2005.02.074.

Ghobadian, A., Talavera, I., Bhattacharya, A., Kumar, V., Garza-Reyes, J.A., & O'regan, N. (2020). Examining legitimatisation of additive manufacturing in the interplay between innovation, lean manufacturing and sustainability. *International Journal of Production Economics*, *219*, 457-468. https://doi.org/10.1016/j.ijpe.2018.06.001.

Goldman, S.L., Nagel, R.N., & Preiss, K. (1995). Agile Competitors and Virtual Organisations. *Manufacturing Review*, *8*(1), 59-67.

Gunasekaran, A., Subramanian, N., & Papadopoulos, T. (2017). Information Technology for Competitive Advantage Within Logistics and Supply Chains: A Review. *Transportation Research Part E: Logistics and Transportation Review*, *99*, 14-33. https://doi.org/10.1016/j.tre.2016.12.008.

Hoek, R.I., Harrison, A., & Christopher, M. (2001). Measuring Agile Capabilities in the Supply Chain. *International Journal of Operations and Production Management*, *21*(1/2), 126-148. https://doi.org/10.1108/01443570110358495.

Jasti, N.K., & Kodali, R. (2015). Lean production: literature review and trends. *International Journal of Production Research*, *53*(3), 867-885. https://doi.org/10.1080 / 00207543.2014.937508.

Kainuma, Y., & Tawara, N. (2006). A multiple attribute utility theory approach to lean and green supply chain management. *International Journal of Production Economics*, *101*(1), 99-108. https://doi.org/10.1016/j.ijpe.2005.05.010.

Kisperska-Moron, D., & Świerczek, A. (2009). The agile capabilities of Polish companies in the supply chain: An empirical study. *International Journal of Production Economics, 118*(1), 217-224. https://doi.org/10.1016/j.ijpe.2008.08.019.

Kolla, S., Minufekr, M., & Plapper, P. (2019). Deriving essential components of lean and industry 4.0 assessment model for manufacturing SMEs. *Procedia Cirp*, *81*, 753-758. https://doi.org/10.1016/j.procir.2019.03.189.

Kruczek, M., & Żebrucki, Z. (2011). Doskonalenie struktury łańcucha dostaw z wykorzystaniem koncepcji Lean. *Logistyka*, *2*.

Kusiak, A. (2019). Fundamentals of smart manufacturing: A multi-thread perspective. *IFAC Annual Reviews in Control*, *47*. https://doi.org/10.1016/j.arcontrol.2019.02.001.

Kusiak, A. (2020). Resilient manufacturing. *Journal of Intelligent Manufacturing, 31*. https://doi.org/10.1007/s10845-019-01523-7.

Marodin, G.A., & Saurin, T.A. (2013). Implementing lean production systems: research areas and opportunities for future studies. *International Journal of Production Research*, *51*(22), 6663-6680. https://doi.org/10.1080/00207543.2013.826831.

Mason-Jones, R., Naylor, B., & Towill, D.R. (2000). Lean, agile or leagile? Matching your supply chain to the marketplace. *International Journal of Production Research*, *38*(17), 4061-4070. https://doi.org/10.1080/00207540050204920.

Michelman, P. (2007). *Building a Resilient Supply Chain*. Harvard Business Review. Retrieved from https://hbr.org/2007/08/building-a-resilient-supply-ch%20May%2011 (28.04.2021).

Moradlou, H., & Asadi, M. (2015). Implementation of Agile Manufacturing Principles in Small and Medium Enterprises (SMES). *Journal of Modern Processes in Manufacturing and Production*, *4*(3), 31-44.

Morley, M. (2020). *What is supply chain resilience?* Opentext Blogs. Retrieved from https://blogs.opentext.com/supply-chain-resilience/ (28.04.2021).

Mulugeta, L. (2021). Productivity improvement through lean manufacturing tools in Ethiopian garment manufacturing company. *Materials Today: Proceedings*, *37*, 1432-1436. https://doi.org/10.1016/j.matpr.2020.06.599.

Muralidar, M. (2015). Agile Manufacturing - An Overview. *International Journal of Science and Engineering Applications*, *4*(3), 145-159.

Negri, M., Cagno, E., Colicchia, C., & Sarkis, J. (2021). Integrating sustainability and resilience in the supply chain: A systematic literature review and a research agenda. *Business Strategy and the environment*. https://doi.org/10.1002/bse.2776.

Ohno, T. (1988). *Toyota Production System: Beyond Large Scale Production*. Cambridge, MA: Productivity Press.

Olhager, J., & Prajogo, D.I. (2012). The impact of manufacturing and supply chain improvement initiatives: a survey comparing make-to-order and make-to-stock firms. *Omega*, *40*(2), 159-165. https://doi.org/10.1016/j.omega.2011.05.001.

Palange, A., & Dhatrak, P. (2021). Lean manufacturing a vital tool to enhance productivity in manufacturing. *Materials Today: Proceedings*, *46*(1), 729-736. https://doi.org/10.1016/j.matpr.2020.12.193.

Pan, F., & Nagi, R. (2013). Multi-echelon supply chain network design in agile manufacturing. *Omega*, *41*(6), 969-983. https://doi.org/10.1016/j.omega.2012.12.004.

Pettigrew, A.M., Woodman, R.W., & Cameron, K.S. (2001). Studying organisational change and development: challenges for future research. *Academy of Management Journal*, *44*(4), 697-713. https://doi.org/10.2307/3069411.

Pisarek, A. (2018). Od szczupłego do zielonego zarządzania łańcuchem dostaw na przykładzie branży motoryzacyjnej. From lean to green supply chain management based on automotive industry. *Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu. Research Papers of Wrocław University of Economics*, *505*. https://doi.org/10.15611/pn.2018.505.19.

Ramesh, G., & Devadasan, S.R. (2007). Literature review on the agile manufacturing criteria. *Journal of Manufacturing Technology Management*, *18*(2), 182-201. https://doi.org/10.1108 / 17410380710722890.

Ren, J., Yusuf, Y.Y., & Burns, N.D. (2003). The Effects of Agile Attributes on Competitive Priorities: A Neural Network Approach. *Integrated Manufacturing Systems*, *14*(6), 489-497. https://doi.org/10.1108 / 09576060310491351.

Sajdak, M. (2013). Przywództwo strategiczne w zwinnym przedsiębiorstwie. *Zeszyty Naukowe. Organizacja i Zarządzanie/Politechnika Łódzka*, *49*, 203-212.

Shah, R., & Ward, P.T. (2007). Defining and developing measures of lean production. *Journal of Operations Management*, *25*(4), 785-805. https://doi.org/10.1016/j.jom.2007.01.019.

Shankarmani, R., Pawar, R., Mantha, S.S., & Babu, V. (2012). Agile Methodology Adoption: Benefits and Constraints. *International Journal of Computer Applications*, *58*(15), 31-37. https://doi.org/10.5120 / 9361-3698.

Sharma, K.M., & Lata, S. (2018). Effectuation of lean tool "5S" on materials and workspace, efficiency in a copper wire drawing micro-scale industry in India. *Materials Today: Proceedings*, *5*(2), 4678-4683. https://doi.org/10.1016/j.matpr.2017.12.039.

Sołtysik, M. (2003). *Zarządzanie logistyczne*. Katowice: Wydawnictwo Akademii Ekonomicznej.

Stavros, T.P., & Epaminondas, K. (2012). Supply Chain Resilience: Definition Of Concept And Its Formative Elements. *Journal of Applied Business Research*, *28*(5). Retrieved from https://www.researchgate.net/publication/257138390_Supply_Chain_Resilience_Definition_Of_Concept_And_Its_Formative_Elements (28.04.2021).

Sundar, R., Balaji, A.N., & Kumar, R.S. (2014). A review on lean manufacturing implementation techniques. *Procedia Engineering*, *97*, 1875-1885. https://doi.org/10.1016/j.proeng.2014.12.341.

Świerczek, A. (2012). *Zarządzanie ryzykiem transmisji zakłóceń we współczesnych przedsiębiorstwach w łańcuchu dostaw*. Katowice: Wydawnictwo Uniwersytetu Ekonomicznego.

Thilak, V.M.M., Devadasan, S.R., & Sivaram, N.M. (2015). A Literature Review on the Progression of Agile Manufacturing Paradigm and its Scope of Application in Pump Industry. *The Scientific World Journal*, *1*, 1-9. https://doi.org/10.1155/2015/297850.

Tortorella, G.L., Narayanamurthy, G., & Thurer, M. (2021). Identifying pathways to a high-performing lean automation implementation: An empirical study in the manufacturing industry. *International Journal of Production Economics*, *231*, 107918. https://doi.org/10.1016/j.ijpe.2020.107918.

Välikangas, L. (2010). *The Resilient Organization: How Adaptive Cultures Thrive Even When Strategy Fails*. New York: McGraw Hill Professional.

Varela, L., Araújo, A., Ávila, P., Castro, H., & Putnik, G. (2019). Evaluation of the relation between lean manufacturing, Industry 4.0, and sustainability. *Sustainability*, *11*(5), 1439. https://doi.org/10.3390/su11051439.

Vonderembse, M.A., Uppal, M., Huang, S.H., & Dismukes, J.P. (2006). Designing supply chains: towards theory development. *International Journal of Production Economics*, *100*(2), 223-238.

Wahab, A.N.A., Mukhtar, M., & Sulaiman, R. (2013). A conceptual model of lean manufacturing dimensions. *Procedia Technology*, *11*, 1292-1298. https://doi.org/10.1016/j.protcy.2013.12.327.

Wallace, J., Hopp, & Spearman, M.L. (2004). To Pull or Not to Pull: What Is the Question? *Manufacturing & Service Operations Management*, *6*(2).

What is a Resilient Supply Chain? (2020). SAP Insights. Retrieved from https://insights.sap.com/what-is-a-resilient-supply-chain/ (28.04.2021).

Wieczorek, A. (2020). Information Transfer in Logistics Using Wireless Technologies. *Olsztyn Economic Journal, 15*(3), 215-228. https://doi.org/10.31648/oej.6541.

Wieland, A., & Wallenburg, C.M. (2013). The Influence of Relational Competencies on Supply Chain Resilience: a Relational View. *International Journal of Physical Distribution & Logistics Management*, *43*(4). https://doi.org/10.1108/IJPDLM-08-2012-0243.

Wincel, P.J. (2004). *Lean supply chain management*. New York: Productivity Press.

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ORIGINAL PAPER

OPERATING SUBSIDIES AND THE ECONOMIC SITUATION OF AGRICULTURAL FARMS IN POLAND IN 2014-2019

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K e y w o r d s: incomes, subsidies, economic size of agricultural farms.

A b s t r a c t

The purpose of this study has been to determine the role of operating subsidies in shaping the economic situation of agricultural farms in the years 2014-2019. Secondary data originating from the database of accounting books of farms aggregated by the Polish FADN were taken for our analysis. The data were processed through an analysis of the dynamics of changes in 2014-2019. The results showed that operating subsidies reached an average of between 41% and 282% of the value of income earned by family-owned farms. It was found that whether or not farms were able to earn a financial surplus without resorting to subsidies depended on the economic size of a farm. The smallest and the largest farms were unable to cover their costs and earn a profit without having access to additional sources of funds.

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DOPŁATY DO DZIAŁALNOŚCI OPERACYJNEJ A SYTUACJA EKONOMICZNA GOSPODARSTW ROLNYCH W POLSCE W LATACH 2014-2019

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S ł o w a k l u c z o w e: dochody, dopłaty, wielkość ekonomiczna gospodarstw rolnych.

A b s t r a k t

Celem badań było określenie znaczenia dopłat do działalności operacyjnej w kształtowaniu się sytuacji ekonomicznej gospodarstw rolnych w latach 2014-2019. Do analizy wykorzystano dane wtórne pochodzące z bazy danych rachunkowych z gospodarstw rolnych polskiego FADN. Zgromadzone dane opracowano z wykorzystaniem analizy wskaźników dynamiki zmian w latach 2014-2019. W wyniku przeprowadzonych badań stwierdzono, że dopłaty do działalności operacyjnej kształtowały się średnio na poziomie od 41% do 282% wartości dochodu z rodzinnego gospodarstwa rolnego. Stwierdzono, że możliwość wypracowania nadwyżki finansowej bez dostępu do dopłat zależy od wielkości ekonomicznej gospodarstwa. Gospodarstwa najmniejsze i największe nie są w stanie bez dodatkowych środków pokryć kosztów i dodatkowo osiągnąć nadwyżki pieniężnej.

Introduction and methodology

The system and economic transformations that occurred in post-communist countries after 1989 and after 2004 had an immense impact on the lives and economic status of rural populations (Toth *et al.*, 2016, p. 2220-2227; Brodziński *et al.*, 2020, p. 103-112). Lizińska (2019, p. 278-287) made an analysis which demonstrated that both agricultural farms and their environment have some capacity for the development of non-farming economic activities that could improve farmers' revenues, but thus far, despite the many years elapsing since the transformation, this potential has been exploited only to a relatively small extent. Thus, the economic situation of farms mainly depends on several factors connected with agriculture. These are the value of sold agricultural products, the costs incurred by farms due to agricultural activity, volumes of imported and exported goods, etc. In Poland, the stability of foreign trade involving agricultural

products and a lesser dependence on Russia than prior to 1989 are ensured by the European Union (Hrybau *et al.*, 2019, p. 397-406). These two factors also affect the incomes earned by Polish farms. Other external conditions including the weather-related risk or farmland use conditions play a role as well. More on this matter can be found in Lososova *et al.* (2017, p. 88-109), who mentions other significant circumstances, e.g. land relief. In her opinion, the dependence on subsidies is more evident in mountainous less favoured areas (LFAs). Furthermore, the impact of other external factors, especially the weather and high volatility of prices, features more distinctly in LFAs situated in mountains. Hence, another factor that significantly affects revenues earned by farms are EU subsidies allocated under the umbrella of the Common Agricultural Policy. The support provided from the CPA, by raising incomes, ensures that farmers can enjoy a certain level of financial security and their farms can generate some economic surplus.

A question arises whether these farms would manage to earn a financial surplus without access to the EU funds. It can be expected that subsidies play an important role in generating farm incomes and without these funds it would be difficult to achieve a financial surplus.

The purpose of this study has been to identify the role of operating subsidies in shaping the economic situation of farms in Poland between 2014 and 2019.

The operating activity of a farm includes transactions which arise from the farm's current economic activities. These are all activities that generate income from plant production, animal production and others, e.g. offering services with the use of the equipment available on a given farm. Operations also entail transactions that generate costs. They are a result of both the farm's existence *per se* and its current activities.

The following hypothesis was set: as the economic size classes increase, the reliance of a farm's ability to earn a financial surplus on operating subsidies diminishes.

Secondary data from the Polish FADN (Farm Accountancy Data Network) database of accounts of farms were analyzed. Farms monitored by the Polish FADN are commodity farms generating at least 90% of Standard Production from all farms in the country. They must have a minimum economic size equal to 4,000 euros. On average for Poland in 2014-2019, there were 730,869 farms which satisfied this criterion, of which a sample of 12,000 was analyzed. The available data are weighted averages of particular variables for the given group of farms and are therefore representative for the Polish FADN observation field. An economic criterion, called Standard Production (SP) has been the basis for classification of farms into economic classes. Standard Production is calculated as an average value of production from five years, excluding subsidies to production and direct costs, expressed in euros. Six economic size classes are distinguished: very small, from 2,000 to 8,000 euros, small, from 8,000 to 25,000 euros, medium small, from 25,000 to 50,000 euros, medium large – from 50,000 to 100,000 euros, large, from 100,000 to 500,000 euros, and very large, 500,000 euros and more.

Although there is a class defined from 2,000 euros of SP, it is worth remembering that the minimum economic size of a farm in Poland included in the Polish FADN observation field is 4,000 euros. Four types of activities are distinguished for the purposes of the Polish FADN statistics, such as operating, investing, financial and private.

The data collected for this study were processed using an analysis of indicators of the dynamics of changes in 2014-2019. The decision to analyze data from 2014--2019 was made as these were the most recent data available in the Polish FADN database. In addition, this was the time period when the previous Financial Perspective, ending in 2020, was implemented.

Role of subsidies in the economic situation of agricultural farms

Subsidies which serve as additional funds are a significant factor influencing the volume of revenues in agriculture, thereby shaping the economic situation of farms. Having more available cash in hand, farmers now have better opportunities for the development of their farms. On the other hand, since Polish agriculture gained access to CAP instruments, prices of production means, e.g. machines and fertilizers, have begun to rise (Sadowski & Antczak, 2012, p. 348-352). Measures which interfere with the market mechanism, besides causing adverse effects such as growing the prices of production means, generate higher incomes. Thus, the level of incomes earned by farmers does not depend solely on the effects of the work they do. It is also shaped by the volume of cash flows which supply agriculture. Measures implemented under the Common Agricultural Policy improve the situation of farmers. Since Poland's access to the EU in 2014, the incomes have nearly doubled while the actual value of agricultural production has increased by 50% (Kondratowicz-Pozorska, 2017, p. 91-100). The revenues earned from agricultural activity are exposed to certain risks, for example adverse weather conditions, which may even cause complete damage of crops and have an undesired impact on production. Direct payments are a source of constant income, which, regardless of market fluctuations, provides farmers with a certain degree of safety in the face of risks. Owing to direct payments, farmers can improve the long-term profitability of farms. They also have better chances for making investments (*Na czym polega WPR…*, 2018). The level of income in 2004 was 2.4-fold higher than in the previous year and the main reason was an increase in granted subsidies. A considerable rise in the share of subsidies in all revenues from farms was noted. In 2004, subsidies corresponded to around 39% of income, compared to 9% in the year before (Dzun & Jóźwiak, 2008, p. 24-26).

According to the survey research carried out by Kutkowska *et al.* (2015, p. 243-248), over half of the respondents from the dolnośląskie province noticed

a positive effect of EU funds on the development of farms. One in four reported that the level of their income from the farm increased considerably. Over 10% indicated that the rate at which their farms were declining was halted or slowed down. A similar study was conducted by Marks-Bielska and Babuchowska (2010, p. 89-100) in the warmińsko-mazurskie province, where most farmers (72.6%) agreed that the funds they had been receiving had a positive effect on the financial condition of their farms, with 27% of the respondents stating that this effect was considerable.

The CAP instruments are a key driver for improving the economic standing of agricultural farms (Grzebyk, 2017, p. 146-161), and direct payments are treated as an extra source of funds supplying the household budget. The share of direct payments in the revenue earned from agricultural production in Poland between 2013 and 2017 was 30%, compared to around 26% on average in the entire European Union. In turn, the contribution of all received subsidies in Poland in the same time reached 45% and was about 8% higher than the EU average. The results obtained by Volkov *et al.* (2019, p. 1-17) showed that the system of direct payments had not contributed to any improvement in the socio-economic balance of small farms in Lithuania until the CAP reform in 2013, when its impact became undeniable.

The significance of the financial support received in the form of subsidies depends on the economic size of a farm and the type of agriculture it carries out. Farms at the two extremes, that is the smallest and the largest ones, are unable to operate without any financial aid. Other farms, especially medium-sized and large ones, can earn a financial surplus without being subsidized (*Rolnictwo w 2019 roku*, 2021).

Impact of operating subsidies on the economic situation of farms in 2014-2019

The economic size of farms is an indicator of their production capacity. The worth of production increases in higher economic size classes. This regularity was evident in all years of the analyzed time period. Over the years 2014 to 2019, the average value of total production ranged from 30,414 PLN in the smallest farms to 6,915,374 PLN in the largest ones. The average value of production for all farms included in the study was 127,923 PLN.

Our analysis of the dynamics of changes in the value of production involved increments relative to a fixed base, which was the year 2014. The value of production in 2015 in farms from all economic size classes was decreasing. The highest decrease in that year occurred in medium large farms (down by 10%). In 2016, compared to the base year, this indicator decreased in all farms except the largest ones, where the value of production rose by 5%. In 2017, this indicator declined only with respect to large (-11%) and very large farms (-3%).

In 2018, the highest increase in the value of production was noted in very large farms (11%), while in medium large and large farms it was lower by -2% and -10%, respectively. In the last year submitted to the analysis, i.e. in 2019, only large farms recorded a decrease in the value of production (-8%) relative to the base year, while the smallest farms showed the highest rise of this indicator, by as much as 16% (Fig. 1).

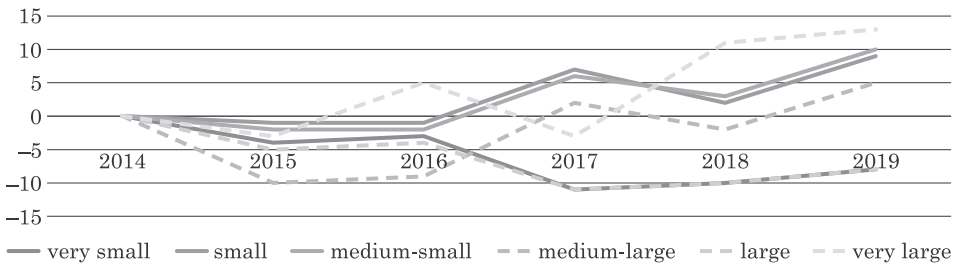

Fig. 1. Dynamics of changes in the production value of farms in Poland, 2014-2019 [%]
Source: the authors, based om the Polish FADN data.

Operating subsidies and the value of production were the main sources of income for agricultural farms. The worth of subsidies increased with the increasing economic size classes of farms. In 2014-2019, the average value of subsidies ranged from 11,061 PLN in the smallest farms to 809,853 PLN in the largest ones. The average value for farms included in the FADN system in 2014-2019 was 26,996 PLN (Tab. 1).

Table 1

Value of operating subsidies in farms monitored by the Polish FADN, 2014-2019 (in PLN)

Economic size	2014	2015	2016	2017	2018	2019	Mean
Very small	10,798	10,006	10,446	11,226	12,009	11,882	11,061
Small	20,070	21,782	22,259	23,581	24,554	24,766	22,835
Medium -smalle	34,250	38,895	39,802	40,473	43,573	44,569	40,260
Large-small	56,691	59,075	60,227	59,662	65,452	64,943	61,008
Large	130,168	106,981	109,411	122,122	129,717	124,556	120,493
Very large	869,389	472,244	731,485	658,022	1,077,117	1,050,860	809,853

Source: the authors, based om the Polish FADN data.

There was an increase in the operating subsidies granted to farms, in nearly all economic size classes, over the analyzed time. The highest rise occurred in medium small farms, where it reached 30%. These farms obtained higher operating subsidies in every year relative to the base year 2014. The same tendency was noted with regards to small and medium large farms. It was only

large farms, which were granted lower operating subsidies in nearly every year, that recorded a decrease by 4% relative to 2014. Very small farms received lower operating subsidies in 2015 and 2016. Moreover, the biggest drop in granted operating subsides was noted in 2015 and concerned very large farms. It was not until 2018 that these farms recorded a rise in the value of operating subsides versus their value in the base year 2014 (Fig. 2). The dependence of a farm's economic standing on subsidies is evident when we compare the level of received support and the level of income earned from farming. The said relationship varied depending on the economic size of farms. However, a considerable role of subsidies in creating an economic surplus by farms was evident in every analyzed case. "When comparing the income with subsidies, one needs to remember that we are presenting average results (…) and that some of the farms record losses" (*Wyniki standardowe 2019 uzyskane…*, 2021).

