


ISSN 1644-0757
eISSN 2450-047X

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ACTA

Oeconomia

19 (2) 2020

ISSN 1644-0757
eISSN 2450-047X

ACTA SCIENTIARUM POLONORUM

Czasopismo naukowe założone w 2001 roku przez polskie uczelnie rolnicze
Scientific Journal established in 2001 by Polish Life Sciences Universities

Oeconomia

Economics

Ekonomia

19 (2) 2020

April – June



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***The printed version of Acta Scientiarum Polonorum Oeconomia
is an initial version of the journal***

Editorial staff

Anna Dołomisiewicz, Elzbieta Wojnarowska

ISSN 1644-0757
eISSN 2450-047X

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Warsaw University of Life Sciences Press, Nowoursynowska 166, 02-787 Warsaw
tel. (22) 593 55 20 (-22; -25 – sales)
e-mail: wydawnictwo@sggw.pl
www.wydawnictwosggw.pl

Print: ZAPOL sp.j., al. Piastów 42, 71-062 Szczecin

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NATIONAL HUMAN DEVELOPMENT POLICY IN A HIGHLY MOBILE SOCIETY: FORMATION METHODOLOGY AND IMPLEMENTATION CONCEPT

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ABSTRACT

The article aims to substantiate the relevance of the formation and implementation of national human development policy in a highly mobile society, in light of the modern imperative for a person's right to freedom of movement and freedom of choice. Such a policy envisages a set of measures aimed at creating a favourable internal living environment and, at the same time, preserving the possibility for the right of return and protection of citizens, regardless of their place of residence. The study deepens the theoretical foundations of national human development policy under the conditions of a highly mobile society. The article justifies the dominance of neoliberal ideology in managerial approaches to policy implementation, and the necessity of legislative consolidation of national human development policy in a highly mobile society. The concept includes three categories and related goals: general security provisions and principles of movement regulations applied to all categories of mobile persons; internal spatial mobility; external (inbound, outbound) spatial mobility. The concept is an important component in the implementation of national sectoral doctrines (socio-cultural, political and legal, economic, security), which in the long term will ensure the formation of a human development paradigm under conditions of a highly mobile society for sustainable human development