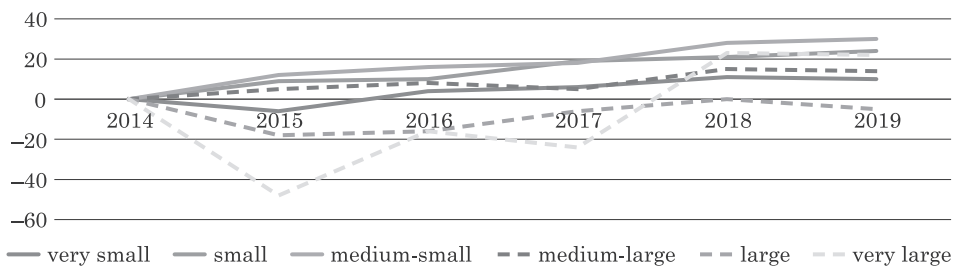

Fig. 2. Dynamics of changes in values of operating subsidies in Poland, 2014-2019 [%]
Source: the authors, based om the Polish FADN data.

The smallest farms of the economic size up to 8,000 euros of SP generated an income lower than the subsidies they received in 2014-2019. The value of subsidies surpassing the income implicates that these farms "(…) report a positive income mainly owing to subsidies" (*Wyniki standardowe 2019 uzyskane…*, 2021). Over the analyzed time period, subsidies reached on average 126% of the income. The biggest difference was noted in 2018, when the earned income was lower than the subsidies by over 3,735 PLN. In 2019, as a result of an increase in the value of the incomes generated by the smallest farms, the average income and the level of subsidies were the most approximate as the difference was just 175 PLN (Fig. 3). The relationship between operating subsidies and incomes in small farms, of the economic size between 8,000 and 25,000 euros of Standard Production, was shaped slightly differently than for very small farms. The income they generated in every year over the analyzed time period was higher than the subsidies they received. The subsidies corresponded to 83% of the income on average. In 2019, the difference between the subsidies and the income was the greatest, reaching 7,602 PLN. The smallest difference appeared in 2018, when the value of the earned income was higher than the granted subsidies by just 2,048 PLN.

Fig. 3. Subsidies and income in farms from different economic size classes in Poland, 2014-2019: *a* – very small, *b* – small, *c* – medium-small, *d* – medium-large, *e* – large, *f* – very large
Source: the authors, based om the Polish FADN data.

When reviewing the ratio of operating subsidies to incomes in medium small farms, that is the ones generating between 25,000 and 50,000 euros of Standard Production in the FADN classification, it emerged that there was a slightly larger discrepancy between the subsidies received and the value of income. In the time period submitted to our analysis, the income exceeded the subsidies

more than in small farms. The latter averaged 57% of the income. The smallest difference appeared in 2015, when the income was higher by 23,642 PLN than the value of granted subsidies. The largest gap between the two values, reaching 39,597 PLN, was noted in 2017, when the income was twice as high as the subsidies. The dependence of the total income from a family farm on operating subsidies was decreasing as the economic size grew larger.

In medium large farms, i.e. generating between 50,000 and 100,000 euros of Standard Production, the income exceeded the subsidies more than it did in small and medium small farms. In 2014-2019, the subsidies on average corresponded to 47% of the income. The biggest difference between the two values was noted in 2017, when the income was higher than the subsidies by 91,332 PLN.

In contrast, the strongest dependence on subsidies was seen in 2015, when the value of the generated income was higher than the obtained financial support by 51,279 PLN. The weakest dependence on operating subsidies appeared in large farms, generating between 50,000 and 100,000 euros of SP. These farms achieved such a level of income that it exceeded the subsidies of most. Over the analyzed time period, the subsidies approximated 31% of the income. The biggest divergence appeared in 2019, when the income was greater than the subsidies by 213,310 PLN. In turn, the subsidies were relatively most important in 2014, that is in the first year of the analyzed time period, when the difference between the two values was the smallest, at 152,273 PLN. The situation was reversed in the case of very large farms, generating at least 500,000 euros of Standard Production.

This type of a situation, namely subsidies exceeding income, also appeared in the group of very small farms. As for the largest farms "(…) it is due to the losses which some of the farms owned by legal persons showed in the accounting year" (*Wyniki standardowe 2019 uzyskane…*, 2021). In each year throughout the analyzed time interval, subsidies considerably exceeded the earned revenues. The biggest difference between the two was seen in 2018, when the value of subsidies was higher than revenues by 699,733 PLN. On average, subsidies corresponded to 282% of revenues.

The above analysis concerning relationships between operating subsidies and revenues from family-owned farms implicates the reliance of the financial standing of agricultural farms on operating subsidies throughout the entire analyzed time period. However, the degree of this dependence varied depending on the economic size of farms. Operating subsidies in 2014-2019 on average corresponded to 41% up to 282% of the value of income earned from family--owned farms. A study reported by Lososova *et al.* (2020, p. 236-251) showed that operating subsidies, for example, had a stronger impact on investment activities than an opportunity to acquire capital support.

Farms with 8,000 to 500,000 euros of Standard Production are able to earn a positive income from farming without additional financial support. On the

other hand, the smallest farms, with 2,000 to 8,000 euros SP, as well as the largest ones, with over 500,000 euros SP, are unable to cover costs and generate a financial surplus without being subsidized. The operation of the largest farms is more strongly dependent on subsidies although they were able to generate a financial surplus. Similar studies using FADN data have demonstrated that subsidies play a key role in shaping the economic position of agricultural farms in the EU, especially in the new member states (Średzińska, 2017, p. 814-820).

Conclusion

The operating subsidies granted between 2014 and 2019 corresponded on average to 41% up to 282% of the value of incomes earned by family-owned farms. Over the analyzed time period, it was possible to observe a decreasing tendency in the importance of subsidies for the total income of farms, except the largest ones, where the dependence of their economic situation on subsidies was clearly increasing. The dependence on subsidies was varied depending on the economic size of farms. It was found that the ability to generate a financial surplus without having access to subsidies depended on the economic size of the farm. The smallest farms, that is the ones which according to the FADN classification generated from 4,000 to 8,000 euros of Standard production, as well as the largest ones, generating above 500,000 euros of SP, were unable to cover the costs and additionally earn a financial surplus without subsidies. The reason is that the costs incurred surpass the value of their production. In the largest farms, these are very high costs of external means, mostly the necessity to hire labour and therefore pay remunerations. On the other hand, farms generating between 8,000 and 500,000 euros of Standard Production are able to earn a financial surplus from farming without additional funding. The farms with 100,000 to 500,000 euros SP manage the best. The hypothesis that as the economic size classes increase, the dependence of farms on subsidies in terms of their ability to earn a financial surplus decreases was not confirmed. This regularity has been distorted by the largest farms, where the dependence of their ability to generate a surplus on being granted subsidies is the strongest among all economic size classes. The largest farms are able to function only with the help of operating subsidies.

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References

Brodziński, Z., Bojkowska, E., & Janek, S. (2020). Development of Micro-Enterprises in Rural Areas in the Warmińsko-Mazurskie Voivodship. *Olsztyn Economic Journal*, *15*(2), 103-112. https://doi.org/10.31648/oej.5834.

Dzun, J., & Jóźwiak, W. (2008). *Polskie gospodarstwa przed i po wejściu do Unii Europejskiej. Rolniczy Magazyn Elektroniczny*, *27*, 24-26. Retrieved from https://cbr.gov.pl/rme-archiwum/2008/rme27/dane/4_6.html (22.03.2021).

Grzebyk, B. (2017). Rola instrumentów Wspólnej Polityki Rolnej Unii Europejskiej w podnoszeniu jakości życia mieszkańców obszarów wiejskich. *Nierówności Społeczne a Wzrost Gospodarczy*, *52*, 146-161. Retrieved from http://repozytorium.ur.edu.pl/handle/item/3328.

Hrybau, A., Hryshanava, V., Witkowska-Dąbrowska, M., & Świdyńska, N. (2019). Agricultural Production Volume in Poland and in Belarus and its Prospects. *Olsztyn Economic Journal*, *14(*4), 397-406. https://doi.org/10.31648/oej.4934.

Kutkowska, B., Berbeka, T., & Pilawka, T. (2015). Wpływ instrumentów wspólnej polityki rolnej na sytuację ekonomiczną gospodarstw indywidualnych w opinii rolników. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, *17*(3), 243-248. Retrieved from https://ageconsearch.umn.edu › 17-3-Kutkowska.pdf.

Lizińska, W. (2019). Conditions motivating a decision to start and develop a non-agricultural business on a farm in the province of Warmia and Mazury. *Annals of the Polish Association of Agricultural and Agribusiness Economists*, *21*(4), 278-287. https://doi.org/10.22004/ag.econ.302839.

Lososova, J., Zdenek, R., & Kopta, D. (2017). Development of the main production and economic indicators of Czech farms. *Custos e Agronegocio*, *13*(2), 88-109. Retrieved from http://www.custoseagronegocioonline.com.br/numero2v13/OK%206%20production.pdf.

Lososova, J., Zdenek, R., & Svoboda, J. (2020). Tangible fixed assets in Czech small and middle-sized farms. *Eastern Journal of European Studies*, *11*(1), 236-251. Retrieved from https://www.ceeol.com/search/article-detail?id=888156.

Marks-Bielska, R., & Babuchowska, K. (2010). Functioning of the Direct Subsidies System in Poland and Other European Union Countries. *Journal of Agribusiness and Rural Development*, *17*(3): 89-100. Retrieved from http://www.jard.edu.pl/tom17/zeszyt3/art_9.pdf@http://www.jard.edu.pl/tom17/zeszyt3/art_9_pl.pdf.

Na czym polega WPR. Płatności bezpośrednie dla rolników w latach 2015–2020. (2018). Urząd Publikacji Unii Europejskiej. Retrieved from https://op.europa.eu/pl/publication-detail/-/publication/541f0184-759e-11e7-b2f2-01aa75ed71a1 (22.03.2021).

Rolnictwo w 2019 roku. (2021). Warszawa: Główny Urząd Statystyczny. Retrieved from https://stat.gov.pl/obszary-tematyczne/rolnictwo-lesnictwo/rolnictwo/rolnictwo-w-2019roku,3,16.html (22.03.2021).

Sadowski, A., & Antczak, W. (2012). Wpływ dopłat bezpośrednich na sytuację ekonomiczną gospodarstw w ocenie ich kierowników. *Roczniki Naukowe Stowarzyszenia Ekonomistów Rolnictwa i Agrobiznesu*, *14*(3): 348-352. Retrieved from https://bazekon.uek.krakow.pl/rekord/171369621.

Średzińska, J. (2017). *The income situation of farms in the European Union countries*. In P. Jedlička, P. Marešová, & I. Soukal (Eds.). *Hradec Economic Days: Double-blind peer reviewed proceedings of the International Scientific Conference*. Hradec Králové: University of Hradec Králové.

Toth, M., Lancaric, D., & Savov, R. (2016). *Globalization and its socio-economic consequences, 16th international scientific conference proceedings*. Zilina: University of Zilina.

Volkov, A., Balezentis, T., Morkunas, M., & Streimikiene, D. (2019). Who Benefits from CAP? The Way the Direct Payments System Impacts Socioeconomic Sustainability of Small Farms. *Sustainability*, *11*(7), 2112, 1-17. https://doi.org/10.3390/su11072112.

Wyniki standardowe 2019 uzyskane przez gospodarstwa rolne uczestniczące w Polskim FADN. Część II. *Analiza wyników standardowych*. (2021). Warszawa: Polski FADN.

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ORIGINAL PAPER

ASEAN AS AN OPTIMAL/NONOPTIMAL CURRENCY AREA

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K e y w o r d s: optimum currency area, ASEAN, monetary system.

A b s t r a c t

Economists have been arguing to this day about the benefits and risks of introducing a community currency. It is very difficult to clearly determine which side is right. Most often, scientists refer to the example of the so-called Eurozone, but it is still far from reaching an agreement between supporters and opponents of such a solution. This paper presents the issues of monetary integration in ASEAN+3 (i.e. ASEAN member countries, China, South Korea, and Japan) in terms of the optimal currency area and other necessary conditions for the creation of a sustainable development region. The researchers argue about whether ASEAN+3 should introduce a single currency. Some suggest that the group meets several OCA theory criteria, i.e. labour mobility and economic openness. According to the results of the study, ASEAN+3 is an economically diverse area and there is a lack of institutions enabling effective monetary integration in the short term. Optimization assumptions included in the analysis determine the real chances of development and survival within the currency area. The author's analysis has indicated that ASEAN+3 should not introduce

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a single currency for three reasons: failure to meet the optimization criteria, diversification of socio-economic development, lack of an institutional framework and inconsistency in the perception of monetary integration. On the other hand, it should be noted that a single currency could contribute to increasing the monetary security of the entire South-East Asian region, which means that the monetary integration may be a long-term idea.

ASEAN JAKO OPTYMALNY/NIEOPTYMALNY OBSZAR WALUTOWY

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S ł o w a k l u c z o w e: optymalny obszar walutowy, ASEAN, system walutowy.

A b s t r a k t

Ekonomiści spierają się do dziś odnośnie do korzyści oraz zagrożeń, które wynikają z wprowadzania wspólnotowej waluty. Bardzo trudno jest jednoznacznie określić, która ze stron ma rację. Najczęściej naukowcy odwołują się do przykładu tzw. strefy euro, jest jednak wciąż daleko do osiągnięcia porozumienia między zwolennikami a przeciwnikami takiego rozwiązania. W pracy przedstawiono problematykę integracji monetarnej w ASEAN+3 (tj. kraje członkowskie ASEAN, Chiny, Korea Południowa, Japonia) w kontekście optymalnego obszaru walutowego oraz innych niezbędnych warunków powstania regionu o zrównoważonym rozwoju. Badacze się nie zgadzają, czy w ASEAN+3 należy wprowadzić wspólny pieniądz. Niektórzy sugerują, że ugrupowanie spełnia kilka kryteriów TOOW, tj. mobilność siły roboczej oraz otwartość gospodarczą. Zgodnie z wynikami badań ASEAN+3 jest obszarem zróżnicowanym pod względem gospodarczym i brakuje instytucjonalnych ciał, które umożliwiłyby skuteczną integrację monetarną w krótkim okresie. Założenia optymalizacji zawarte w przeprowadzonej analizie określiły rzeczywiste szanse rozwoju i przetrwania obszaru walutowego. Przeprowadzona przez autorów analiza wskazała, że ASEAN+3 nie powinien wprowadzać wspólnego pieniądza z powodów: niespełnienia kryteriów optymalizacji, dywersyfikacji rozwoju społeczno-gospodarczego, braku instytucjonalnych ram oraz niezgodności postrzegania integracji monetarnej. Należy jednak zauważyć, że wspólna waluta mogłaby przyczynić się do zwiększenia bezpieczeństwa monetarnego całego regionu Azji Południowo-Wschodniej, wskutek czego pomysł integracji walutowej może być pomysłem długoterminowym.

Introduction

The Association of Southeast Asian Nations is an organization founded in 1967 and associates ten countries – Indonesia, Malaysia, Philippines, Singapore, Thailand, Brunei Darussalam, Vietnam, Laos, Myanmar and Cambodia (Santos-Paulino, 2017, p. 5). It assumes political and economic cooperation in spite of the diversity of its members (Hill & Menon, 2010, p. 1-8). The most important aim of the association is to provide peace in times of dynamic economic development (Preepremmote *et al.*, 2013, p. 923-925). The main goals of ASEAN include (Onyusheya & Thammashote, 2018, p. 3):

– fair and equal economic development (supporting the sector of small and medium-sized enterprises);

– a single market and manufacturing base (free movement of goods, services, investments, capital and labour);

– a competitive economic region (creating fair competition, consumer protection, intellectual property protection, infrastructure development and e-commerce);

– integration with the global economy.

Based on the process of introducing the single currency in the Euro area, ASEAN+3 is trying to introduce its own currency in its territory. In comparison to European integration, ASEAN is at a low level of integration, i.e. at the level of a free-trade zone (Kazushi, 2010, p. 77-84). The regulations of the 1990s enabled the elimination of tariff barriers in mutual trade (Watanabe & Ogura, 2006, p. 2-7), which resulted in the creation of the above-mentioned AFTA zone in 1993 (ASEAN Free Trade Area). The aim of the research is to try to answer the question of whether ASEAN should introduce a single currency in accordance with the optimum currency area theory (OCA) or not.

Research methodology

The conducted research concerned the ASEAN+3 members, the study period between 2005-2019 was assumed. In the analysis, a descriptive method and a statistical analysis were employed, with the data coming from the World Bank (2021). The conducted analysis took into account a comparison of GDP, GDP per capita, total exports as a % of GDP, inflation, unemployment and trade openness. GDP data was based on the trade value data (USD). The methods enabled the presentation of the ASEAN economic integration and the optimum currency area theory. The optimization assumptions included in the analysis are: business cycle synchronization (change in GDP) and a similarity in inflation and economic openness; especially in relation to ASEAN +3 partners. The comparison of the above-mentioned factors created the possibility of determining the real chances for the development and survival of the currency area.

The optimum currency area theory

The genesis of the optimum currency area theory dates back to the 1960s. Mundell (1961, p. 661) noticed that countries which had removed floating exchange rates had the possibility to become an optimal currency area, that is, an area in which currency unification is beneficial for the economy. According to the economist, the region should be characterized by labour mobility and flexibility of prices and wages. In the following years, many economists, including McKinnon (1963, p. 717), Ingram (1970, p. 6-23), Tavlas (1993, p. 663-671), Frankel and Rose (1996, p. 490-493) and De Grauwe (2003, p. 140), made an attempt to create further optimization criteria.

The first economist who developed the so-called optimization theory, introduced by Mundell (1961), was McKinnon (1963). He drew attention to the impact of the economic openness, i.e. the ratio of tradable goods to non--tradable goods and the problem of reconciling external and internal balance, while emphasizing the need for internal price stability. The main person who was critical when it comes to the so-called 'old' theory of optimal areas was Ingram (1970). The author emphasized that it is a critical mistake to refer only to real, and not also to monetary factors while formulating the OCA criteria. A new approach to the theory of optimal currency areas was introduced and adopted in the 1990s. Frankel and Rose (1996) concluded that one of the most significant benefits of introducing the single currency is an increase in the convergence of business cycles and an increase in economic exchange. Tavlas (1993), in turn, enumerated eight features that countries which want to create a monetary union should have. These are: convergence of inflation, mobility of factors of production, openness and size of the economy, economic diversification, price and wage flexibility, goods market integration and fiscal and political integration. According to De Grauwe (2003), OCA should not be based on the two main principles which were listed, for example in the Maastricht Treaty. The principle of staged transition and the principle of determining the criteria of convergence should not constitute the basis of OCA. To confirm his thesis, the author referred to the situation of the intra-German monetary union in 1990, where decisions had been made regardless of the differences in convergence or specific stages of transition.

Should ASEAN introduce a single currency?

In 2002, Mundell (2002, p. 3-12) published a study "Does Asia need a common currency?". The conclusion was as follows: yes – with the current system of international finance, no – with the change of the world monetary system. According to Mundell, a change in the international finance system would be

grounded on a system based on three selected currencies[1]. However, one may ask if Asia or even a selected group of countries would meet the criteria of optimal currency areas.

The Asian financial crisis, which affected ASEAN member countries the most, contributed to the acceleration of economic integration and debates on currency unification. In November 1999, ASEAN leaders decided to introduce currency swaps and a repurchase agreement system as a credit line to cope with future macroeconomic shocks. In May 2005, ASEAN members agreed to extend the network of bilateral currency swaps and introduced multilateral ones. It is believed that this will enable the establishment of an Asian currency fund in the future. Another essential decision was made. The Asian Bond Market Initiative (ABMI) was implemented. The conditions were then created to collect the necessary savings which were to be allocated to local investments. These resources were to reduce the need for loans from outside the region. Gharlehji *et al.* (2015, p. 111) recognized that this was a turning point in regional monetary integration.

Asian researchers quite often engage in the topic of monetary integration in the context of the OCA theory. Some of them wonder if ASEAN together with three Asian countries (Japan, China and South Korea) could create an optimal currency area (Ogawa & Kawasaki, 2006, p. 219-223). Supporters of a fixing of the exchange rate note that a single currency would enable coping with the attacks on minor, insignificant currencies. The argument in favour of creating an Asian monetary union is also the fulfilment of selected optimization criteria. Asia, in particular ASEAN+3, is an association with strong economic ties, which has relatively large trade and foreign direct investment (Shimitzutani, 2009, p. 32-34).

The authors list numerous reasons that would prevent the introduction of the single currency area in ASEAN or in ASEAN+3. They can be divided into three categories: OCA theory criteria, socio-economic differentiation (factors not included in OCA theory) and conflict of interest.

Researchers who deal with the topic of monetary integration in ASEAN in the context of the theory of optimal currency areas point out that the association fulfils some of the optimization criteria. ASEAN is characterized by a high mobility of the workforce and capital in relation to the European Union. Workers from Indonesia, Malaysia, the Philippines and Thailand constitute 10% of the workforce in Singapore, and over 2% of the workforce in their countries of origin. ASEAN also meets the price and wage elasticity condition, which guarantees (according to OCA theory) a quick adjustment in case of a macroeconomic shock. Chirathivat and co-authors in their study (2005) mentioned high economic relativity and trade within the group, which was partially confirmed by this particular research..

[1] Mundell was certain that the system ought to be based on the US dollar, the euro and one more currency. However, he was not convinced of any Asian currency.

Opponents of currency unification recognize that ASEAN+3 is an economically diversified area. The countries differ in, for instance, GDP per capita and are characterized by little diversification of trade, which may make it difficult to deal with macroeconomic damage quickly and effectively (Masini, 2009, p. 7-9).

Chia (2013, p. 24-28) noticed numerous economic barriers to the creation of an optimal currency area, i.e. the diversity of the size of economies and the socio-economic situation. ASEAN countries also differ in terms of economic openness. According to research performed by the author, 25% of trade from ASEAN members goes to the remaining countries of the association. This is 15 percentage points fewer than in the EU, but more by the same percentage points than in the Caribbean and West African Monetary Union. To conclude, ASEAN fulfils the OCA theory's criteria mentioned above, and could therefore become an optimal currency area.

The second important counterargument is the socio-economic differentiation of these countries. Szołtun (2002) has stated that if Asia created a monetary union, Japan would become the dominant country, like Germany in the euro area (admittedly, this country is not counted among the members of the Association, but among the ASEAN+3 members).

The third category of premises that would make it difficult to create a single currency zone relates to different interests. Szołtun (2002) noted that members of the Association are reluctant to create a single currency area because of their diversified interests and perception of the possible consequences resulting from monetary integration.

Madhur (2002, p. 5-7) summarized all of the above-mentioned difficulties – those related to the non-fulfilment of selected OCA theory criteria, as well as the ones connected with a conflict of interest. The author also noticed too wide of a variety of levels of economic development. What is more, he noted that fiscal and political integration, i.e. the criterion introduced by Ingram to OCA theory, is at too low of a level. Important barriers to the creation of a single currency area in ASEAN are: the weaknesses of many financial sectors, the inadequacy of the mechanisms for pooling resources at the regional and institutional level required to establish and manage the monetary union, the lack of political preconditions for monetary policy, and the current level of monetary cooperation. It also appears to be a long-term idea since the current level of economic integration is too low.

Kenen and Meade (2010) have also pointed out that the obstacle to the immediate creation of a monetary union is the lack of an institutional structure similar to the European Union, which would allow the coordination of monetary and fiscal policy in Southeast Asia. The authors indicated that some members would not agree to lose their autonomy in favour of the single monetary policy. It means that not all the ASEAN members, much less the ones belonging to ASEAN+3, would choose to reduce their sovereignty. According to Kenen and Meade, the largest economies, i.e. China and Japan, would especially like to maintain their national currencies.

ASEAN as an optimal/nonoptimal currency area

ASEAN and ASEAN+3 are socio-economically diverse groups, which is a factor that hinders the maintenance and development of the currency area. Currently, taking into account the experiences of the euro area, it seems to be unjustified to create a currency area among countries with diversified development or a diversified economic situation. The unsustainable economic position of the countries forming the single currency zone causes, for instance, domination of the richest countries (De Grauwe, 2003). The GDP of ASEAN and ASEAN+3 members is diverse (Tab. 1).

Table 1

GDP of ASEAN+3 countries measured in USD billion in 2007, 2012 and 2017

Country		GDP (in billion USD)		
		2007	2012	2017
ASEAN	Brunei	12.248	19.048	12.128
	Philippines	149.360	250.092	313.620
	Indonesia	432.217	917.870	1,015.423
	Cambodia	8.639	14.054	22.180
	Laos	4.223	10.191	16.853
	Malaysia	193.548	314.443	318.958
	Myanmar	20.182	59.938	66.719
	Singapore	180.942	295.087	338.406
	Thailand	262.943	397.558	455.276
	Vietnam	77.414	155.820	223.780
China		3,550.342	8,532.231	12,143.491
South Korea		1,122.679	1,222.807	1,530.751
Japan		4,515.265	6,203.213	4,859.951

Source: based on GDP (current US$). Online (07.08.2021).

In the years 2007-2017, there was a noticeable GDP increase among the group's members. The lowest GDP in 2017 was recorded in Brunei (USD 12.1 billion), Laos (USD 16.9 billion) and Cambodia (USD 22.2 billion). In the same year, the highest GDP was recorded in: Indonesia (USD 1,015.4 billion), Thailand (USD 455.3 billion) and Singapore (USD 338.4 billion). In the surveyed countries, beyond the Association, in 2017 the highest GDP was recorded in China (USD 12,143.5 billion), and the lowest in South Korea (USD 1,530 billion). The highest growth dynamics in the analyzed decade occurred in Laos (about 302%) and Myanmar (about 230%). Beyond the Association, in 2017, China dominated (USD 13,608 billion) in terms of ASEAN+3 GDP. During the period, the country

was characterized by dynamics of growth of around 242%. GDP decline in the years 2012-2017 among ASEAN countries occurred in Brunei (around 36%) and outside of the Association, it was recorded in Japan (around 22%).

It should be noted that in the ASEAN+3 countries there is also a significant differentiation in GDP per capita (Tab. 2).

Table 2

GDP per capita in USD in ASEAN+3 countries in 2007, 2012 and 2017

Country		GDP per capita (in USD)		
		2007	2012	2017
ASEAN	Brunei	3,266.57	47,741.91	31,628.33
	Philippines	1,670.59	2,572.63	3,102.71
	Indonesia	1,860.00	3,694.35	3,893.60
	Cambodia	631.52	95.88	1,510.32
	Laos	710.34	1,581.40	2,542.49
	Malaysia	7,243.46	10,817.44	11,373.23
	Myanmar	406.73	1,165.79	1,325.95
	Singapore	39,432.94	55,546.49	64,581.94
	Thailand	3,973.02	5,860.58	6,578.19
	Vietnam	906.28	1,735.14	2,365.62
China		2,693.97	6,316.92	9,770.85
South Korea		23,060.71	24,358.78	31,362.75
Japan		35,275.23	48,603.48	39,289.96

Source: based on: GDP per capita (current US$). Online (7.08.2021).

During the analyzed period, in the majority of the Association's countries, an increase in GDP per capita is noticeable. Taking into account ASEAN countries, the highest GDP per capita in 2017 was recorded in Singapore (USD 65 thousand), Brunei (USD 31.6 thousand) and Malaysia (USD 11 thousand). The lowest GDP per capita was recorded in Myanmar (USD 1.3 thousand), Cambodia (USD 1.5 thousand), Vietnam (USD 2.3 thousand) and Laos (USD 2.5 thousand). The highest increase in the analyzed period was recorded in Laos (257%) and Myanmar (226%). Outside of the Association, the above--average GDP per capita in 2017 was recorded in Japan (USD 39 thousand). Between 2007 and 2017, only Brunei declined in GDP per capita (around 3%). The downward trend occurred especially in the years 2012 – 2017, and then a decrease in GDP per capita by 36% was recorded in this country.

The second OCA theory criterion is inflation. In ASEAN+3, there is a diversified dynamic of changes in product prices (Tab. 3). In selected countries, apart from Japan, in 2005 and 2010 inflation was creeping or moderate.

In 2017, the Association countries recorded inflation in the range from -1% to 4.5%. The highest inflation in the last analyzed year in the ASEAN countries

Table 3

Inflation, consumer prices in ASEAN+3 countries in 2007, 2012 and 2017

Country		Inflation, consumer prices (% annually)		
		2007	2012	2017
ASEAN	Brunei	0.968	0.112	-1.261
	Philippines	2.900	3.027	2.853
	Indonesia	6.407	4.279	3.809
	Cambodia	7.668	2.933	2.891
	Laos	4.662	4.255	0.826
	Malaysia	2.027	1.664	3.871
	Myanmar	35.025	1.468	4.573
	Singapore	2.105	4.576	0.576
	Thailand	2.242	3.015	0.666
	Vietnam	8.304	9.094	3.520
China		4.817	2.620	1.593
South Korea		2.535	2.187	1.944
Japan		0.060	-0.052	0.467

Source: based on Inflation, consumer prices… Online (07.08.2021).

was recorded in Myanmar (4.6%), Malaysia (3.9%) and the Philippines (3.8%). The smallest price increases were recorded in Brunei (-1.3%), Singapore (0.6%) and Thailand (0.7%). Apart from the Association countries, in 2017 the highest inflation was recorded in South Korea (1.9%), and the lowest in Japan (0.5%). In the analyzed period, the most significant downward dynamic was recorded in Myanmar (-87%), with inflation falling from 35% to 4.6%. Between 2007 and 2017, the most moderate inflation was recorded in the Philippines (-1.6%). Beyond the association, the most significant dynamic was recorded in China (-67%) during this period.

An important indicator reflecting the economic situation is the unemployment rate. This indicator plays an indirect role in OCA theory. Unemployment in ASEAN+3 countries is relatively moderate (Tab. 4). The unemployment rate rarely exceeds 5%.

The highest unemployment rate observed in the Association countries in 2017 occurred in Brunei (9.3%), while the lowest were observed in Laos and Thailand (0.6%). In the analyzed period, the most significant increase in the unemployment rate was recorded in Brunei (it reached the level of 66%), whereas the largest downward trend was recorded in Indonesia (-48%). Beyond ASEAN countries, in 2017 the lowest unemployment rate was recorded in Japan (2.8%) and the highest rate was in China (4.4%). Between 2007-2017 the most stable unemployment rate was recorded in Cambodia (9%).

In selected countries, there is a differentiation in terms of economic openness formulated as the ratio of exports of goods and services as % of GDP (Tab. 5).

Table 4

Total unemployment as % of total workforce in ASEAN+3 countries in 2007, 2012 and 2017

Country		Total unemployment (% of total workforce) – ILO model		
		2007	2012	2017
ASEAN	Brunei	5.624	6.897	9.316
	Philippines	3.434	3.504	2.552
	Indonesia	8.060	4.468	4.185
	Cambodia	1.168	1.279	1.062
	Laos	0.865	0.690	0.603
	Malaysia	3.230	3.040	3.410
	Myanmar	0.837	0.870	1.551
	Singapore	3.900	3.720	3.907
	Thailand	1.180	0.580	0.632
	Vietnam	2.026	1.027	1.886
China		4.300	4.600	4.400
South Korea		3.200	3.200	3.700
Japan		3.900	4.300	2.800

Source: based on Unemployment… (2021).

Table 5

Export of goods and services as % of GDP in ASEAN+3 countries in 2007, 2012 and 2017

Country		Export of goods and services (% of GDP)		
		2007	2012	2017
ASEAN	Brunei	67.85	70.16	49.57
	Philippines	43.26	30.82	31.02
	Indonesia	29.44	24.59	20.19
	Cambodia	65.33	57.89	60.68
	Laos	33.61	37.88	34.60
	Malaysia	106.17	79.30	70.05
	Myanmar	0.14	11.50	19.96
	Singapore	212.78	196.72	171.42
	Thailand	68.87	69.76	68.18
	Vietnam	70.52	80.03	101.59
China		35.43	25.49	19.96
South Korea		39.18	56.34	43.09
Japan		17.49	14.54	17.77

Source: based on Exports of goods and services… Online (07.08.2021).

The largest export of goods and services as a percentage of GDP in 2017 was in Singapore (171%), while the lowest level of exports were in Myanmar and Indonesia (20%). Between 2007 and 2017, there was a downward trend in dynamics in seven countries of the Association: Brunei, Philippines, Indonesia, Cambodia, Malaysia, Singapore and Thailand. The most significant downward dynamics were observed in Malaysia and Indonesia (-34% and -31% respectively). The greatest increase in openness occurred in Myanmar, which in the analyzed period achieved dynamics at the level of 14,348%. Outside of the ASEAN countries, South Korea achieved the highest export of goods and services as a % of GDP in 2017 (43%), whereas the lowest level of export was recorded in Japan (17.7%). Between 2007-2017, there was a decrease in openness in China (-44%).

The OCA theory criterion concerning trade is trade openness of individual countries towards other members of the Association. Bilateral trade relations indicate differentiation in this respect in selected countries (Tab. 6, 7)[2].

Table 6

ASEAN+3 country codes according to the ISO 3166 standard

Brunei	BRN
Philippines	PHL
Indonesia	IDN
Cambodia	KHM
Laos	LAO
Myanmar	MMR
Malaysia	MYS
Singapore	SGP
Thailand	THA
Vietnam	VNM
China	CHN
South Korea	KOR
Japan	JPN

Source: based on the ISO 3166 standard.

[2] Table 6 presents abbreviations of the countries according to the ISO 3166 standard, which facilitate the reading of Table 7.

Table 7

Trade openness towards ASEAN+3 partners in 2018 expressed in %

	BRN	PHL	IDN	KHM	LAO	MMR	MYS	SGP	THA	VNM	CHN	KOR	JPN
BRN	X	0	0	0	0	0	0.23	0	0.04	0	0	0.11	0.02
PHL	0.59	X	3.9	0	0	0.27	1.8	2	3.2	1.3	1.4	2.1	1.6
IDN	0.71	1.3	X	0	0	0.74	3.3	8.3	4.1	1.4	1.8	1.5	2.1
KHM	0	0	0	X	0	0.05	0	1.2	3.1	1.3	0	0	0
LAO	0	0	0	0	X	0	0	0	1.7	0.25	0	0	0
MMR	0	0.01	0.51	0	0	X	0.29	0.7	1.9	0.33	0	0	0.1
MYS	8.1	3	5.4	0	0	1.6	X	11	4.7	2	1.9	1.5	2
SGP	9	6.5	7.4	0	0	2.9	14	X	3.8	1.4	2	2	3
THA	11	4.2	3.9	0	0.49	18	5.9	3.9	X	2.3	1.8	1.5	4.6
VNM	0.4	1.5	2.6	0	0.15	1.3	3.5	3	5.2	X	3.4	8.3	2.5
CHN	3.8	13	15	0	0.26	33	14	13	12	17	X	28	20
KOR	10	3.9	5.4	0	0	2.7	3.5	4	2	7	4.5	X	7
JPN	37	15	11	0.01	0.01	8.3	7.2	5.1	10	8	6	5.2	X
ASEAN	29.81	16.51	23.71	0.01	0.64	24.86	29.02	30.1	27.74	10.28	X	X	X
ASEAN+3	80.61	48.41	55.11	0.02	0.91	68.86	53.72	52.2	51.74	42.28	22.81	50.21	42.92

Source: based on Open economy tools… Online (07.08.2021).

About 20-30% of export from the majority of ASEAN countries goes to the remaining members of the Association. The exceptions are Vietnam and Cambodia, since only 10% of their export goes to other members of the group. The main export directions of the surveyed countries are: Malaysia, Singapore, Thailand and Vietnam. The largest share in trade to ASEAN+3 members was recorded in Brunei (an increase in the share of export from 30% to 80%) and Myanmar (from 25% to 68%). The share of trade with ASEAN+3 in the rest of the countries ranges from 42% to 53%. The remaining directions for export goods are: the USA, Hong Kong, India and highly developed European countries (including Germany and the Netherlands). It should be noticed that the greatest trade openness is towards the most developed countries in the association (China, Korea and Japan). The main reason for that is the depreciation of money in highly developed countries, which makes exporting cheaper and more competitive. However, this is not a desired state for developed countries since they suffer under such circumstances.

Conclusions

The economic crisis of the 1990s changed the paradigm of the monetary system. Researchers are more and more often wondering if Asia or ASEAN+3 (i.e. ASEAN member countries plus China, South Korea and Japan) could be introduced to a single currency. Economists note that a single currency could contribute to the increase of the monetary security of the entire Southeast Asian region, which means that monetary integration may be a long-term idea. Introducing a single currency would benefit both highly developed and underdeveloped countries. Already developed countries are interested in stopping the depreciation of their currency in relation to the appreciation of currencies from developing markets. On the other hand, developing countries try to stop the appreciation of their currency, which, together with the depreciation of the currency of the importing countries, leads to trade barriers. The introduction of a single currency does not generate only positives. It may also cause some problems, not only during the functioning of this currency, but also during its introduction. Considering the conducted analyses, which took into account the assumptions of the theory of optimal currency areas, ASEAN+3 should not introduce a single currency for four reasons: failure to meet the optimization criteria, diversification of socio-economic development, lack of an institutional framework and an inconsistency in the perception of monetary integration. The single currency is the future of Southeast Asia, but it should not be introduced yet.

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References

Chia, S.Y. (2013). The ASEAN Economic Community: Progress, Challenges, and Prospects. *Asian Development Bank Institute Working Papers*, *440*. http://dx.doi.org/10.2139/ssrn.2346058.

Chirathivat, S., Schroder, J., & Classen, E.M. (2005). *East Asia's Monetary Future: Integration in The Global Economy (New Horizons in Money and Finance series).* Cheltenham: Edward Elgar Publishing Limited.

De Grauwe, P. (2003). *Unia walutowa.* Warszawa: Polskie Wydawnictwo Ekonomiczne.

Exports of goods and services (% of GDP). World Bank national accounts data, and OECD National Accounts data files. The World Bank. Retrieved from https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS (07.08.2021).

Frankel, J.A., & Rose, A.K. (1997). The Endogeneity of the Optimum Currency Area Criteria. *The National Bureau of Economic Research*, *5700*(4), 487-512.

GDP (current US$). World Bank national accounts data, and OECD National Accounts data files. The World Bank. Retrieved from https://data.worldbank.org/indicator/NY.GDP.MKTP.CD (07.08.2021).

GDP per capita (current US$). World Bank national accounts data, and OECD National Accounts data files. The World Bank. Retrieved from https://data.worldbank.org/indicator/ny.gdp.pcap.cd (7.08.2021).

Gharleghi, B., Shafighi, N., Chan, B., & Fah, Y. (2015). Financial Integration and Common Currency Area in ASEAN. *Journal of Economics, Business and Management*, *1*(3), 111-114. http://dx.doi.org/10.7763/JOEBM.2015.V3.164.

Hill, H., & Menon, J. (2010). ASEAN Economic Integration: Features, Fulfillments, Failures, and the Future, ADB Working Paper Series on Regional Economic Integration, 69. Retrieved from https://www.adb.org/sites/default/files/publication/28551/wp69-hill-menon-asean-economic-integration.pdf (16.07.2021).

Inflation, consumer prices (annual %). International Monetary Fund, International Financial Statistics and data files. The World Bank. Retrieved from https://data.worldbank.org/indicator/fp.cpi.totl.zg (07.08.2021).

Ingram, J.C. (1973). The Case for the European Monetary Integration. *Essays in International Finance*, *98*, 1-33.

Kazushi, S. (2010). ASEAN Economic Integration in the World Economy – Toward the ASEAN Economic Community (AEC). *Economic Journal of Hokkaido University*, *39*, 77-88.

Kenen, P.B., & Meade, E.E. (2010). *Regional Monetary Integration*. Cambridge: Cambridge University Press.

Madhur, S. (2002). Costs and Benefits of a Common Currency for ASEAN. *ERD Working Paper Series*, *12*, 1-18. http://dx.doi.org/10.4337/9781845423384.00018.

Masini, F. (2009). Asian Monetary Integration in Recent Economic Debates. *Perspectives on Federalism*, *1*. Retrieved from http://www.on-federalism.eu/attachments/023_download.pdf (16.07.2021). http://dx.doi.org/10.2139/ssrn.1582965.

McKinnon, R.I. (1963). Optimum Currency Areas. *The American Economic Review*, *4*(53), 717-725.

Mundell, R. (1961). A Theory of Optimum Currency Areas. *American Economic Review*, *4*(51), 657-665.

Mundell, R. (2002). Does Asia need a common currency? *Pacific Economic Review*, *7*(1), 3-12. http://dx.doi.org/10.1111/1468-0106.00145.

Ogawa, E., & Kawasaki, K. (2008). Adopting a Common Currency Basket Arrangement into the „ASEAN Plus Three". *International Financial Issues in the Pacific Rim*, *17*, 219-237. http://dx.doi.org/10.7208/chicago/9780226387086.003.0008.

Onyusheya, I., Thammashote, L., & Kot, S. (2018). ASEAN: Problems of Regional Integration. *Revista Espacios*, *36*(39). Retrieved from https://www.revistaespacios.com/a18v39n36/a18v39n36p02.pdf (16.07.2021).

Open economy tools for policymakers in developing countries. The World Bank. Retrieved from https://documents.worldbank.org/en/publication/documents-reports/documentdetail/ 546231468782131518/open-economy-tools-for-policymakers-in-developing-countries (07.08.2021).

Preepremmote, P., Santipolvut, S., & Puttitanun, T. (2013). Economic integration in the Asean and its effect on empirical economic growth. *Journal of Applied Economic Sciences*, *4*(58), 922-934.

Santos-Paulino, A.U. (2017). The Asian Economic Integration Cooperation Agreement: lessons for economic and social development. *Research Paper*, *UNCTAD*, *3*. Retrieved from https://unctad.org/system/files/official-document/ser-rp-2017d3_en.pdf (16.07.2021).

Shimizutani, S. (2009). Asian Common Currency as a Driving Force of Economic Integration in East Asia: A Prospect. *Asia – Pacific Review*, *16*(2), 26-41. http://dx.doi.org/10.1080/13439000903381360.

Szołtun, A. (2002). Systemy bankowe w Azji Południowo-Wschodniej. *Materiały i Studia NBP*, *6*.

Talvas, G.S. (1993). The „New" Theory of Optimum Currency Areas. *World Economy*, *6*(16), 663-685.

Unemployment, total (% of total labor force) (modeled ILO estimate). International Labour Organization, ILOSTAT database. (2021). The World Bank. Retrieved from https://data.worldbank.org/indicator/sl.uem.totl.zs (07.08.2021).

Watanabe S., & Ogura, M. (2006). How Far Apart Are Two ACUs from Each Other?: Asian Currency Unit and Asian Currency Union. *Working Paper Series Tokio, Bank of Japan*, *6*(20). Retrieved from https://www.boj.or.jp/en/research/wps_rev/wps_2006/data/wp06e20.pdf (16.07.2021).

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ORIGINAL PAPER

SOLIDARITY ECONOMY REINTEGRATION ENTITIES IN WARMIA AND MAZURY

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JEL Classification: L31, L39, P13, 035.

K e y w o r d s: social economy, solidarity economy, social reintegration, labour market reintegration, social economy entity.

A b s t r a c t

The aim of the paper is to present solidarity economy reintegration entities and to analyse the actions they undertake for labour market reintegration and social inclusion of people at risk of social exclusion and for social and vocational rehabilitation of the disabled in the Warmia and Mazury region. The paper provides a review of the literature on the subject, based on an analysis of data from public statistics published by Statistics Poland, current studies of the Regional Centre of Social Policy in Olsztyn and scientific studies dedicated to the field of the social and solidarity economy.

The analysis has revealed that all solidarity economy entities operating in the region are focused on taking comprehensive measures aimed at counteracting social exclusion and promoting social and vocational reintegration of people who, for various reasons, are not able to perform their social and professional roles independently and effectively.

PODMIOTY REINTEGRACYJNE EKONOMII SOLIDARNEJ NA WARMII I MAZURACH

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S ł o w a k l u c z o w e: ekonomia społeczna, ekonomia solidarna, reintegracja społeczna, reintegracja zawodowa, podmiot ekonomii społecznej.

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Abstrakt

Celem artykułu jest zaprezentowanie podmiotów reintegracyjnych ekonomii solidarnej oraz analiza podejmowanych przez nie działań na rzecz reintegracji zawodowej i integracji społecznej osób zagrożonych wykluczeniem społecznym oraz rehabilitacji społecznej i zawodowej osób z niepełnosprawnościami na Warmii i Mazurach. Artykuł o charakterze przeglądowym stanowi rezultat kwerendy literatury przedmiotu, analizy danych zastanych, których źródłem są dane pochodzące ze statystyki publicznej Głównego Urzędu Statystycznego, bieżących opracowań Regionalnego Ośrodka Polityki Społecznej w Olsztynie oraz opracowań naukowych przeznaczonych dla obszaru ekonomii społecznej i solidarnej.

Przeprowadzone analizy wykazały, że wszystkie funkcjonujące w regionie podmioty ekonomii solidarnej koncentrują się na podejmowaniu wszechstronnych działań ukierunkowanych na przeciwdziałanie wykluczeniu społecznemu i reintegrację społeczną i zawodową osób, które z różnych powodów nie są zdolne do samodzielnego i efektywnego odgrywania ról społecznych oraz zawodowych.

Introduction

This paper focuses on issues related to the social economy sector (SE), understood as a specific and innovative way of strengthening social cohesion and building inter-institutional cooperation and, at the same time, as a special type of economy (Hausner *et al.*, 2006, p. 5, 6). This sector analyses economic operators oriented towards mobilising social capital, generating innovation and widening the market by including previously excluded persons (Pearce, 2003, p. 190). One of the directions of SE development is the solidarity economy, which focuses on issues related to professional activation and the social integration of people at risk of social exclusion.

In recent years, the issue of social exclusion has affected about 10 million inhabitants of Poland, experiencing various (with varying intensity) deficits; including, lack of financial resources, lack of access to material goods or access to jobs (*Krajowy program przeciwdziałania ubóstwu*..., 2020). Therefore, it becomes reasonable to ask how to support those who encounter difficulties in their daily lives so that they can avoid the consequences of the social exclusion process?

The literature offers various studies on the social and vocational reintegration of the people furthest from the labour market. However, publications on reintegration from the point of view of solidarity economy operators are scarce.

This article presents the main issues determining the role of SE from the perspective of reintegration entities of the solidarity economy. They represent the first link in the process of vocational activation for people in a difficult situation in the labour market due to disability, long-term unemployment, addictions or other difficulties (Rychły-Mierzwa, 2019, p. 18).

The main objective of the article is to present the scope of activities pursued by solidarity economy reintegration entities in Warmia and Mazury. This review used a literature study on the social and solidarity economy, and also used data

analysis as the research method, including an analysis of research results based on data from public statistics, published by Statistics Poland, current studies of the Regional Centre of Social Policy in Olsztyn and scientific studies dedicated to the area of the social and solidarity economy. In view of the multi-faceted and extensive nature of the subject, the analysis is limited to reintegration entities forming part of the solidarity economy, i.e. social integration centres (centra integracji społecznej, CIS), social integration clubs (kluby integracji społecznej, KIS), occupational therapy workshops (warsztaty terapii zajęciowej, WTP) and vocational activity establishments (zakłady aktywności zawodowej, ZAZ).

Social and solidarity economy: Theoretical discourse

The title of this subsection first requires a clarification of the term "social and solidarity economy", which is not an easy task, as this concept is defined in various ways and any attempt to synthesise these definitions encounters interpretation difficulties due to its multidimensionality (Łojko, 2019, p. 138). SE is neither a new phenomenon nor a new economic category (Defourny & Develterre, 1999, p. 3). The literature on the subject is abundant, with various approaches and interpretations of the concept referring to this sector, while the ways of defining the social economy are still debatable (Wielicka-Gańczarczyk, 2020, p. 134). On the one hand, it is still an insufficiently recognised research field dealing with the search for an appropriate form to bridge the gap between the public and the private sector by building on the social policy basis already developed to some extent by the so-called "third sector" (Grodowska *et al.*, 2008, p. 7). However, it encompasses a wide range of practices that clearly indicate its existence and distinctiveness (Nagel, 2013, p. 68). It is a type of undertaking whose purpose is to provide services or produce goods for a particular community, with human capital outweighing financial capital, a management system independent of the public sector and democratic operation (Vivet & Thiry, 2000, p. 11). The discourses concerning the ways of defining the SE sector are characterised by references to solidarity and social cohesion, responsibility and commitment, participation, autonomy and independence, aimed at meeting needs that cannot be met by other sectors (Roelants, 2002, p. 3).

Typically, SE encompasses a wide range of activities whose main objective is to improve the social, economic and environmental conditions of specific local communities and their individual units (Loxley, 2007, p. 39). It is also a response to the challenges of a competitive labour market, which is not always friendly to all its participants. One of the groups that may experience problems in finding their way in the modern labour market are individuals who, for various reasons, are at risk of social exclusion (Reichel *et al.*, 2021, p. 277).

In analysing the current evolution in the field of SE, its redefinition is evident, inter alia, by separating the concept of solidarity economy, whose key objective is to create jobs and socially reintegrate people at risk of social exclusion. Social exclusion is, therefore, an important area for generating forms characteristic for SE, as well as a criterion for distinguishing the solidarity economy (Lipowicz & Małecka-Łyszczek, 2020, p. 8). The solidarity dimension of SE is fulfilled by those entities which, as part of their activities, assume the function of creating jobs for the purpose of activating and socially reintegrating people at risk of social exclusion, providing social services of general interest and implementing public tasks in the field of local development (Chojnacka, 2020, p. 174).

The other set consists of civic organisations with a wide range of social activities (SE). Together, these constitute a certain unity that links the area of self-organised society with the economic sphere; the market (Skrzypczak, 2018). These actors are important for democratising access to social services and, by stimulating active participation in local life, facilitate the reconstruction of social ties (Graefe, 2001, p. 42).

The rest of the article focuses on the analysis of reintegration entities in Warmia and Mazury, with the aim of presenting the activities undertaken by these entities, building social awareness of the role and importance of the solidarity economy, as well as popularising and placing it in the focus of mainstream activities, especially carried out by local government authorities. As the literature shows, the common knowledge of the concept itself and of the basic forms of activity contrasts with the poor recognition of the scope of activities undertaken by the entities of the solidarity economy (Lipowicz & Małecka-Łyszczek, 2020, p. 7).

Reintegration entities in the region

Warmia and Mazury is a region characterised by a vulnerable income situation of the population, a low material standard of living and the highest frequency of households assessing their situation as extremely difficult (Czapliński & Panek, 2015). For years, the region has recorded the highest rate of registered unemployment in the country. At the end of December 2020, the unemployment rate in Poland was 6.2%, but the region had a rate of 10.1% (GUS, 2021).

The wealth level of the inhabitants of the province significantly departs from the national average. This is attributable to a number of factors, including: the low level of the average monthly salary in the national economy, which in December 2020 amounted to PLN 4,828.45, and was one of the lowest in the country, with the average monthly salary in the enterprise sector in Poland amounting to PLN 5,973.75 (*Komunikat o sytuacji społeczno-gospodarczej…*, 2021). In turn, a representative study of household budgets in 2020 showed that in Warmia and

Mazury the average monthly disposable income per person in the household was lower than the average in the country and amounted to 1,896 PLN (monthly disposable income at that time was PLN 1,919) (GUS, 2021).

The province is also characterised by a significant number of people with a disability or incapacity certificate. In 2015-2019, a total of 182,877 disability certificates were issued, of which: 20,396 (11.15%) were for persons under 16 years of age and 162,481 (88.85%) were for persons over 16 years of age (*Wojewódzki program wyrównywania szans…*, 2020, p. 10).

This high number of people with a disability or incapacity certificate may indicate the disadvantageous situation of disabled people in the labour market. The employment rate among disabled people of working age in the province has almost always been below the average rate for Poland (Fig. 1). In 2010, a relatively large difference (6.7 p.p.) was recorded. In turn in 2016, this indicator was similar in Poland and in the analysed province (with the difference amounting to 0.2 p.p.). Despite the increase in the employment rate of people with disabilities in the following years in both analysed cases, the indicator for Warmia and Mazury in 2020 was again significantly below the average for Poland (27.1%) and amounted to 19.4%. The difference, in this case, was the highest, by as much as 7.7 p.p.

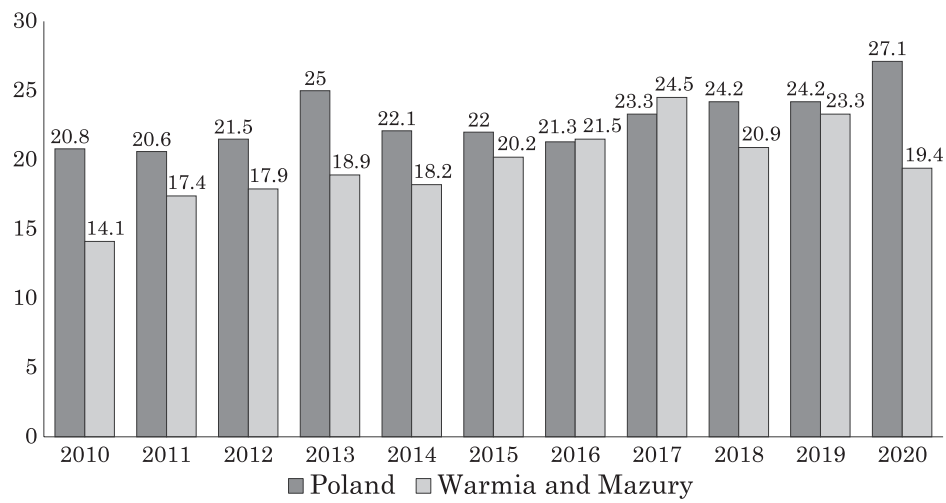

Fig. 1. Employment rate of disabled people aged 16-64 (as of Q4)
Source: own work based on data published by Statistics Poland for 2010-2020.

These issues have a direct impact on the phenomenon of social exclusion, which for years has been the subject of interest in the broader field of SE (Nosal, 2014, p. 36). The entities analysed in the SE sector in the region include those related to traditional forms of management (worker cooperatives, cooperatives of the disabled or blind) and reintegration entities. These include social integration

centres and clubs, occupational therapy workshops and vocational activity establishments. Although they belong to the social economy sector, they do not carry out economic activity in the strict meaning of the word. Manufacturing, trade or service activities are not their primary focus and are either an instrument or effect of the reintegration function (Wilimska, 2018, p. 6). This chapter, following the adopted objective, describes the functioning reintegration entities of the social and solidarity economy sector in Warmia and Mazury and describes the activities undertaken by these groups.

Social integration centres

Social integration centres (CIS) are a relatively new legal form of SE entity. Introduced in Poland in 2003, they offered a great opportunity for professional and multi-faceted assistance to people at risk of social exclusion. The centres comprehensively prepare and carry out socio-professional activities for people at risk of social exclusion, the aim of which is to implement a full range of social employment programmes to counteract poverty, marginalisation and social exclusion. The idea behind their creation and activities is based on the concept of active social policy. The basic legal acts governing their operation include the Act on Social Employment (Ustawa…, 2003), the Act on Employment Promotion and Labour Market Institutions (Ustawa…, 2004) and the Act on Public Finance (Ustawa…, 2009).

According to the data published by Statistics Poland (GUS), in 2019 there were 186 social integration centres in Poland, which provided social and professional integration services to nearly 11.1 thousand participants, with 60 participants on average per centre. While the number of centres remained unchanged compared to 2018, the number of participants decreased significantly by 8.0% (12,100 people in 2018). There was also a considerable variation in numbers by individual provinces. Most CIS were located in the following provinces: Śląskie (25), Wielkopolskie (26), Pomorskie (21) and Lubuskie (18). The fewestwere found in Łódzkie (2), Kujawsko-Pomorskie (3) and Mazowieckie (5) provinces (Fig. 2).

The activities of social integration centres are financed to a large extent from public funds (the budget of the provincial local government, the budgets of the municipalities and the Labour Fund). These entities may also apply for EU funding for their projects and their operation may also be covered from their activities (Subocz, 2017, p. 38). The profile and nature of the activities carried out over the years is unchanged due to the fact that social integration centres can only carry out certain activities, i.e. manufacturing, trade, services or agricultural production activities. Under the Act, the scope of permitted activities excludes such operations as the production and trade in products of fuel, tobacco, spirits, wine and beer, as well as other alcoholic products with an alcohol content of over

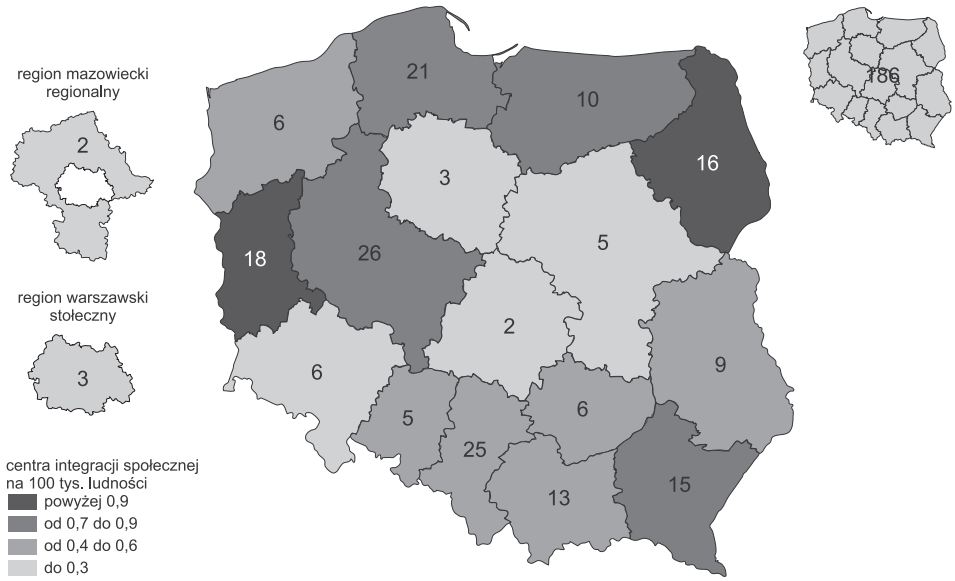

Fig. 2. Social integration centres in Poland by province in 2019
Source: based on *Centra integracji społecznej…*, (2020).

0.5% and products made of precious metals or with the participation of these metals (Act, 2003, Art. 9.1).

The number of social integration centres in Warmia and Mazury in 2015--2020 has stabilised at the level of ten entities. The activities of eight centres are carried out by NGOs and the other two by local government units (Tab. 1).

While offering social employment, the centres in Warmia and Mazury combine and simultaneously carry out activities in social and economic areas. Social integration centres in the region represent specialised entities whose main mission is to rebuild (and sustain) in these persons the ability to perform social roles independently and effectively, as well as to move independently in the labour market, leading to employment with an employer, on their own account or in social cooperatives. The list of CIS participants has remained unchanged for years; they are mostly people with primary, lower secondary or vocational education with the majority aged 25-50, mainly long-term unemployed, people released from penal institutions, alcohol addicts or homeless people. The centres organise: vocational workshops; assistance in transferring job offers; classes in self-employment or social cooperatives; participation in therapeutic activities and other social reintegration activities. CIS graduates can take advantage of assistance from the Labour Fund to start creating their own jobs (through self-employment or in the form of a social cooperative).

According to the data collected (Tab. 2), the number of participants in 2020 decreased by 66 compared to 2019, which may be directly related to the Covid-19

Table 1

Social Integration Centres in Warmia and Mazury in 2020

District	Name of entity	Name of founder	Examples of business activity
Braniewo	Social Integration Centre in Braniewo	Braniewskie Stowarzyszenie Abstynenckie w Braniewie (Braniewo Teetotallers Association in Braniewo)	repair services, care services, recycling services for municipal waste sorting, maintenance of drainage ditches, cleaning of municipal areas
Ełk	Social Integration Centre in Ełk	Stowarzyszenie Inicjatyw Społeczno-Gospodarczych im. Króla Zygmunta Augusta (Sigismund Augustus Association of Social and Economic Initiatives)	catering, commercial, cleaning, office work and bookkeeping, construction work
Ełk	Social Integration Centre in Ełk	Stowarzyszenie Adelfi (Adelfi Association)	housekeeping, care services, office services and sponsorship
Giżycko	Social Integration Centre in Giżycko	Municipality of Giżycko	care services, cleaning and general construction work
Ostróda	Social Integration Centre in Ostróda	District Board of the Polish Social Welfare Committee in Ostróda, Polish Social Welfare Committee, the Provincial Board in Olsztyn	repair and cleaning services, catering services, care services for dependants
Pisz	Social Integration Centre in Biała Piska	Ewangelickie Stowarzyszenie BETEL (Evangelical Association BETEL)	care services, cleaning services
Pisz	Social Integration Centre in Pisz	Stowarzyszenie Kobieta na PLUS (Association for the Benefit of Women)	hairdressing, beauty services, tailoring
City of Elbląg	Social Integration Centre in Elbląg	Elbląskie Stowarzyszenie Wspierania Inicjatyw Pozarządowych (Elbląg Association for Supporting Non-Governmental Initiatives)	public services
City of Elbląg	ERKON Social Integration Centre in Elbląg	Elbląska Rada Konsultacyjna Osób Niepełnosprawnych (Elbląg Advisory Board for Persons with Disabilities)	care services, tailoring, computer services
City of Olsztyn	Social Integration Centre	Samorządowy Zakład Budżetowy m. Olsztyna (Local Government Budgetary Facility of the City of Olsztyn)	cleaning services, care services, repair services

Source: own work based on: *Raport o stanie ekonomii społecznej…* (2021, p. 14).

pandemic situation. In addition, the number of economically independent persons has decreased in 2019-2020. Over the past years, the largest group among economically independent CIS participants are those who have been employed by an employer without supported employment (approximately 90%) (*Raport o stanie ekonomii społecznej…*, 2021, p. 15).

Table 2

Number of social integration centre participants covered by social and professional reintegration between 2015 and 2020

Year	2015	2016	2017	2018	2019	2020
Number of participants who have completed activities in CIS	292	309	350	433	455	389
Economically independent CIS participants	121	112	164	199	187	115

Source: own work based on *Informacja na temat centrów i klubów…* (2020, p. 12).

Social integration clubs

The activities of social integration clubs (KIS) are also aimed at social and professional reintegration. The participants of KIS operations may include persons who are socially excluded, due to their life situation, are not able to satisfy their basic life needs on their own, and are in a situation causing poverty and preventing or limiting their participation in professional, social and family life (Narodowiec *et al.*, 2010, p. 8).

In Poland, there are more than 260 such entities registered, which in the area of Warmia and Mazury in 2019 and 2020 included 48 social integration clubs, although only 42 clubs were active (social integration clubs in these three districts were not in operation: Działdowo, Gołdap and Ostróda). The entities running KIS clubs in the region are social welfare centres, municipalities and NGOs (*Wojewódzki program rozwoju ekonomii społecznej…*, 2020, p. 38). The largest number of registered KIS operates in the Olsztyn District (11), the Kętrzyn District (6) and the Iława District (5).

Social integration clubs provide psychological services, legal services, crisis intervention and correctional-educational programmes. Additionally, participants are offered job search assistance, as well as supportive and motivational discussions. Each of the above-mentioned forms of assistance is free of charge and can greatly facilitate the participation of these people in social life and in the labour market. After completing activities in social integration clubs, some participants are sent to perform community service works, public works and some of them take up employment with an employer *(Informacja na temat*

centrów i klubów integracji…, 2020, p. 30). Employment-oriented activities mainly include work for the benefit of the community. They are an important element of the activities of these entities, and they teach the rhythm of work and the associated systematic nature and responsibility; they activate and gradually allow a return to the labour market and they also provide concrete financial support (*Raport o stanie ekonomii społecznej…*, 2020, p. 19). In 2020, (due to the pandemic situation) the number of people receiving support through social integration clubs clearly decreased in comparison to the previous period: the number of participants in the social and professional reintegration programme was 1052; while in 2019 it was 2,761, and in 2018 – 2,337 (*Raport o stanie ekonomii społecznej…*, 2021, p. 16).

The main funding sources for social integration clubs are the municipal budget and funds from the District Labour Offices. Another important source of funding are EU funds. Some social integration clubs carry out projects co-financed within the Regional Operational Programme of the Warmia and Mazury Province, which are targeted at supporting people at risk of poverty and/or social exclusion by financing the functioning of social integration entities implemented under Priority Axis 11 *Social inclusion*, Measure 11.1 "Active inclusion, including with a view to promoting equal opportunities and active participation, and improving employability, *Sub-measure 11.1.1 Social and vocational activation of persons excluded and at risk of social exclusion*" (*Informacja na temat centrów i klubów integracji społecznej…*, 2020, p. 29).

It should be emphasized that the number of social integration clubs (42 active entities) does not correspond to the number of social integration centres (10 active entities), which should constitute another stage of including people at risk of social exclusion in the labour market. This situation disturbs the natural path of reintegration, rehabilitation and ultimately, the activity of their participants.

Occupational therapy workshops

Occupational therapy workshops (WTZ) are another reintegration entity. It is an organisationally and financially separate institution, which offers social and vocational rehabilitation to disabled people who are unable to find employment in the open labour market. The implementation of activities for the acquisition or restoration of skills necessary for employment is carried out through occupational therapy, during which skills are developed to perform activities of daily living and basic and specific vocational skills to enable participation in vocational training to prepare for employment. There are over 720 workshops in Poland for 26,000 people with severe and moderate disabilities. Thirty-five workshops involving 1,500 participants operate in the province. Both the number of occupational therapy workshops and the list of beneficiaries have been stable for years.

People who become participants in occupational therapy workshops benefit from the assistance of such entities for many years. Changes here are negligible. Occupational therapy workshops are mainly run by foundations, associations and municipalities and their activities are financed by grants from the State Fund for the Rehabilitation of the Disabled and from the resources of the district in which the given entity operates.

With regard to the relationship between occupational therapy workshops and vocational activity establishments, a significant disproportion should also be noted. Their number (35) does not correspond to the number of vocational activity establishments (9), which violates the natural and logical sequence of reintegration, rehabilitation and ultimately the socio-vocational activity of persons with disabilities.

Vocational activity establishments

The most important forms of professional reintegration dedicated to people with disabilities include vocational activity establishments (ZAZ). These facilities are intended for people with severe and moderate disabilities and the aim is to give these people the opportunity to lead an independent, autonomous and active life through employment and social and vocational rehabilitation.

The key objective of activities carried out in the vocational activity establishments in the region is employment, the vocational and social rehabilitation of disabled people classified as suffering from a significant or moderate degree of disability, the creation of workplaces adapted to the potential and interests of people with disabilities, the building of positive social attitudes and learning independence in the workplace and beyond and cooperation with the families of employees with disabilities. These tasks are fulfilled by the ZAZs by creating and implementing individual programmes of social and vocational rehabilitation, teaching the principles of work at a particular position and adjusting the work mode to the abilities and possibilities of disabled employees.

While the number of vocational activity establishments in the region has been stable in recent years, it is worth noting that there has been a significant increase in the number of disabled people (with severe and moderate disabilities) employed in this type of facility in the region between 2015 and 2020 (Tab. 3).

The vast majority of the vocational activity establishments are institutions with numerous years of experience in the reintegration of people with disabilities, conducting both service and production activities, while purely production activities are rare. The most common activities include catering, laundry, tailoring and cleaning services. It is worth noting that vocational activity establishments are not limited to only one profile of activity. Almost all such establishments indicate activity in several sectors (Tab. 4).

Table 3

Number of vocational activity establishments and people with disabilities employed in those entities between 2015 and 2020

Year	2015	2016	2017	2018	2019	2020
Number of establishments operating in the Warmia and Mazury Province	8	8	9	9	9	9
Number of disabled persons employed	260	263	288	290	305	305

Source: Statistical data of the Regional Social Policy Centre of the Marshal's Office of the Warmia and Mazury Province in Olsztyn.

Table 4

Vocational activity establishments in the Warmia and Mazury Province by the degree of disability and profile of activity (as of 2020)

Name	Year of founding	Entity running the establishment	Business profile
1	2	3	4
Vocational Activity Establishment in Giżycko	2004	District Starost Office in Giżycko	laundry services, tailoring, carpentry and upholstery, metalwork
Vocational Activity Establishment in Kamionek Wielki	2003	District Starost Office in Elbląg	carpentry and upholstery, wickerwork, ecological laundry
Vocational Activity Establishment in Elbląg	2004	Elbląska Rada Konsultacyjna Osób Niepełnosprawnych (Elbląg Advisory Board for Persons with Disabilities)	catering and confectionery industry, publishing
Vocational Activity Establishment in Olsztyn	2002	Polski Związek Niewidomych (Polish Association of the Blind)	tailoring, artistic products, delicatessen, catering, confectionery, gardening
Vocational Activity Establishment in Biskupiec	2011	Polskie Stowarzyszenie na rzecz Osób z Niepełnosprawnością Intelektualną Koło w Biskupcu (Polish Association for Persons with Intellectual Disability, Biskupiec Branch)	carpentry, production of firelighters, cleaning and gardening services
Vocational Activity Establishment in Ostróda	2014	Polskie Stowarzyszenie na rzecz Osób z Niepełnosprawnością Intelektualną Koło w Ostródzie (Polish Association for Persons with Intellectual Disability, Ostróda Branch)	catering, handicrafts, manufacturing, cleaning and gardening, document disposal

cont. Table 4

1	2	3	4
Vocational Activity Establishment in Bartoszyce	2014	Stowarzyszenie Integracji Osób Niepełnosprawnych SION w Bartoszycach (Association for Integration of the Disabled in Bartoszyce)	maintenance of green areas, laundry services, handicrafts, food services
"Wieża" Vocational Activity Establishment in Pisz	2015	Pisz Commune	food services, cleaning of premises/green areas and handicrafts
Vocational Activity Establishment in Nidzica	2017	Polskie Stowarzyszenie na rzecz Osób z Niepełnosprawnością Intelektualną Koło w Nidzicy (Polish Association for Persons with Intellectual Disability, Nidzica Branch)	production of firelighters, cleaning services and care of greenery, catering

Source: own work based on *Raport o stanie ekonomii społecznej…* (2020, p. 23).

The establishment of such institutions in the region is the outcome of consistent implementation of the local social policy aimed at providing comprehensive support and assistance to the disabled. The province occupies a leading position among regions in terms of jobs dedicated to the disabled.

All of the vocational activity establishments in the region are of a hybrid nature, which means that they can be placed in the SE area as entities operating in two spheres (Sochańska-Kawiecka, 2017, p. 5):

– reintegration, serving the social and professional reintegration of people at risk of social exclusion;

– economic, consisting of non-governmental organisations conducting economic activity, the profits from which support the implementation of statutory objectives.

The costs of establishing and operating the vocational activity establishments are covered mainly from the funds of the State Fund for Rehabilitation of Disabled Persons (PFRON), the local government or from other sources (own economic activity, own funds of the organiser, sponsors or public funds obtained from sources other than PFRON).

Conclusion

The main objective of the paper was to present the solidarity economy entities operating in the Warmia and Mazury region and their activities. Given the multi-faceted and extensive nature of the subject matter, the research was limited to reintegration entities.

The conducted analysis has shown that practically all types of solidarity economy reintegration entities operate in the province, conducting various activities aimed at the social and labour market reintegration of people at risk of social exclusion.

The key reintegration entities in the region are social integration centres and social integration clubs, which carry out comprehensive vocational and social reintegration. Their beneficiaries are mostly young people who experience difficulties in finding a job due to insufficient education and vocational training. Their business profile is diverse. Within the framework of vocational reintegration, participants become active and acquire qualifications in catering, care services, housekeeping, tailoring or repair work. Social integration centres and social integration clubs have become a particular bridge between the social welfare system and the labour market by creating various support opportunities,

Other important institutional elements of the system aimed at social and vocational rehabilitation of people with disabilities include occupational therapy workshops and vocational activity establishments. As it has been demonstrated, vocational activity establishments in the province operate (similarly to social integration centres and social integration clubs) in various sectors. Generally, they are not limited to carrying out a single activity profile. However, the manufacturing and service activities carried out are of a subordinate nature in this case, as the main objective is to maintain and restore the working capacity of people with disabilities and prepare them for the open labour market. It is hard to disagree with the statement that disability "must not be (…) a factor that prevents the person affected from taking up employment. It entails certain individual limitations, greater or lesser, but it does not deprive a person with a disability of the ability to undertake and perform work, or of the skills, knowledge and competences necessary to perform the employment relationship" (Pietrzak, 2010, p. 27).

In line with the assumptions of the National Programme for the Social Economy Development until 2023, the Social Solidarity Economy (KPRES, 2019, p. 21) and the provisions contained in the draft Provincial Programme for the Development of the Social and Solidarity Economy for Warmia and Mazury 2021--2025 (WPRESiS, 2020, p. 7), it is expected that the upcoming years will bring an increase in the importance of the SE sector in the implementation of both social and economic objectives. In 2023, social and solidarity economy entities will have become an important element in activating and socially integrating people at risk of social exclusion, as well as providing public services and implementing local development tasks.

This text is an invitation to further discussion and research aimed at building public awareness of the role and importance of social solidarity economics at the beginning of the third decade of the 21st century.

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References

Bezrobotni zarejestrowani i stopa bezrobocia. Stan w końcu grudnia 2020 r. (2021). Warszawa: Główny Urząd Statystyczny.

Centra integracji społecznej, kluby integracji społecznej, zakłady aktywności zawodowej, warsztaty terapii zajęciowej w 2019 r. (*Social integration centres, social integration clubs, vocational activity establishments, occupational therapy workshops in 2019*). (2020). Warszawa: Główny Urząd Statystyczny.

Chojnacka, K.J. (2020). Ekonomia społeczna w Polsce a rozwój gospodarczy. *Studia Prawno-Ekonomiczne*, *CXVI*, 157-179. https://doi.org/10.26485/SPE/2020/116/9.

Czapliński, J., & Panek, T. (2015). *Diagnoza społeczna 2015. Warunki i jakość życia Polaków.* Warszawa: Rada Monitoringu Społecznego.

Defourny, J., Develterre, P. (1999). *The Social Economy: The Worldwide Making of a Third Sector.* Universite de Liege: L'économie sociale au Nord et au Sud, De Boeck.

Goleński, W. (2019). E*konomia społeczna w Polsce – przyczynek do krytyki innowacyjności rozwiązań krajowych*. In N. Laurisz, & A. Pacut (Eds.). *Ekonomia społeczna. Innowacyjność społeczna w Polsce*. Kraków: Uniwersytet Ekonomiczny w Krakowie.

Graefe, P. (2001). Whose Social Economy? Debating State Practices in Quebec. *Critical Social Policy*, *21*(1), 35-58. https://doi.org/10.1177/026101830102100104.

Grodowska, B., Krampus-Sepielak, A., & Wiecha, K. (Eds.). (2008). *Społeczny biznes. Teoria i praktyka*. Kraków: Małopolska Agencja Rozwoju Regionalnego S.A.

Hausner, J., Kwiecińska, D., & Pacut, A. (2006). Europejski model społeczny. *Nowe Życie Gospodarcze*, 11, 5-10.

Informacja na temat centrów i klubów integracji społecznej funkcjonujących w województwie warmińsko-mazurskim wg stanu na dzień 31 grudnia 2019 r. (2020). Olsztyn: Regionalny Ośrodek Polityki Społecznej.

Informacja na temat centrów i klubów integracji społecznej funkcjonujących w województwie warmińsko-mazurskim wg stanu na 31 grudnia 2020 r. (2021). Olsztyn: Regionalny Ośrodek Polityki Społecznej.

Komunikat o sytuacji społeczno-gospodarczej województwa warmińsko-mazurskiego w grudniu 2020 r. nr 12 z 01.02. (2021). Olsztyn: Urząd Statystyczny.

Krajowy program ekonomii społecznej do 2023 roku. Ekonomia solidarności społecznej. (2020). Monitor Polski z 2019, poz. 214. Warszawa: MRiPS.

Krajowy program przeciwdziałania ubóstwu i wykluczeniu społecznemu (projekt z 19 listopada 2020 r., aktualizacja 2021-2027 z perspektywą do 2030 r.). (2020). Warszawa: MRiPS.

Lipowicz, I., & Małecka-Łyszczek, M. (2020). *Ekonomia społeczna a wykluczenie społeczne – uwagi wstępne*. In I. Lipowicz, & M. Małecka-Łyszczek (Eds.). *Ekonomia społeczna. Wykluczenie społeczne*. Kraków: Uniwersytet Ekonomiczny w Krakowie. https://doi.org/10.15678/ES.2020.1.01.

Loxley, J. (2007). *Transforming or Reforming Capitalism: Towards a Theory of Community Economic Development*. Halifax: Fernwood Publishing.

Łojko, M. (2019). *CIS jako przykład podmiotu ekonomii społecznej oraz samorządowego zakładu budżetowego w Polsce*. In A. Borcuch, & A. Krzysztofek (Eds.). *Ekonomia, finanse i zarządzanie: problemy teoretyczne i praktyczne*. Kraków: AT Wydawnictwo.

Nagel, K. (2013). Teoretyczne i definicyjne ujęcia ekonomii społecznej. *Studia Ekonomiczne*, *129*, 68-79.

Narodowiec, P., Juros, A., Bylicki, W., Sokołowska, K., & Wiśniewski, P. (2010). *Zakładanie i prowadzenie Centrum Integracji Społecznej*. Lublin: Bractwo Miłosierdzia im. Św. Brata Alberta.

Nosal, P. (2014). Symboliczno-relacyjny wymiar wykluczenia przez ubóstwo. *Studia Socialia Cracoviensia*, *2*(11), 25–44. http://dx.doi.org/10.15633/ssc.775.

Obwieszczenie Prezesa Głównego Urzędu Statystycznego z 17 grudnia 2020 r. w sprawie przeciętnego miesięcznego wynagrodzenia w sektorze przedsiębiorstw, włącznie z wypłatami z zysku, w drugim kwartale 2020 r. Dz.U. z 2020 r., poz. 56.

Pearce, J. (2003). *Social Enterprise in Anytown*. London: Calouste Gunbelkian Foundation.
Pietrzak, D. (2010). *Aktywizacja zawodowa i społeczna osób z niepełnosprawnością*. In D. Kukla, & Ł. Bednarczyk (Eds.). *Poradnictwo zawodowe dla osób z grupy szczególnego ryzyka. Wybrane aspekty*. Warszawa: Wydawnictwo Difin.
Raport o stanie ekonomii społecznej w województwie warmińsko-mazurskim w 2019 r. (2020). Olsztyn: Regionalny Ośrodek Polityki Społecznej.
Raport o stanie ekonomii społecznej w województwie warmińsko-mazurskim w 2020 r. (2021). Olsztyn: Regionalny Ośrodek Polityki Społecznej.
Reichel, J., Rudnicka, A., & Socha, B. (2021). Gospodarka społeczna – nieodkryty potencjał rynku pracy. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, *LXXXIII*(1), 277-292. https://doi.org/10.14746/rpeis.2021.83.1.20.
Roelants, B. (2002). *Defining the Social Economy?* In *Preparatory Dossier*. Praha: First European Social Economy Conference in the EU Candidate Countries.
Rychły-Mierzwa, A. (2019). Usługi aktywacji społeczno-zawodowej w małopolskich jednostkach reintegracyjnych w świetle badania ROPS w Krakowie. *Kwartalnik es.O.es*, *2*, 18-26.
Skrzypczak, B. (2018). *Ekonomia społeczna a solidarna – implikacje podziału – na podstawie KPRES oraz projektu ustawy o ekonomii społecznej i solidarnej*. Retrieved from https://www.ekonomiaspoleczna.gov.pl/download/files/EKONOMIA_SPOLECZNA/artykuly_UW/Ekonomia_spoleczna_a_solidarna.pdf (10.05.2021).
Sochańska-Kawiecka, M. (2017). *Badanie zakładów aktywności zawodowej. Raport końcowy*. Warszawa: PEFRON.
Subocz, E. (2017). Aktywna polityka społeczna wobec osób zagrożonych wykluczeniem społecznym (na przykładzie województwa warmińsko-mazurskiego). *Rozprawy Społeczne*, *11*(11), 35-43.
Sytuacja gospodarstw domowych w 2020 r. w świetle wyników badania budżetów gospodarstw domowych. (2021). Warszawa: Główny Urząd Statystyczny.
Ustawa z 13.06.2003 r. o zatrudnieniu socjalnym. Dz. U. z 2003 r., nr 122, poz. 1143.
Ustawa z 20.04. 2004 r. o promocji zatrudnienia i instytucjach rynku pracy. Dz.U. z 2004 r., nr 99, poz. 1001.
Ustawa z 27.08 2009 r. o finansach publicznych. Dz.U. z 2009 r., nr 157, poz. 1240.
Vivet, D., Thiry, B. (2000). *The Enterprises and Organizations: A Strategic Challenge for Employment. Pilot Action „Third System and Employment" of the European Commission*. Liège: CIRIEC.
Wielicka-Gańczarczyk, K. (2020). Wielowymiarowość przedsiębiorczości w polskiej literaturze naukowej. *Ekonomia Społeczna*, *2*, 126-137.
Wilimska, W. (2018). *Wstęp*. In A. Rychły-Mierzwa (Ed.). *Ukryte zasoby rynku pracy*. Kraków: Regionalny Ośrodek Polityki Społecznej.
Wojewódzki program rozwoju ekonomii społecznej i solidarnej na lata 2021-2025. (2020). Olsztyn: Regionalny Ośrodek Polityki Społecznej.
Wojewódzki program wyrównywania szans i przeciwdziałania wykluczeniu społecznemu oraz pomocy w realizacji zadań na rzecz zatrudniania osób z niepełnosprawnościami na lata 2021-2026. (2020). Olsztyn: Warmińsko-Mazurski Urząd Wojewódzki.

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ORIGINAL PAPER

STABILITY OF TAX REVENUE IN POLAND'S NATIONAL BUDGET IN 2004-2020

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K e y w o r d s: taxes, state budget, stability of tax revenue, business cycles.

A b s t r a c t

Both the amount and structure of tax revenue may change in time as they depend on numerous variables, including factors of the business cycle. However, the stability of tax revenue affects the balance of public finances and the ability to meet public obligations. The aim of this study is to evaluate the stability of tax revenue in Poland's national budget in 2004-2020. The research results indicate that both the amount and the structure of tax revenue in the national budget in 2004-2020 were stable.

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STABILNOŚĆ DOCHODÓW PODATKOWYCH BUDŻETU PAŃSTWA W POLSCE W LATACH 2004-2020

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S ł o w a k l u c z o w e: podatki, budżet państwa, stabilność dochodów podatkowych, cykle koniunkturalne.

A b s t r a k t

Zarówno wysokość, jak i struktura dochodów podatkowych mogą się zmieniać w czasie, zależą bowiem od wielu czynników, w tym czynników o charakterze koniunkturalnym. Od stabilności dochodów podatkowych zależy tymczasem stabilność finansów publicznych i możliwość wypełniania zadań publicznych. Celem badań stała się więc ocena stabilności dochodów podatkowych budżetu państwa w Polsce w latach 2004-2020. Na podstawie przeprowadzonych badań wykazano, że zarówno poziom, jak i struktura podatkowych dochodów budżetu państwa w latach 2004-2020 były stabilne.

Introduction

The national budget is the main instrument for public authorities to achieve their social and economic objectives. The revenue of the national budget consists of monies collected by the state from economic entities and households in order to finance public expenditure. It should be noted that currently only a small percentage of the state's financial needs is covered with non-tax revenue. Tax revenue is the main source of the national budget and the foundation of the state's policy.

Public authorities use various types of taxes which contribute to the achievement of social and economic objectives to a varying degree, as part of the fiscal policy implemented by the state. The authorities are obliged to use taxes in a rational manner, properly combining the state fiscal interest with the economic interest of taxpayers, and to manage the social policy so as to avoid unfavorable effects of taxation (Alińska & Woźniak (Eds.), 2015, p. 115).

The most important sources of tax revenue in the national budget are the VAT, excise tax, personal income tax and corporate income tax. The amount of revenue from each source and its share in the overall tax revenue may vary in time, similarly to the share of tax revenue in the aggregate income in the national budget. Fluctuations in the amount and structure of the tax revenue in the national budget may follow from changes in the legal regulations concerning specific types of taxes, e.g. in the scope and the base of taxation, the level of taxation or reductions and exemptions. As S. Owsiak indicates (2011, p. 25), the stability of tax revenue in the national budget may also be at risk from an economic recession, which entails a decrease in the public revenue caused by the slowdown of the economic growth.

In the light of the above, the aim of this research was to evaluate the stability of the tax revenue in Poland's national budget in 2004-2020. The investigation concerned the stability of the amount and the structure of tax revenue in Poland in that period. It was assumed that the income from a given source is more stable in time when it is subject to fewer and smaller fluctuations, and vice versa (Garsztka & Cieślukowski, 2014, p. 193-209).

The stability of the tax revenue was estimated using a coefficient of variation calculated with the following formula (Panek & Zwierzchowski, 2013, p. 21):

$$V = \frac{s}{|\bar{x}|},$$

where:

s – level of standard deviation,

$\bar{x}$ – arithmetic mean, assuming that $\bar{x} \neq 0$.

The evaluation of tax revenue stability was conducted along with the interpretation of the coefficient of variation proposed by P. Garsztka & M. Cieślukowski (2014, p. 201):

- $V < 0.1$ – very stable,
- $0.1 \leq V < 0.2$ – stable,
- $0.2 \leq V < 0.3$ – moderately stable,
- $0.3 \leq V < 0.4$ – unstable,
- $V \geq 0.4$ – very unstable.

The research was based on the data from 2004-2020. The selection of this period followed from the fact that many changes in the Polish tax law have been implemented since 2004, the year marked by Poland's accession to the European Union, and their goal has been to harmonize the Polish tax law with that of the European Union. Moreover, this period is long enough to conduct an analysis of the changes in the stability of the tax revenue in the national budget, both during an economic expansion and economic slowdown.

The study employed the following research methods: analysis of the relevant literature, analysis of the sources, statistical method, and induction method.

Literature review

The national budget is the main instrument for public authorities to achieve their social and economic objectives. These objectives take the form of specific policies implemented by the government, and they are financed from the state revenue, in which taxes have the largest share (Alińska & Woźniak (Eds.), 2015, p. 115).

The Polish Constitution of 2 April 1997 is the supreme and the most general legal act which regulates the national revenue (Dziennik Ustaw of 1997, no. 78, item 483, with subsequent amendments). According to Article 216, the funds towards public objectives are collected and spent according to the law, namely the Act on Public Finances, of 27 August 2009 (Dz.U. 2017, item 2077, consolidated). The collection of the national budget revenue is the foundation of the state's financial policy and is a public responsibility. The correct distribution of the budget revenue constitutes the basis of the proper structure of the budget (Bitner *et al.*, 2017, p. 84).

The national budget revenue is made of funds collected in various forms, both from domestic and foreign economic entities. It should be noted that this revenue does not create any financial obligations of the state towards its citizens, except for the political obligation towards the electorate to spend it properly (Żyżyński, 2009, p. 87). The main source of revenue are public levies, seen as a classic charge imposed on households and enterprises. Its main feature is the fact that the entity being levied does not obtain any direct benefits in return (Kosidłowska, 2013; Ważna, 2018).

The revenue of the state originates from tax and non-tax income. The tax income comes from indirect taxation, such as the VAT, excise, gambling and lottery tax, as well as from direct taxation, mostly from the personal income tax (PIT) and corporate income tax (CIT), tonnage tax, and mining tax on some extracted resources. The non-tax revenue includes non-tax public and legal income, such as charges, civil law income following from ownership rights to public funds and other assets, duties resulting from guarantees and warranties granted by the State Treasury, income from the surplus in current assets of executive agencies, duties imposed by the state budget units and those collected by units of the local government during the performance of delegated tasks (Bitner *et al.*, 2017, p. 150). The list of sources of revenues to the budget is not finite as the budget can be supplied with income from other sources, defined in separate laws or international agreements (Juja, 2011, p. 57).

Currently, non-tax revenues cover only a small share of the financial needs of the state. The main source of income to the budget is tax revenue, which constitutes the foundation for the achievement of the objectives adopted by the state. Public authorities take advantage of many types of taxes, which contribute to the implementation of the adopted social and economic policies in various

degrees, as part of the overall fiscal policy (Stecuła, 2018, p. 574). In an adequately rational taxation policy, it is assumed that the amount of taxes should not suppress the economic activity. On the other hand, the amount of tax should ensure the necessary supply, for social reasons, of funds in the national budget. The most important function of taxes is their fiscal role, which involves the supply of funds towards the implementation of the adopted state policy.

The concept of tax is defined by the provisions of Article 6 of the Tax Code Act of 29 August 1997 – (Dz.U. item 800, consolidated). According to this definition, a tax is a public-law, gratuitous, mandatory and non-refundable financial charge for the sake of the State Treasury, and for all units of the state's administrative division (provinces, districts and municipalities), as stipulated in the Tax Act (Borodo, 2014, p. 136). According to the OECD definition, the term "taxes" refers to mandatory and non-refundable payments towards the sector of national and local government institutions (OECD, 2020, p. 224). R. Rybarski (2015, p. 12) maintains that "a tax is a compulsory charge in money or other financial assets, which is imposed by the state on their subordinates". According to Article 217 of the Constitution of the Republic of Poland of 2 April 1997 (Dz.U. 1997, no. 78, item 483, with subsequent amendments), the imposition of taxes and other public duties, definition of subjects, objects and levels of taxation, as well as principles for granting reliefs and redemptions, and the categories of subjects entitled to tax exemptions are all regulated exclusively by acts of law.

The amount of taxes from specific types of taxation and their share in the total tax revenue depend on many factors, and as such can vary in time. It is important then that such changes are not too rapid and allow for smooth implementation of the state policies. It is therefore understandable that the issue of stability in the budget revenue, including tax revenue, is considered essential and draws attention of scholars both in Poland and abroad (cf. Dye & Merriman, 2004; Carroll, 2009; Yan, 2012; Czudec, 2014; Klank, 2014; Wójtowicz, 2014; Galiński, 2015). Many authors emphasize that the security of revenue sources plays a key role in the proper achievement of public objectives, both nationally and locally, in local government units. It is a prerequisite for the efficient attainment of these objectives (Bożek, 2016, p. 34; Śmiechowicz, 2016, p. 173; Dworakowska, 2018, p. 53; Wichowska & Ostrowska, 2018). It should be noted that the wider the range of objectives and the higher their importance to the public and to the proper functioning and development of the country, the more important the issue of revenue stability (Śmiechowicz, 2016, p. 173).

The notion of revenue stability has not been clearly defined in the literature. Some authors stress that the revenue which bears the burden of a properly structured system of public finances should have specific attributes, such as (Wójtowicz, 2014, p. 138, 139; Poniatowicz, 2016, p. 9, 10):

– fiscal efficiency – allowing for the effective implementation of basic public policies;

– anti-cyclical – allowing for the implementation of these policies regardless of an phase in the business cycle;

– stability – involving the relative legal stability of this revenue.

Some authors indicate, however, that the public revenue can only be considered stable if it supplies the national budget with adequate funds regardless of an phase in the business cycle (cf. Cattoir, 2004; Owsiak, 2011). Others stress that in fact stable public revenue is properly correlated with economic cycles (cf. Fox, 2004; Kawecka-Wyrzykowska, 2008). And some scholars propose a more universal approach to the research of public revenue stability. They investigate the stability of revenue exclusively in the context of income fluctuations, with no reference to the fiscal efficiency and business cycle (see Garsztka & Cieślukowski, 2014). In this approach, the revenue from one specific source is treated as more stable when it is subject to fewer fluctuations, and vice versa. This understanding and manner of measuring stability has been adopted in this research.

It is worth mentioning that national governments which try to prevent the instability of budget revenue strive to determine the optimal contents of their tax portfolio. They want to own a mix of tax revenue that enables them to grow their income during an economic expansion, so as the planned spending can be done with no major changes of tax rates. At the same time they try to maintain the relative stability of tax revenue so as not to suffer major financial limitations during an economic contraction (Felix, 2008, p. 63). It is without doubt that the business cycle affects the income, consumption, and investment, and thus the amount of tax revenue (Schunk & Porca, 2005; Lubieniecka, 2013). The diminished budget income during an economic slowdown is then a difficult fiscal problem to national governments (Mikesell & Mullins, 2010, p. 246). For the local government units, it may mean a decrease in financial independence (cf. Heller, 2006; Heller & Farelnik, 2013; Bisogno *et al.*, 2017; Dziemianowicz *et al.*, 2018; Wichowska & Wierzejski, 2019).

Results

Tax revenue constitutes the most important source of the overall national budget. The tax revenue in Poland in the studied period included taxes collected through the VAT, excise duties, gambling and lottery tax, personal and corporate income tax, mining tax levied on some extraction enterprises, and taxes from some financial institutions. Table 1 shows the amount of tax income for the national budget from these taxes in 2004-2020.

The amount of tax revenue increased in the studied period from PLN 135.6 bn to PLN 370.3 bn, which means that is nearly trebled. Changes in the amount of tax revenue in following years showed an evident increasing tendency. A drop in the tax revenue in the national budget was only reported in two years: 2009

Table 1

Tax revenue of the national budget in 2004-2020 (in bn PLN)

Year	Total revenue	VAT	Excise duty	Gambling and lottery tax	CIT	PIT	Mining tax on some extraction	Tax on some financial institutions
2004	135.6	62.3	37.9	0.8	13.1	21.5		
2005	155.9	75.4	39.5	0.8	15.8	24.4		
2006	174.9	84.4	42.1	0.9	19.3	28.1		
2007	206.4	96.3	49.0	1.1	24.5	35.4		
2008	219.5	101.8	50.5	1.4	27.2	38.7		
2009	214.9	99.5	53.9	1.6	24.2	35.8		
2010	222.6	107.9	55.7	1.6	21.8	35.6		
2011	243.2	120.8	57.9	1.5	24.9	38.1		
2012	248.3	120.0	60.4	1.4	25.1	39.8	1.4	
2013	241.7	113.4	60.7	1.3	23.1	41.3	1.9	
2014	254.8	124.3	61.6	1.2	23.3	43.0	1.4	
2015	259.7	123.1	62.8	1.3	25.8	45.0	1.6	
2016	273.1	126.6	65.7	1.4	26.4	48.2	1.3	3.5
2017	315.3	156.8	68.3	1.6	29.8	52.7	1.8	4.3
2018	349.4	174.9	72.1	1.9	34.6	59.6	1.7	4.5
2019	367.3	180.9	72.4	2.3	40.0	65.4	1.5	4.7
2020	370.3	184.6	71.8	2.3	41.3	63.8	1.7	4.8

Source: developed by the authors, based on reports of national budget execution in years 2004-2020.

and 2013, both due to cyclical factors and the slowdown of the economic growth. The lower tax revenue in 2009 also resulted from the decrease in the rates of personal income tax, implemented in that year.

An analysis of the collected data suggests that the main source of tax revenue in Poland are consumption taxes, namely the VAT and excise duties. The highest revenue is collected from the VAT, with the revenue from this tax growing from PLN 62.3 bn in 2004 to PLN 184.6 bn in 2020, which constitutes a nearly threefold increase. It is also evident that the revenue from this tax was subject to fluctuations. In 2004-2008, the revenue from the VAT was on the rise, but in 2009, most likely due to the global financial crisis, the VAT revenue decreased. Other years when the VAT revenue declined were 2012, 2013, and 2015.

Another significant source of tax revenue is the excise duty. The budget revenue from this tax stood at PLN 37.9 in 2004 and surged to PLN 71.8 bn, which is an increase by 89.4%. It should be noted that the income from this tax was increasing all through the period of 2014-2019. A slight decrease in the excise duty revenue took place only in 2020.

The third significant source of revenue for the national budget is the personal income tax (the PIT). In the studied period, the income from this tax increased from PLN 21.5 bn to PLN 63.9 bn, or by 196.7%. Moreover, the income from this tax had seen the rise in nearly every analyzed year. The PIT revenue dropped only in years 2009-2010, which followed from the implementation of lower tax rates for this tax.

Another important source of income for the national budget is the corporate income tax (the CIT). There was a threefold increase in tax revenue from this charge, from PLN 13.1 bn in year 2004 to PLN 41.3 bn in 2020. It should be noted that the revenue from this tax was not free from some fluctuations.

A much less significant amount of revenue comes from the gambling and lottery tax, and from the mining tax on some extraction, which was introduced in 2012, or the tax on some financial institutions, introduced in Poland's tax system in 2016.

What follows from the above is that the budget revenue from the analyzed taxes obviously expanded over the studied period. For these taxes, periods of fluctuations were evident in specific years. It should be noted that such fluctuations resulted from a variety of factors, including the current phase of the business cycle, changes in retail prices, Poland's foreign trade balance and changes in the tax system.

To determine how stable the tax revenue was in Poland in years 2004-2020, an analysis was made of the income stability of each of the enumerated taxes. This stability was measured using a classic variation coefficient, which must be interpreted as inversely correlated to the stability of income: the more stable the income, the lower value of the coefficient should be expected. The values of the variation coefficient for the total and particular tax revenue are presented in Table 2.

Table 2

Analysis of the tax revenue stability in Poland in years 2004-2020

Specification	Arithmetic mean (in PLN bn)	Standard deviation (in PLN bn)	Variation coefficient
VAT tax	120.76	34.64	0.287
Excise duty	57.78	10.76	0.186
Gambling and Lottery tax	1.44	0.43	0.297
Personal Income Tax	25.89	7.18	0.277
Corporate Income Tax	42.14	12.30	0.292
Mining tax on some extractions	1.59	0.19	0.120
Tax on some financial institutions	4.36	0.46	0.106

Source: developed by the authors, based on the data presented in Table 1.

In line with the interpretation of the variation coefficient, years 2004-2020 witnessed a stable level of income from the excise duty, mining tax on some extractions, and tax on some financial institutions. The coefficient of variation for these taxes did not exceed the value of 0.2. For other taxes, namely the tax on gambling and lottery, VAT, PIT, and CIT, the coefficient of variation assumed values between 0.2 and 0.3, which is interpreted as moderate stability.

Different amounts of revenue to the national budget from specific types of taxes translate into the structure of tax revenue. Table 3 shows the share of specific types of taxes in the total amount of tax revenue in years 2004-2020

Table 3

Structure of the national budget tax revenue in years 2004-2020 (%)

Year	Total tax revenue	VAT	Excise duty	Gambling and lottery tax	CIT	PIT	Mining tax on some extractions	Tax on some financial institutions
2004	100	45.9	27.9	0.6	9.7	15.9	0.0	0.0
2005	100	48.4	25.3	0.5	10.1	15.7	0.0	0.0
2006	100	48.3	24.1	0.5	11.0	16.1	0.0	0.0
2007	100	46.7	23.7	0.5	11.9	17.2	0.0	0.0
2008	100	46.4	23.0	0.6	12.4	17.6	0.0	0.0
2009	100	46.3	25.1	0.7	11.3	16.7	0.0	0.0
2010	100	48.5	25.0	0.7	9.8	16.0	0.0	0.0
2011	100	49.7	23.8	0.6	10.2	15.7	0.0	0.0
2012	100	48.3	24.3	0.6	10.1	16.0	0.6	0.0
2013	100	46.9	25.1	0.5	9.6	17.1	0.8	0.0
2014	100	48.8	24.2	0.5	9.1	16.9	0.5	0.0
2015	100	47.4	24.2	0.5	9.9	17.3	0.6	0.0
2016	100	46.4	24.1	0.5	9.7	17.6	0.5	1.3
2017	100	49.7	21.7	0.5	9.5	16.7	0.6	1.4
2018	100	50.1	20.6	0.5	9.9	17.1	0.5	1.3
2019	100	49.3	19.7	0.6	10.9	17.8	0.4	1.3
2020	100	49.9	19.4	0.6	11.2	17.2	0.5	1.3

Source: developed by the authors, based on reports on the national budget execution in years 2004-2020.

The VAT tax generates the largest share of the tax revenue. In 2004, its share in the total tax revenue amounted to 45.9%, and it had grown to 49.9% by 2020, which was not its highest value in the analyzed period. The VAT reached the highest share in the total tax revenue in 2018, when it amounted to PLN 174.9 bn, which constituted 50.1% of the total revenue. It can be concluded

that the VAT is the most efficient tax, in addition to which it is the state which budget income in its entirety. Its average share in the total tax revenue in 2004--2020 stood at 48%.

A large portion of the national budget revenue is the income from excise duties. The share of this tax reached 27.9% at the beginning of the studied period, but dropped to 19.4% in 2020. This resulted from the much weaker dynamics of growth of the income from this tax than those from the VAT or the personal income tax. The average share of the excise duty in the total tax revenue during the analyzed period reached 23.6%.

The largest share in the tax revenue for the national budget was from the personal income tax, ranging from 15.9% in 2004 to 17.2% in 2020, which was not its highest level within the analyzed years. The PIT reached the highest share of 17.8% in 2018.

Another significant position in the overall tax revenue is the corporate income tax, whose share ranged from 9.7% in year 2004 to 11.2% in 2020, a slight increase over the years. Its average share in the tax revenue in years 2004-2020 amounted to 10.4%.

The structure of tax revenue in the national budget is therefore diverse, but dominated by four types of taxes. The impact of other taxes is slight. For example, the revenue from the tax on gambling and lottery was between 0.5% and 0.7% of the total tax revenue. Similarly, the share of the mining tax on some extractions ranged between 0.5% and 0.8% of the total revenue. The tax on some financial institutions, introduced in 2019, constituted between 1.3% and 1.4% of the total tax revenue.

As mentioned above, the structure of the tax revenue in the national budget is diverse, but is it stable? To answer this question, an analysis of the stability of the tax revenue structure in the national budget was carried out for years 2004-2020. The results of this analysis are presented in Table 4.

Table 4

Analysis of the stability of tax revenue structure in Poland in 2004-2020

Specification	Arithmetic mean (in %)	Standard deviation (in percentage points)	Variation coefficient
VAT	48.04	1.37	0.029
Excise duty	23.60	2.11	0.090
Gambling and lottery tax	0.57	0.08	0.131
CIT	10.36	0.89	0.085
PIT	16.73	0.70	0.042
Mining tax on some extractions	0.55	0.10	0.191
Tax on some financial institutions	1.30	0.03	0.024

Source: developed by the authors, based on the data presented in Table 3.

The analysis of the data presented in the table above leads to the conclusion that the structure of the tax revenue was stable in 2004-2020. The variation coefficient for the VAT, excise duty, CIT and the tax on some financial institutions assumed values below 0.1, which indicates their very stable share in the total revenue. On the other hand, the same coefficient for the mining tax and the tax on gambling and lottery reached above 0.1, which, in line with the assumed interpretation of this indicator, meant their stable share in the total tax revenue.

It is worth noting that the variation coefficient achieved a very low value for the VAT revenue, which means that the share of this tax in the overall mix of the revenue is very stable. This may result from the fact that the VAT is a charge on consumption, which is less sensitive to the business cycle than taxpayers' income, which affects the revenue from income taxes.

Conclusions

The revenue from particular types of taxes, and its share in the total tax revenue may change in time, along with the changes in legal provisions concerning specific tax regulations, and with the factors of cyclical nature. At the same time, the stability and the structure of tax revenue are very important for the balance of public finances and the ability of the state to fulfil its responsibilities. Stable tax revenue protects the state during periods of economic slowdown, ensuring predictable supply of funds in the national budget, which is therefore easier to adopt in the parliament. Hence, the above study was conducted to evaluate the stability of tax revenue in Poland's national budget in 2004-2020. The results of our analyses can be summarized as follows:

1. The value of tax revenue in 2004-2020 in Poland nearly trebled. The largest revenue flow came from the VAT, the value of which increased nearly threefold, from PLN 62.3 bn in 2004 to PLN 184.6 bn in 2020. This tax was the most efficient one, generating the largest part of the tax revenue. Its share in the total tax revenue stood at 45.9% in 2004 and increased to 49.9 in 2020, which was not the highest value during the studied period. The average share of the VAT revenue in the analyzed years was 48% of the total tax income.

2. The second important source of tax income was the excise duty. The revenue from this tax went up from PLN 37.9 bn in 2004 to PLN 71.8 bn, which constitutes an 89.4% increase. It should be noted that the revenue from this tax was constantly rising, while its share in the total tax revenue decreased from 27.9% in 2004 to 19.4% in 2020. The average share of the excise duty in the national tax revenue in the analyzed period amounted to 23.6%.

3. Another significant tax resource for the national budget was the personal income tax. The income from this tax rose from PLN 21.5 bn in 2004 to PLN 63.8 bn in 2020, i.e. by 196.7%. Moreover, the income from this tax increased

in nearly every analyzed year. The share of this tax in the total revenue also increased, from 15.9% in 2004 to 17.2% in 2020.

4. The corporate income tax was another important source of tax revenue for the national budget. The revenue from this source rose by over three times – from PLN 13.1 bn in 2004 to PLN 41.3 bn in 2020. The share of the CIT in the total tax revenue increased from 9.7% in 2004 to 11.2% in 2020.

5. Despite some fluctuations observed in 2004-2020 in the amount of revenue from particular types of taxes, the level of income from the excise duty, mining tax on some extractions, and tax on some financial institutions proved to be stable. In turn, the level of revenue from the gambling tax, VAT, PIT and CIT can be characterized as moderately stable. It should be noted that a change in the stability of the personal income tax was most likely due to changes in the tax rates which were introduced during the analyzed period.

6. The structure of the tax revenue in Poland in 2004-2020 appears even more positive. For the VAT, excise duty, PIT, CIT, and the tax on some financial institutions, the structure turned out to be particularly stable. As for the gambling tax and the mining tax on some extractions, it was stable. One might even venture the opinion that the global financial crisis, which ensued in 2008, did not throw the tax revenue in Poland off balance.

To sum up, the stable level and structure of tax revenue in Poland is beneficial to the Polish economy, as reliable income to the national budget protects the state during an economic recession and ensures a predictable supply of funds to the state treasury.

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References

Alińska, A., & Woźniak, B. (Eds.). (2015). *Współczesne finanse publiczne*. Warszawa: Centrum Doradztwa i Informacji Difin.

Bisogno, M., Cuadrado-Ballesteros, B., & García-Sánchez, I.M. (2017). Financial Sustainability in Local Governments: Definition, Measurement and Determinants. In M.P.R. Bolívar (Ed.). *Financial Sustainability in Public Administration, Exploring the Concept of Financial Health*. Cham: Palgrave Macmillan. https://doi.org/10.1007/978-3-319-57962-7.

Bitner, M., Chojna-Duch, E., Grzybowski, M., Chowaniec, J., Karwat, P., Kornberger-Sokołowska, E., Lachowicz, M., Litwińczuk, H., Modzelewski, W., Radzikowski, K., Supera-Markowska, M., Slifirczyk, M., Tetłak, K., & Waluga, M. (2017). *Prawo finansowe*. Warszawa: Wolters Kluwer Polska SA.

Borodo, A. (2014). *Polskie prawo finansowe zarys ogólny*. Toruń: Dom Organizatora.

Bożek, W. (2016). Dochody podatkowe budżetu państwa i ich znaczenie w finansowaniu zadań publicznych – analiza wybranych zagadnień. In W. Bożek (Ed.). *System podatkowy w Polsce. Jego rola i znaczenie w procesach gospodarowania*. Szczecin: Wydział Prawa i Administracji Uniwersytetu Szczecińskiego.

Carroll, D.A. (2009). Diversifying Municipal Government Revenue Structures: Fiscal Illusion Or Instability? *Public Budgeting and Finance*, *29*(1), 27-48. https://doi.org/10.1111/j.1540-5850.2009.00922.x.

Cattoir, P. (2004). Tax-Based UE Own Resource: An Assessment. *European Commission Taxation Papers, Working Paper*, *1*, 1-47.

Czudec, A. (2014). Znaczenie transferów zewnętrznych w kształtowaniu stabilności finansowej jednostek samorządu terytorialnego. *Nierówności Społeczne a Wzrost Gospodarczy*, *40*(4), 17-30.

Dye, R.F., & Merriman, D.F. (2004). State Revenue Stability: Alternative Conceptualizations. *Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association*, *97*, 258-268.

Dworakowska, M. (2018). Dochody budżetowe jednostek samorządu terytorialnego z perspektywy absorpcji funduszy unijnych. *Optimum. Economic Studies*, *3*(93), 51-62. https://doi.org/10.15290/oes.2018.03.93.05.

Dziemianowicz, R.I., Kargol-Wasiluk, A., & Bołtromiuk, A. (2018). Samodzielność finansowa gmin w Polsce w kontekście koncepcji good governance. *Optimum. Economic Studies*, *4*(94), 204-219. https://doi.org/10.15290/oes.2018.04.94.16.

Felix, R.A. (2008). The growth and volatility of state tax revenue sources in the Tenth District. *Economic Review*, *93*(Q III), 63-88.

Fox, W.F. (2004). The Ongoing Evolution of State Revenue System. *Marquette Law Review*, *88*, 19-44.

Galiński, P. (2015). Stabilność dochodów z podatku dochodowego od osób fizycznych w jednostkach samorządu terytorialnego w Polsce. *Zarządzanie i Finanse. Journal of Management and Finance*, *13*(4), 5-17.

Garsztka, P., & Cieślukowski, M. (2014). Ocena stabilności dochodów publicznych na przykładzie zasobów własnych Unii Europejskiej w latach 2000-2010. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, *76*(3), 193-209. https://doi.org/10.14746/rpeis.2014.76.3.14.

Heller, J. (2006). Samodzielność finansowa samorządów terytorialnych w Polsce. *Studia Regionalne i Lokalne*, *2*(24), 137-151.

Heller, J., & Farelnik, E. (2013). Finanse i samodzielność ekonomiczna a ustrój samorządów terytorialnych w Polsce. *Studia Regionalne i Lokalne*, *2*(52), 81-94. http://dx.doi.org/10.7366/1509499525205.

Juja, T. (2011). *Finanse Publiczne*. Poznań: Wydawnictwo Uniwersytetu Ekonomicznego w Poznaniu.

Kawecka-Wyrzykowska, E. (2008). VAT jako nowe źródło dochodu budżetu Unii Europejskiej. In E. Kawecka-Wyrzykowska (Ed.). *Budżet dla Unii Europejskiej po 2013 roku. Implikacje dla Polski*. Warszawa: Szkoła Główna Handlowa.

Klank, L. (2014). Stabilność finansowa jednostek samorządu terytorialnego. *Przedsiębiorczość i Zarządzanie*, *15*(9), 71-86.

Konstytucja Rzeczypospolitej Polskiej z dnia 2 kwietnia 1997 r. Dz.U. z 1997 r., nr 78, poz. 483, ze zmianami.

Kosidłowska, A. (2013). Tendencje zmian w podatkach dochodowych budżetu państwa w wybranych krajach Europy Środkowo-Wschodniej. *Annales Universitatis Mariae Curie- Skłodowska Lublin-Polonia, Sectio H*, *47*(3), 327-335. http://dx.doi.org/10.17951/h.2013.47.3.327.

Lubieniecka, M. (2013). Budżet państwa w obliczu wahań koniunktury gospodarczej na przykładzie gospodarki polskiej. *Nierówności społeczne a wzrost gospodarczy*, *30*, 245-260.

Mikesell, J.L., & Mullins, D.R. (2010). State and Local Revenue Yield and Stability in a Recession: The Virtues of Cyclical versus Secular Adequacy and the Necessity of Policy Responses. Proceedings of the 102nd Annual Conference on Taxation. Washington: National Tax Association.

OECD. (2020). *Revenue Statistics 2020*. Paris: OECD Publishing. https://doi.org/10.1787/8625f8e5-en.

Owsiak, S. (2011). Stabilność systemu zasilania finansowego a nowatorskie zarządzanie podmiotami publicznymi w warunkach kryzysu. In S. Owsiak (Ed.). *Nowe zarządzanie finansami publicznymi w warunkach kryzysu*. Warszawa: Polskie Wydawnictwo Ekonomiczne.

Panek, T., & Zwierzchowski, J. (2013). *Statystyczne metody wielowymiarowej analizy porównawczej. Teoria i zastosowania*. Warszawa: Oficyna Wydawnicza Szkoły Głównej Handlowej w Warszawie.

Poniatowicz, M. (2016). Stabilność finansowa jednostek samorządu terytorialnego w aspekcie nowej perspektywy finansowej Unii Europejskiej i zmian w systemie dochodów samorządowych. *Ekonomiczne Problemy Usług*, *125*, 7-23. https://doi.org/10.18276/epu.2016.125-01.

Rybarski, R. (2015). *Nauka skarbowości*. Warszawa: Wydawnictwo Wolters Kluwer Polska SA.

Schunk, D., & Porca, S. (2005). State-Local Revenue Diversification, Stability, and Growth: Time Series Evidence. *The Review of Regional Studies*, *35*(3), 246-265.

Stecuła, K. (2018). Analiza dochodów podatkowych budżetu Polski w latach 2009-2015. *Zeszyty Naukowe Politechniki Śląskiej. Seria: Organizacja i Zarządzanie*, *117*(1996), 573-586. http://dx.doi.org/10.29119/1641-3466.2018.117.38.

Śmiechowicz, J. (2016). Stabilność dochodów gmin w kontekście ich władztwa podatkowego i fakultatywności opłat lokalnych. *Studia Ekonomiczne. Zeszyty Naukowe Uniwersytetu Ekonomicznego w Katowicach*, *294*, 173-184.

Ustawa z dnia 29 sierpnia 1997 r. – Ordynacja podatkowa. Dz.U. z 2018 r., poz. 800, tekst jednolity.

Ustawa z dnia 27 sierpnia 2009 r. o finansach publicznych. Dz.U. z 2017 r., poz. 2077, tekst jednolity.

Ważna, E. (2018). Podatki pośrednie jako źródło dochodów budżetu państwa w Polsce w latach 2004-2017. *Zeszyty Naukowe Politechniki Śląskiej. Seria: Organizacja i Zarządzanie*, *132*, 597-608. http://dx.doi.org/10.29119/1641-3466.2018.132.43.

Wichowska, A., & Ostrowska, A. (2018). Stabilność finansowa gmin na przykładzie gmin województwa warmińsko-mazurskiego. *Studia Prawno-Ekonomiczne*, *109*, 339-354. https://doi.org/10.26485/spe/2018/109/2.

Wichowska, A., & Wierzejski, T. (2019). Revenue Autonomy and Entrepreneurship in the Municipalities of the Warmian-Masurian Voivodeship. *Olsztyn Economic Journal*, *14*(1), 75-86. https://doi.org/10.31648/oej.3647.

Wójtowicz, K. (2014). Udział w podatkach państwowych a problem stabilności fiskalnej jednostek samorządu terytorialnego w Polsce. *Annales Universitatis Mariae Curie-Skłodowska. Sectio H*, *43*(2), 135-143.

Yan, W. (2012). The Impact of Revenue Diversification and Economic Base on State Revenue Stability. Journal of Public Budgeting, Accounting & Financial Management, 24(1), 58-81. https://doi.org/10.1108/JPBAFM-24-01-2012-B003.

Żyżyński, J. (2009). *Budżet i polityka podatkowa wybrane zagadnienia*. Warszawa: Wydawnictwo Naukowe PWN.

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ORIGINAL PAPER

HORIZONTAL INTEGRATION OF FARMERS ON THE EXAMPLE OF AGRICULTURAL PRODUCER GROUPS IN NORTH-EAST POLAND

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JEL Classification: R11, Q10.

K e y w o r d s: agricultural producer groups, horizontal integration.

A b s t r a c t

Increasing horizontal integration in agriculture, by creating groups of agricultural producers, may accelerate the modernization of Polish agriculture and increase its competitiveness.

The aim of the research was to find out about the state and conditions affecting the functioning of agricultural producer groups in North-East Poland in the years 2000-2021.

As part of the research, data on the characteristics of the groups were analyzed, i.e. their specializations, scope of activities, personal composition, and legal forms. Moreover, the amount of financial aid obtained from RDP was defined.

The article uses information contained in legal acts, literature on the subject, as well as secondary data from the ARMA. Based on the research, a short duration of the created groups has been noticed. Out of 170 entities created, 24 of them were active at the time of the study, with a total of 3,142 members. Most of them collaborated in dairy groups in the Podlaskie Voivodeship (1940).

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INTEGRACJA POZIOMA ROLNIKÓW NA PRZYKŁADZIE GRUP PRODUCENTÓW ROLNYCH POLSKI PÓŁNOCNO-WSCHODNIEJ

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Kody JEL: R11, Q10.

S ł o w a k l u c z o w e: grupy producentów rolnych, integracja pozioma.

A b s t r a k t

Wzrost integracji poziomej w rolnictwie przez tworzenie grup producentów rolnych może przyspieszyć modernizację polskiego rolnictwa i podniesienie jego konkurencyjności. Celem prowadzonych badań było poznanie stanu i uwarunkowań mających wpływ na funkcjonowanie grup producentów rolnych w Polsce Północno-Wschodniej w latach 2000-2021. W ramach prowadzonych badań przeanalizowano dane dotyczące charakterystyki grup, tj. zdefiniowano ich specjalizacje, zakres działania, skład osobowy, formy prawne, a także wysokość uzyskanej pomocy finansowej z PROW. W artykule wykorzystano informacje zawarte w aktach prawnych, literaturze przedmiotu, a także dane wtórne ARiMR. Na podstawie badań zauważono krótkotrwałość tworzonych grup. Ze 170 utworzonych podmiotów w chwili przeprowadzenia badania funkcjonowało 24 z nich. Łącznie zrzeszonych było 3142 członków. Najwięcej z nich współpracowało w grupach mlecznych w województwie podlaskim (1940).

Introduction and methodology

The organization of economic companies is the weakest side of agriculture in Poland. By producing good quality crops, farmers most often sell them to intermediaries. Selling while not organizing into trade companies is due to the party's limited modesty and maladjustment to the recipient (Łazarek & Góralski, 2009, p. 179-186). Horizontal integration in the form of the aforementioned Intervention Groups (USAR) is aimed, inter alia, at the adaptation of products on the basis of technical changes and also changes in the modern market, the introduction of goods to suppliers, the adaptation of central supplies to wholesalers, organizing and facilitating the delivery of new products and improving the technical condition of the environment; including the rural population (Fal & Chlebicka, 2021, p. 1-12). The USAR Team is part of the

management of the Common Policy areas, which is designed to shape development, including sustainable development, and create areas of observation in the area of the 2012 management system (De Master, 2012, p. 89109; Witkowska, 2010, p. 258-268). In this context, the development of a joint action among the agricultural community of the control group, the control group belonging to the group associated with the group of soil acidification (Witkowska-Dąbrowska, 2018, p. 83-92), or non-agricultural development on management (Brodziński *et al.*, 2020, p. 103-112). These types of activities refer to an increasingly better cooperation of the movement. Like the management of Pawlewicz and Brodziński (2016, p. 31-37), grids of operating cooperatives (often referred to as USAR) accelerate services and support or even renewable energy based on the use of substrates from the center's sources.

The economic effect of activities in the association indicate the possibility of negotiating both when selling raw materials and purchasing means of production. Consequently, the negotiating power influences the formation of long-term contracts with recipients and suppliers, thanks to which access to preferential loans is additionally facilitated (Zawisza, 2010, p. 5-9).

The legal act defining the functioning of the USAR is the Act of 15 September 2000 on agricultural producer groups and their unions. Since 1 September 2017, supervision over the groups and their registration has been carried out by the Agency for Restructuring and Modernization of Agriculture (ARMA).

The USAR integration process takes place on what is called the first level. This means that mainly single and relatively small groups are formed. Despite the support of groups from the RDP fund since 2004, they usually have the minimum number of statutory members of 5 (Łazarek & Góralski, 2009, p. 179-186). To register a producer group in the National Court Register, members must choose a legal form for it. The USAR may act as a cooperative, limited liability company, or association. The initial decision determines the development of the group in the future. This is due to the legal consequences assigned to the above--mentioned types of cooperation. These are the Code of Commercial Companies for Limited Liability Companies, the Cooperative Law for Cooperatives, the Law on Associations or the Act on Social and Professional Organizations for Associations. The group's founding act takes into account the provisions of a given act. Limited liability companies and cooperatives dominate in Poland (Trajer, 2013). Each established group specializes in a specific agricultural production industry. Pursuant to the ordinance, they may conduct economic activity covering many directions of plant and animal production. The question is, how is the horizontal integration process going? Is it dependent on the subsequent stages of co-financing from the European Union and how is it shaped depending on the industry?

The aim of the study was to get to know the state and conditions affecting the functioning of agricultural producer groups in North-East Poland. The study made a detailed analysis of data on the characteristics of the groups, defined the directions of specialization, industries, scope of activity, personnel, legal

forms, as well as the amount and scope of financial aid obtained from RDP. The main differences of groups operating in areas with two different conditions of agricultural production were determined. The information contained in legal acts, the literature on the subject, as well as secondary and primary data from the Agency for Restructuring and Modernization of Agriculture was used.

The current state of integration of the USAR team in North-East Poland

The territory of North-East Poland includes the Warmińsko-Mazurskie and Podlaskie voivodships. According to the commission decision EEC/2008/1242 (OJ L 335 13.12.2008, p. 3), EU countries are covered by the Community typology of agricultural holdings (WTGR). Based on this decision, the Polish FADN defines agriculture in the territories of the Warmińsko-Mazurskie and Podlaskie voivodeships as different from each other due to the average economic size of farms (Goraj *et al.*, 2013, p. 91-103). The Warmińsko-Mazurskie voivodship is characterized by very large farms, an average level of production intensity, the highest density of dairy cows, and the region is second in terms of the average pig stock on a farm. The Podlaskie Voivodeship belongs to an area characterized by an average size of agricultural holdings, an average level of production intensity, and is second in terms of the average density of dairy cows on a farm. Additionally, attention should be paid to the development disproportions that occur in the functioning of farms in the surveyed region and in the whole of Poland in relation to the countries of Western Europe (Poczta, 2013, p. 7-13; Wilkin, 2016, p. 11-20). For these reasons, supporting the operation and development of USAR teams is intended to contribute to reducing these disproportions. The first producer group in the studied area was established in 2003. In the Podlaskie Voivodeship it was an association of 79 tobacco producers, and in the Warmia and Mazury Voivodeship an association of 23 fruit and vegetable producers and a limited

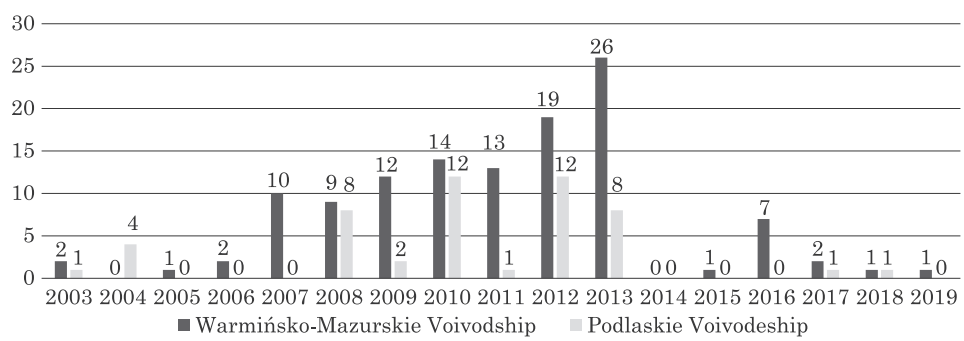

Fig. 1. Number of agricultural producer groups established in North-East Poland
Source: own study based on ARMA data (as of 01.06.2021).

liability company that linked 5 farmers into a grain group. However, it was only since 2007 that a relatively greater increase in the formation of new groups was noticed. In total, in the years 2003-2020 in North-East Poland, 172 producer groups were created, of which 120 were in the Warmińsko-Mazurskie Voivodeship and 52 in the Podlaskie Voivodeship, which is presented in Figure 1.

The greatest increase in the number of created producer groups took place in the years 2007-2013. It was the period of implementation of the Rural Development Program for 2007-2013. After the transitional period (2014) of the RDP 2014-2020 program, there is a regression in the creation of new entities. Among the established entities, groups producing poultry (50) and cereals (48) dominated in the Warmińsko-Mazurskie voivodship. In the Podlaskie Voivodeship, the majority of poultry (31) and pig producers (8) constituted 90% of all groups of the region, which is presented in Figure 2.

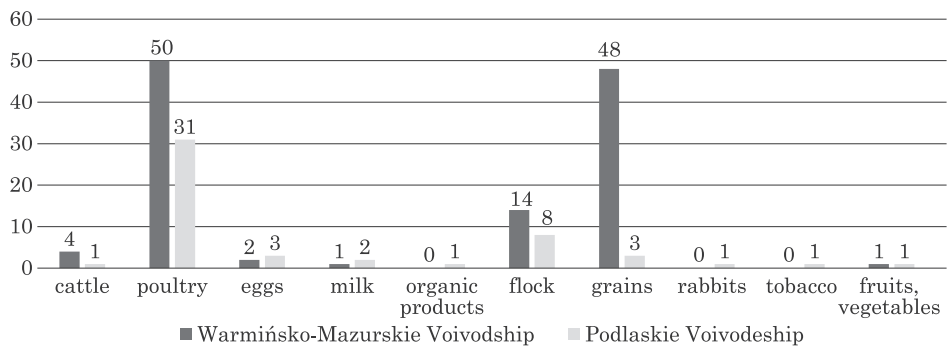

Fig. 2. Number of created producer groups of individual industries in North-East Poland
Source: own study based on ARMA data (as of 01.06.2021).

An important issue in the functioning of producer groups is their durability. Unfortunately, the desire to integrate members mainly covers the period of financial support, after which there is no clear factor motivating for further cooperation (Kozłowska-Burdziak & Przygodzka, 2019, p. 161). This also applies to the groups of the studied area (Fig. 3).

The region has the largest number of poultry groups. A total of six of the eighty-one previously created remain. Most industries recorded a decrease of at least 50% in the number of groups (Tab. 1). Only producers of organic products, tobacco and eggs, while remaining in the market, opposed this trend.

Of the four possible forms of activity, farmers in North-East Poland most often chose limited liability companies (115) and cooperatives (75). In addition, two associations were established. No group was registered to function as an association (Tab. 2). Each of these legal forms as the basis for USAR activity has advantages and disadvantages. The association is not required to establish initial capital. However, it is a non-profit-organization and any property is owned by the association and not its members. For a group intending to invest in fixed assets,

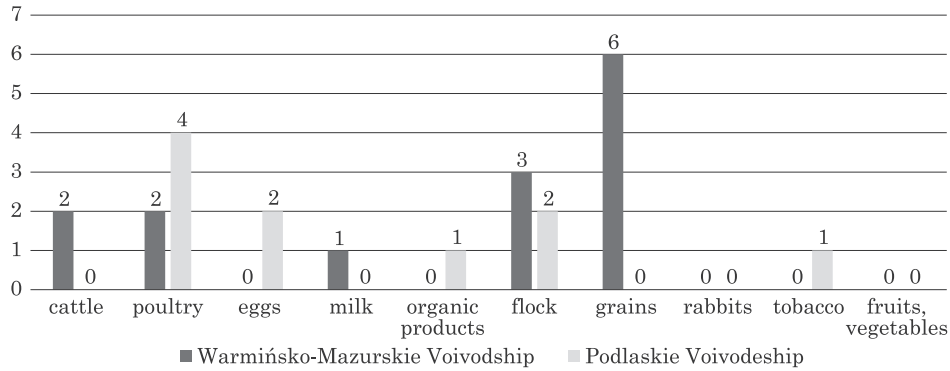

Fig. 3. The number of operating USAR teams in North-East Poland
Source: own study based on ARMA data (as of 01.06.2021).

Table 1

Participating USAR removed from the register

Industry	Number of USAR removed from the register in the years 2003-2021		Percentage share USAR removed from the register compared to other industries	
	Warmińsko-Mazurskie voivodship	Podlaskie voivodeship	Warmińsko-Mazurskie voivodship [%]	Podlaskie voivodeship [%]
Cattle	2	1	50	100
Poultry	48	27	96	87
Eggs	2	1	100	33
Milk	0	2	0	100
Organic products	–	0	–	0
Flock	11	6	79	75
Grains	42	3	88	100
Rabbits	–	1	–	100
Tobacco	–	0	–	0
Fruits, vegetables	1	1	100	100

Source: own study based on ARMA data (as of 01.06.2021).

Table 2

Legal forms of producer groups in north-eastern Poland

Form of activity	Warmia-Masuria Province	Podlasie Province	Total
Association	1	1	2
Company	74	41	115
Coopoeration	45	10	75

Source: own study based on ARMA data (as of 01.06.2021).

an easier solution is to operate as a limited liability company. Shareholders who have assets may contribute them to the company in the form of a contribution in kind, and the participation of members in the group depends on the amount of their contribution. Functioning in the form of a cooperative ensures equal participation of each member. This means that one member has one vote.

The size of the group, measured by the number of its members, can be used to assess the progress of the integration process in individual production sectors. Pursuant to the act, producer groups are required to have a minimum of 5 members. Most of the groups created were characterized by the minimum number of members or a slightly higher value (Fig. 4). Only a few groups with a larger number of members changed the average size assigned to a given type of production. However, one should distinguish between milk groups. There were 1918 members and 22 members in two groups in the Podlaskie Voivodeship. Additionally, there was one tobacco group uniting 79 farmers.

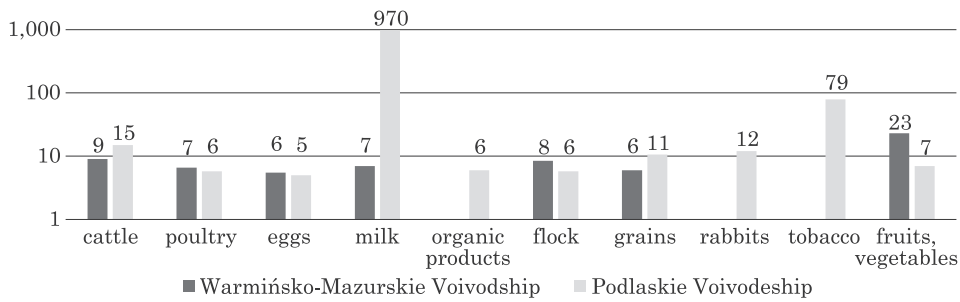

Fig. 4. Average number of members in one producer group in North-East Poland
Source: own study based on ARMA data (as of 01.06.2021).

In the Warmian-Masurian Voivodeship, the group of pig farmers had the largest number of members (47). However, the dominant nature of the small size of groups in this industry significantly lowered the average number of members recorded. The highest value assigned to the group of fruit and vegetable growers resulted from its singularity. Additionally, there was a visible increase in the average number of groups that remained in the market (Fig. 4) in relation to all created groups (Fig. 3). In the Podlaskie Voivodeship, this increase included groups producing poultry, eggs and pigs, i.e. the majority of entities that have survived in the form of a group. The remaining sectors, except for tobacco and organic production, where the structure did not change, closed their activities. In the Warmian-Masurian Voivodeship, the average number of members increased in the cattle, poultry and pig sectors. As in the Podlaskie Voivodeship, the remaining groups, except for the dairy and cereal groups, have ceased their activities. In the functioning of crop groups, an exclusive decrease in the average number of members can be noticed compared to all groups registered in this

industry – on average by one member (Fig. 5). The persistence of relatively more numerous groups may result, as noted by Czapiewska (2013, p. 165-178) and Chlebicka and Pietrzak (2018, p. 1-24), from easier organization of large entities and adaptation of production to the recipient's requirements in terms of quality, quantity and assortment with the simultaneous application of the principles of environmental protection at all stages of production, storage and distribution of agricultural products.

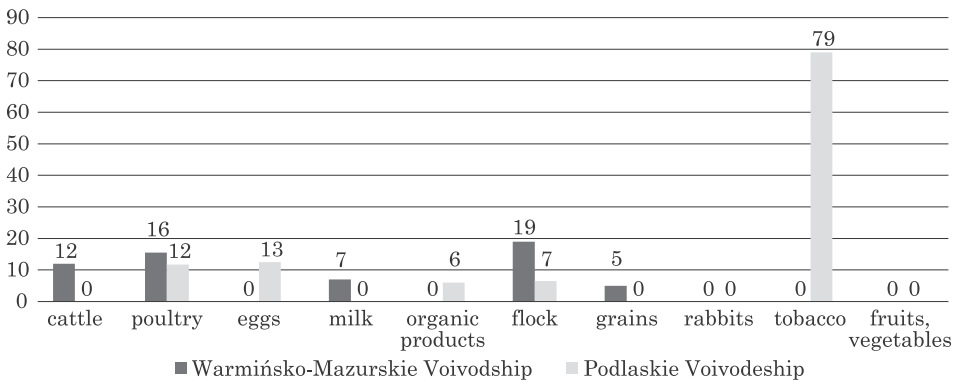

Fig. 5. The average number of USAR operating in North-Eastern Poland
Source: own study based on ARMA data (as of 01.06.2021).

The issue of resigning from a large cooperative USAR that still operates in the market requires additional and in-depth examination. The research carried out by Majewska and Klibisz (2012, p. 425-435) may be due to additional administrative controls and reporting obligations for producer groups.

The level of financial support under the RDP for agricultural producer groups in North-Eastern Poland

Financial support for agricultural producer groups under RDP is provided by the Agency for Restructuring and Modernization of Agriculture. Until June 2021, ARMA serviced 3 more programs: RDP 2004-2006, RDP 2007-2013 and RDP 2014-2020. During this period, support was granted to 142 groups, 92 of which operated in the Warmińsko-Mazurskie Voivodship, and 50 in the Podlaskie Voivodeship. In the Warmińsko-Mazurskie Voivodship, the ARMA made payments in the amount of PLN 79,696,395.60, while in the Podlaskie Voivodship this value was PLN 41,401,754.18. In both voivodeships, the greatest support was allocated to poultry groups. Respectively, PLN 48,648,363.92 in Warmińsko--Mazurskie Voivodship and PLN 32,034,538.16 in Podlaskie Voivodship (Fig. 6).

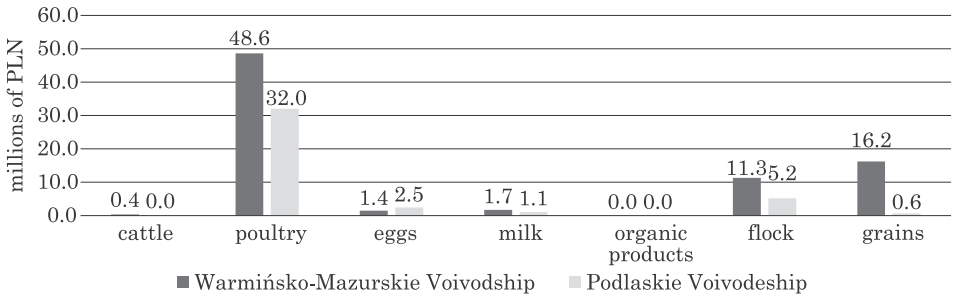

Fig. 6. The amount of support from RDP funds granted to producer groups in North-Eastern Poland

Source: own study based on ARMA data (as of 01.06.2021).

The attractiveness of external support for producer groups is easier to compare in the case of individual entities. Figure 7 shows the average value of total support per one entity in a given type of production. Here, the greatest support was given to dairy groups in the Warmian-Masurian Voivodeship and to egg groups in the Podlaskie Voivodeship.

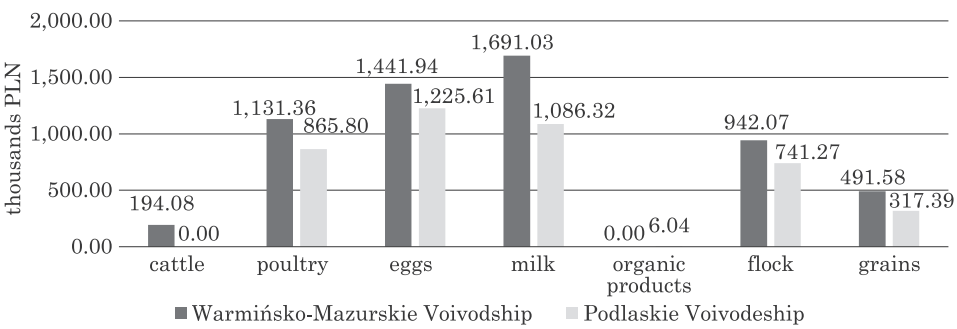

Fig. 7. The average value of the total support per one entity in a given type of production in North-East Poland

Source: own study based on ARMA data (as of 01.06.2021).

There are large disproportions in the amount of support for individual industries. They result from the production value, of which the level of the granted annual subsidy depends. This justifies little support for groups involved in organic and cattle production. The scale of the size of these entities is limited due to relatively high production inputs.

Summary

Co-financing of agricultural producer groups under the first two RDP financial perspectives increased the level of integration of farmers in north-eastern Poland. Of the four possible legal forms of cooperation within the USAR, limited liability companies and cooperatives dominated. From 2007 to 2013, there was a clear upward trend in the number of created groups. Subsequently, this process was reduced. Most often, producers of poultry, cereals and pigs came together. However, it is in industries such as fruit and vegetables, pigs and cattle that the highest concentration of members per group was observed. The vast majority of registered agricultural producer groups had only a minimal number of members. The most disturbing trend in USAR operations is their closure after several years of activity. By June 2021, 146 entities out of 170 created in total were deleted. Financial support under the RDP was received by 142 groups three consecutive times. Total payments amounted to PLN 79,696,395.60 in the Warmińsko-Mazurskie Voivodship and PLN 41,401,754.18 in Podlaskie. Despite the increase in the level of horizontal integration in agriculture, the situation in this respect in comparison to Western European countries is highly unsatisfactory. The progressive competition of production in agriculture, both in Poland and in other EU countries, as well as financial aid from the EU and state institutions for the association of farmers, do not contribute to the deepening of horizontal integration among farmers.

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Proofreading by Michael Thoene

References

Brodziński, Z., Bojkowska, E., & Janek, S. (2020). Development of Micro-Enterprises in Rural Areas in the Warmińsko-Mazurskie Voivodship. *Olsztyn Economic Journal*, *15*(2), 103-112. https://doi.org/10.31648/oej.5834.

Chlebicka, A., & Pietrzak, M. (2018). Size of Membership and Survival Patterns of Producers' Organizations in Agriculture-Social Aspects Based on Evidence from Poland. *Sustainability, MDPI, Open Access Journal*, *10*(7), 1-24. https://doi.org/10.3390/su10072293.

Czapiewska, G. (2013). Grupy producentów rolnych w rozwoju obszarów wiejskich Pomorza. *Acta Universitatis Lodziensis*, *Folia Geographica Socio-Oeconomica*, *13*, *Koncepcje i problemy badawcze w geografii wsi*, 165-178. Retrieved from http://foliags-o.geo.uni.lodz.pl/folia13/czapiewska.pdf (31.06.2021).

De Master, K. (2012). Designing Dreamsor Constructing Contradictions? European Union Multifunctional Policies and the Polish Organic Farm Sector. *Rural Sociology*, *77*(1), 89-109. https://doi.org/10.1111/j.1549-0831.2012.00071.x.

Falkowski, J., & Chlebicka, A. (2021). What product mix do they offer and what marketing channels do they use? – Exploring agricultural producer organisations' heterogeneity. *Journal of Rural Studies*, *85*, 1-12. https://doi.org/10.1016/j.jrurstud.2021.05.002.

Goraj, L., Bocian, M., & Cholewa, I. (2013). Wspólnotowa Typologia Gospodarstw Rolnych po zmianie w 2010 roku. *Zagadnienia Ekonomiki Rolnej*, *1*, 91-103. Retrieved from http://www.zer.waw.pl/WSPOLNOTOWA-TYPOLOGIA-GOSPODARSTW-ROLNYCH-PO-ZMIANIE-W-2010-ROKU,83481,0,2.html (31.06.2021).

Kozłowska-Burdziak, M., & Przygodzka, R. (2019). *Grupy producentów rolnych – szanse i bariery rozwoju*. Białystok: Wydawnictwo Uniwersytetu w Białymstoku.

Łazarek, M., & Góralski, P. (2009). Integracja w rolnictwie: grupy producenckie. *Ekonomiczne Problemy Usług*, *43*, 179-186. Retrieved from http://bazhum.muzhp.pl/media/files/Ekonomiczne_Problemy_Uslug/Ekonomiczne_Problemy_Uslug-r2009-t-n43/Ekonomiczne_Problemy_Uslug-r2009-t-n43-s179-186/Ekonomiczne_Problemy_Uslug-r2009-t-n43-s179-186.pdf (31.06.2021).

Majewska, M., & Klibisz, K. (2012). Wybrane bariery rozwoju grup producentów rolnych w Polsce. *Prace i Materiały Wydziału Zarządzania Uniwersytetu Gdańskiego*, *Zarządzanie i Finanse*, *10*(1), 425-435. Retrieved from http://bazekon.icm.edu.pl/bazekon/element/bwmeta1.element.ekon-element-000171235887 (31.06.2021).

Pawlewicz, A., & Brodziński, Z. (2016). Rural cooperative emovement – prospects of changes Economic. *Science for Rural Development*, *41*, 31-37. Retrieved from http://llufb.llu.lv/conference/economic_science_rural/2016/Latvia_ESRD_41_2016-31-37.pdf (31.06.2021).

Poczta, W. (2013). *Gospodarstwa rolne w Polsce na tle gospodarstw Unii Europejskiej – wpływ WPR*. Warszawa: Zakład Wydawnictw Statystycznych.

Trajer, M., & Trajer, M.A. (2015). Grupy producentów rolnych jako forma przedsiębiorczości zespołowej rolników. *Turystyka i Rozwój Regionalny*, *3*, 129-143. Retrieved from http://sj.wne.sggw.pl/article-TIRR_2015_n4_s129/ (31.06.2021).

Wilkin, J. **(**2016). *Polska wieś na tle kraju i Europy – synteza raportu*. In Przedsiębiorstwo – Raport o stanie wsi. Warszawa: Wydawnictwo Naukowe Scholar.

Witkowska-Dąbrowska, M. (2018). Spatial Variability and Economic and Environmental Consequences of Agricultural Acidification of Soils in The Province of Warmia and Mazury. *Ekonomia i Środowisko*, *3*(66), 83-92. Retrieved from http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.baztech-610b4ff3-e059-4737-b97c-745f099a5b94?q=2118b064-3b42-4491-9b37-7f5053d08d77$1&qt=IN_PAGE (31.06.2021).

Witkowska-Dąbrowska, M., & Bączkowski, T. (2010). Indicators of Warmińsko-Mazurskie Voivodship Sustainable Development in the EconomicAspect. *Olsztyn Economic Journal*, *5*(2), 258-268. Retrieved from https://yadda.icm.edu.pl/yadda/element/bwmeta1.element.desklight-0998d9b5-edda-438e-bbd8-fde0c7212194 bwmeta1.element.desklight-0998d9b5-edda-438e-bbd8-fde0c7212194 (31.06.2021).

Zawisza, S. (2010). *Perspektywy rozwoju grup producentów rolnych – szanse i zagrożenia*. Bydgoszcz: Wydawnictwa Uczelniane UTP.

Ustawa z dnia 15 września 2000 r. o grupach producentów rolnych i ich związkach oraz o zmianie innych ustaw (Dz. U. z 2018 r., poz. 1026).

Rozporządzenie Ministra Rolnictwa i Rozwoju Wsi z dnia 2 sierpnia 2016 r. w sprawie szczegółowych warunków i trybu przyznawania, wypłaty oraz zwrotu pomocy finansowej w ramach działania „Tworzenie grup producentów i organizacji producentów" objętego programem rozwoju obszarów wiejskich na lata 2014-2020. (Dz.U. z 2016 r., poz. 1284).

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ORIGINAL PAPER

ECONOMIC COMPETITIVENESS AND AVAILABILITY OF ROAD INFRASTRUCTURE

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JEL Classification: R11, R40.

K e y w o r d s: economic competitiveness, development of the region, road infrastructure, transport.

A b s t r a c t

The level of road infrastructure development brings about several benefits, such as shorter travel times, reduced transport costs, or improved road safety. Undoubtedly, it is also a factor that has had a beneficial impact on the growth of certain regions. This is particularly important for the entire economy (in the macroeconomic context), for regions (on the meso-regional level) and for business enterprises (the macroeconomic aspect). The aim of this study has been to evaluate the effect of the availability of road infrastructure on the economic competitiveness of Polish voivodeships. To this end, the Regional Competitiveness Index (RCI) was compared with the ratio of the density of hard-surface roads per 100 km^2. The analysis showed that the highest regional competitiveness and simultaneously the highest road density ratio were in the voivodeships: śląskie, małopolskie and mazowieckie. However, the majority of regions in Poland are composed of voivodeships with both of these indicators scoring below zero. These are regions in the eastern part of Poland; as well as the lubuskie and zachodniopomorskie voivodeships.

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KONKURENCYJNOŚĆ GOSPODARCZA A DOSTĘPNOŚĆ DO INFRASTRUKTURY DROGOWEJ

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Kody JEL: R11, R40.

Słowa kluczowe: konkurencyjność gospodarcza, rozwój regionu, infrastruktura drogowa, transport.

Abstrakt

Poziom rozwoju infrastruktury drogowej przekłada się na zmniejszanie czasów podróży, redukowanie kosztów transportu, poprawę bezpieczeństwa i wiele innych aspektów. Wynika z tego, że rozwój infrastruktury transportowej pozytywnie oddziałuje na rozwój regionu. Jest to niezwykle istotne chociażby z punktu widzenia przedsiębiorstw. Celem badań była ocena wpływu dostępności do infrastruktury drogowej na konkurencyjność gospodarczą polskich województw. W tym celu porównano wskaźnik RCI ze wskaźnikiem gęstości dróg o twardej nawierzchni przypadających na 100 km^2. Przeprowadzona analiza wskazała, że najwyższym poziomem konkurencyjności regionalnej, z jednocześnie wysoką gęstością dróg, charakteryzują się województwa śląskie, małopolskie i mazowieckie. Najliczniejszą grupą regionów w Polsce są jednak województwa z obydwoma wskaźnikami na poziomie ujemnym. Są to regiony znajdujące się we wschodniej części kraju, a także województwa lubuskie i zachodniopomorskie.

Introduction

In the economy, competitiveness is defined as the ability to achieve success in economic competition. Considering the field of regional development, we define economic competitiveness as the ability of regions to adapt to constantly changing conditions in order to maintain or improve their position (Kamerschen, 1991). Issues pertaining to determinants of regional competitiveness are an important component of economic research, because they help to understand which factors can accelerate the development of a region. Knowledge of these underlying conditions can facilitate more effective investment in the region's development. Economists point to the influence of many factors that shape the development of a region, including natural resources, climate, availability of human labour,

quality of human capital, opportunities to secure land for investment projects, and broadly understood road infrastructure (Koźlak, 2014; Nazarczuk, 2013). Easier access to transportation channels reduces transport time and costs for all finished products, raw materials or semi-finished products (Domańska, 2006; Krakowiak-Bal, 2007). This is a significant factor to consider by managers of the companies where transport costs make a considerable contribution to total costs.

The main purpose of this study has been to assess the relationship between the availability of road infrastructure and the competitiveness of Polish voivodeships. To this end, the Regional Competitiveness Index (RCI) was compared to the road infrastructure availability indicator.

Road infrastructure as a determinant of economic competitiveness

Benefits from the development of road infrastructure and its stimulating impact on economic growth and regional development are broadly described in the subject literature (Pawłowska, 2013). The way infrastructural investments affect the level of regional competitiveness is a multi-faceted and complex process, above all because of a large number of mutual links between regions.

Road infrastructure is an element of transportation infrastructure. It plays an important role, especially in the transport of cargo over short and medium distances (Pyza, 2010). The principal indicator showing the transport structure is the share of transport work carried out by all transport branches. Whilst analysing this structure, the distinctly prevalent role of road transport emerges. According to statistical data from 2010, 70.4% of transport work was performed using road vehicles as the means of transport. The second most popular means of cargo transport was railway transport, at 15.4% of transport work done. This is a huge difference, which is continually increasing as time passes (Ambroziak & Pyza, 2011).

In the second half of the 20th century, numerous economists undertook research on infrastructure. For example, P.N. Rosenstein-Rodan (1959) analysed benefits from infrastructural investments in comparison to other types of investment. An extremely important achievement of that analysis was that it gave rise to the concept of the big push. In line with the big push model, it is stated that less developed regions find it difficult to overcome a certain development threshold, which would allow them to attain self-sustaining growth. Special attention has been drawn to capital constraints, which forces decision-makers to choose between infrastructural investments and investment into production.

Ragnar Nurkse drew attention to the impossibility of importing infrastructure and to limited possibilities of purchasing its services abroad, while simultaneously

there are no obstacles to importing industrial products. In his opinion, in a situation of the simultaneous presence of unsatisfied demand for industrial goods and infrastructural services, infrastructure should be constructed (Nurkse, 1963).

Connections between infrastructure and the development of other links in the economy must not be viewed in terms of the absolute superiority of one possibility over another, In different economies, depending on economic, geographical, political or demographic circumstances, a different, appropriate development strategy will exist (Ratajczak, 2000). In 1989, D. Aschauer (1989) hypothesised that the development of infrastructure has a considerable influence on the total productivity of production means. This hypothesis was crucial when creating the theoretical grounding for the analysis and evaluation of the effect of infrastructure on economic growth and incomes earned by societies. Current studies concerning the role of infrastructure in the economy focus on pro-development effects and issues of effectiveness. It turns out that a rise in the availability of infrastructure contributes to a growth in GDP and improved productivity of production means. Thus, infrastructure is an important contributor to the activation, convergence and also competitiveness of regions. A turning point in substantiating this opinion was the publication of a manuscript by C. Calderón and L. Servén (2004), which summarised studies carried out for many years, based on data from 121 countries covering the years 1960-2000. The main conclusion drawn from observations of the positive impact of the development of infrastructure on the increase in GDP and decrease in disproportions of incomes earned by the population was that the development of infrastructure is an essential determinant of the economic activation of regions and reduction of spatial disparities.

The development of infrastructure favours the growing competitiveness of regions, and helps to achieve social goals. Many authors claim that the development of infrastructure leads to enhanced productivity, lower costs, time savings, improved safety and lower unemployment (Burnewicz & Grzywacz, 1989; Hawlena, 2012; Ratajczak, 1999). On the other hand, when road infrastructure is underdeveloped, marginalisation of a given region could be a consequence (Koźlak, 2007). Sites located far from main roads and hubs are less attractive to domestic and international investors. Even in less developed countries, regions with the best connections to major EU regions and/or the highest growth centres in their own countries develop the fastest. A region's investment attractiveness is a compilation of location advantages as perceived by economic entities. This attractiveness, and hence the ability to attract investors, has an influence on the overall attractiveness of the region. Both research and surveys addressed to foreign investors indicate that transport accessibility and transport infrastructure are among the major determinants of a region's competitiveness (Kaczyńska & Korycińska, 2014). It is also noticeable that investment into transport infrastructure contributes to a greater effectiveness of production and distribution processes. Moreover, it creates opportunities to take advantage of economies of scale, promote production specialisation and stimulate the development of logistics systems

by reducing their costs. Overall, it is beneficial to the increasing efficiency of business and thus to GDP growth (Koźlak & Pawłowska, 2014).

The main purpose of investing into road infrastructure is to improve the accessibility of a given area. Owing to such investments, travel time is shorter while transport costs are reduced. Investing into road infrastructure generates, both directly and indirectly, more advantages than disadvantages. The former include: higher employment, improved labour productivity and prevention of social exclusion. However, there are some negative consequences as well, of which the adverse impact on the natural environment should be considered as the gravest (Wacek, 2013).

Research methodology and results

The empirical part of this study was based on secondary data obtained from the Polish databases created by Statistics Poland (GUS) and global databases maintained by the European Commission. The conclusions were drawn by analysing the relationships between:

– the Regional Competitiveness Index (RCI), and
– the density ratio of hard-surface roads per 100 km^2.

The RCI serves to measure different dimensions of regional competitiveness. It shows both strengths and weaknesses of the EU regions, including Polish voivodeships. It also facilitates the determination of possible investment directions, accounting for a region's characteristics and the level of its general development. The index comprises three groups, referred to as pillars. The basic pillar consists of institutions, macroeconomic stability, infrastructure and health; as well as the quality of primary and secondary education. Notably, infrastructure is implicated as one of the most important dimensions, included in the set of principal determinants of regional competitiveness, which is significant in the light of the goal set for this study. The second group, known as the efficiency pillar, comprises tertiary education, labour market efficiency and the size of the market. The third and last pillar is called the innovation pillar, and is composed of technological readiness, business sophistication and innovations (Dijkstra, 2011).

The study also included the density ratio of hard-surface roads per 100 km^2. For this purpose, the length of roads with a hard surface (cobblestone, brick, concrete, stone and concrete slabs, asphalt, gravel, paved) per 100 km^2 of a voivodeship's area was determined (Statistics Poland, 2021),

To ensure the comparability of variables in the study, the data were standardised using the *z*-score method. This enabled us to express all data on one scale (Knoke, 2002):

$$X_{\text{Std}} = \frac{x - \bar{x}}{\sigma},$$

where:

$\bar{x}$ – mean of a sample,

σ – standard deviation of a sample.

Our analysis of the standardised ratio of the density of hard-surface roads and standardised RCI for every Polish voivodeship allows us to determine the dispersion between these data (Fig. 1).

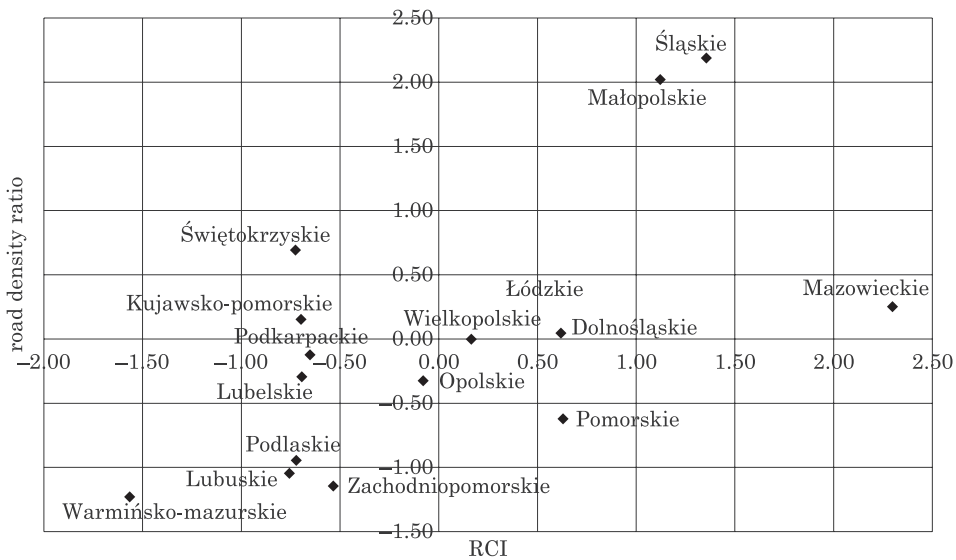

Fig. 1. Dispersion between the RCI and the hard-surface road density ratio in Polish voivodeships in 2019

Source: developed by the authors, based on data from Statistics Poland and the EU Regional Competitiveness Index.

The analysis allowed us to distinguish regions which clearly stood out, in both a positive and negative sense, against the country's average. Special attention should be drawn to two voivodeships: śląskie (RCI = 1.35) and małopolskie (RCI = 1.12), in which both the RCI and road density ratio were higher than in the other Polish regions. These two voivodeships are characterised by a high level of industrialisation, mainly because of their large stocks of natural resources. Large quantities of mined coal have long been a factor attracting industrial plants in which coal is the main fuel. However, this is not the only determinant of the development of these regions. Industry also needs well-developed road infrastructure, which facilitates the transport of semi-finished goods, finished goods and the fuel mentioned before. The RCI is higher in just one other province, namely the mazowieckie voivodeship (RCI = 2.3). This area owes its high level of development to the location of the country's capital city, which attracts many

companies and investors. This voivodeship is also a region with the highest share of services in the employment structure (*Rozwój usług w Polsce*, 2021). Due to their specific nature, services are less dependent on road infrastructure, which explains why the mazowieckie voivodeship may not have the highest hard-surface road density ratio in Poland, despite scoring the highest RCI in the country.

The most numerous group was composed of the voivodeships with both indicators scoring below zero. These are voivodeships located in the eastern as well as the north-western parts of Poland. The lagging development of Eastern Poland is rooted in the times of Poland's partition, because when Poland regained independence the eastern outskirts of the country were in a much worse socio-economic situation than the other regions. However, this is not the only reason for its lower competitiveness. The lack of strategic resources and poorly developed transport infrastructure mean that the eastern voivodeships are hardly competitive relative to the other areas in Poland. The north-western block, which comprises the lubuskie (RCI = -0.76) and zachodniopomorskie (RCI = -0.54) voivodeships, is a region which can take advantage of being located in the neighbourhood of Germany in its development strategy. Well-developed road infrastructure would improve the efficiency of transport and encourage some investors to transfer capital to the Polish voivodeships. Lower labour costs in Poland are certainly of interest among investors from behind the western border of Poland, and good road infrastructure most certainly would be another asset.

The pomorskie voivodeship is the only region in which a relatively high competitiveness level coincides with the road density below Poland's average. However, this region, owing to its seaside location, has an above-average access to other transportation channels. Moreover, the agglomeration of three cities, Gdańsk, Sopot and Gdynia, which makes a strategic part of the voivodeship, has a well-developed railway infrastructure. All these factors contribute to the positive level of competitiveness even with a negative road density ratio in this voivodeship.

Conclusions

The level of economic competitiveness depends on many factors, whose role changes in relation to the achieved level of growth and dominant economic paradigm. To a large extent, however, economic competitiveness depends on the condition that many scholars consider to be the basic one, that is on the access to road infrastructure. The same is implicated by the results of this study. They seem to suggest that a well-developed network of roads in conjunction with other pro-developmental stimuli, greatly improves the competitiveness of a region. Road infrastructure is often the major factor that drives the development as it facilitates efficient transport of semi-finished products. The śląskie and

małopolskie voivodeships are a good example, as both were able to develop their industries owing to the well-developed road infrastructure. Development of road infrastructure should be a priority in a development strategy of regions which in this study were determined to have a negative RCI and a negative road density ratio. For the voivodeships located in the north-western part of Poland, this is a chance for a more rapid development, which has not been taken advantage of yet. The question arises why the local governments in these voivodeships do not invest in roads. For one thing, this is a long-term investment, and both planning and executing road development takes years. However, the implementation of such an investment translates into an increased interest in a given region among both national and international companies. In consequence, new jobs are created and tax revenues increase. Better access to road infrastructure is also beneficial for working people as they can often commute to work in a shorter time. It also facilitates a decision to look for a better-paid post or an occupation that fits one's education better. Nonetheless, it is worth noting that road infrastructure is not the only factor that can drive and intensify a region's development. An example is the pomorskie voivodeship, where, owing to the access to maritime and aviation infrastructure, the regional competitiveness index value is above the country's average despite the road density ratio being below the average value for Poland.

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Proofreading by Michael Thoene

References

Ambroziak, T., & Pyza, D. (2011). Problematyka wykorzystania różnych form transportu w aspekcie zrównoważonego rozwoju infrastruktury transportu. *Logistyka*, *4*.

Aschauer, D.A. (1989). Is public expenditure productive? *Journal of Monetary Economics*, *23*(2), 177–200.

Burnewicz, J., & Grzywacz, W. (1989). *Ekonomika transportu*. Warszawa: Wydawnictwo Komunikacji i Łączności.

Calderón, C., & Servén, L. (2004). *The Effects of Infrastructure Development on Growth and Income Distribution*. Washington DC: The World Bank.

Dijkstra, L., Annoni, P., & Kozovska, K. (2011). A New Regional Competitiveness Index: Theory, Methods and Findings. *European Union Regional Policy Working Papers*, *02*.

Domańska, A. (2006). *Wpływ infrastruktury transportu drogowego na rozwój regionalny*. Warszawa: Wydawnictwo Naukowe PWN.

Główny Urząd Statystyczny. (2019). Retrieved from https://stat.gov.pl (19.08.2021).

Hawlena, J. (2012). *Konkurencja na rynku lotniczych przewozów pasażerskich w warunkach globalizacji*. Katowice: Wydawnictwo Uniwersytetu Ekonomicznego w Katowicach.

Kaczyńska, W., & Korycińska, K. (2014). Wpływ infrastruktury transportu drogowego na rozwój regionu. *Zeszyty Naukowe Uniwersytetu Przyrodniczo-Humanistycznego w Siedlcach*, *30*(103), 319-324.

Kamerschen, D.R., McKenzie, R.B., & Nardinelli, C. (1991). *Ekonomia*. Fundacja Gospodarcza NSZZ "Solidarność", Gdańsk, p. 47.

Knoke, D., Bohrnstestedt, G., & Potter Mee, A. (2002). *Statistic for Social Data Analysis*. F.E. Peacock Publisher Inc., Itasca, Illinois.

Koźlak, A. (2007). *Poprawa dostępności transportowej regionów peryferyjnych w polityce spójności Unii Europejskiej*. In M. Michałowska (Ed.). *Procesy integracyjne wybranych systemów transportowych*. Katowice: Wydawnictwo Akademii Ekonomicznej w Katowicach, p. 73–86.

Koźlak, A., & Pawłowska, B. (2014). Rola infarstruktury transportowej jako czynnika poprawy konkurencyjności Europy. *Zeszyty Naukowe Uniwersytetu Szczecińskiego. Studia i Prace Wydziału Nauk Ekonomicznych i Zarządzania*. *37*(2).

Nazarczuk, J.M. (2013). *Potencjał rozwojowy a aktywność inwestycyjna województw i podregionów Polski*. Olsztyn: Wydawnictwo Uniwersytetu Warmińsko-Mazurskiego.

Nurkse, R. (1963). *Wpływ obrotów międzynarodowych na rozwój gospodarczy*. Warszawa: Państwowe Wydawnictwo Ekonomiczne, p. 84-85.

Pawłowska, B. (2013). *Zrównoważony rozwój transportu na tle współczesnych procesów społeczno-gospodarczych*. Gdańsk: Wydawnictwo Uniwersytetu Gdańskiego, chapter 4.

Pojęcia stosowane w statystyce publicznej. (no data). Główny Urząd Statystyczny. Retrieved from https://stat.gov.pl/metainformacje/slownik-pojec/pojecia-stosowane-w-statystyce-publicznej/3898,pojecie.html (06.08.2021).

Pyza, D. (2010). System transportowy i jego ukształtowanie w Systemie logistycznym Polski. *Prace Naukowe Politechniki Warszawskiej*, *Transport*, *76*.

Ratajczak, M. (1999). *Infrastruktura w gospodarce rynkowej*. Poznañ: Wydawnictwo Akademii Ekonomicznej w Poznaniu.

Ratajczak, M. (2000). Infrastruktura a wzrost i rozwój gospodarczy. *Ruch Prawniczy, Ekonomiczny i Socjologiczny*, *4*.

RCI scorecards. (2019). European Regional Competitiveness Index. Retrieved from https://ec.europa.eu/regional_policy/en/information/maps/regional_competitiveness/ (19.08.2021).

Rosenstein-Rodan, P.N. (1959). Uwagi o teorii „wielkiego pchnięcia". *Ekonomista*, *2*.

Rozwój usług w Polsce. (2021). Zintegrowana Platforma Edukacyjna. Ministerstwo Edukacji i Nauki. Retrieved from https://zpe.gov.pl/a/rozwoj-uslug-w-polsce/DOY6bBRPa (19.08.2021).

Wacek, P. (2013). Modelowanie relacji między infrastrukturą transportu a innowacyjnością w kontekście rozwoju gospodarczego. *Zagadnienia Naukoznawstwa*, *3*(197).

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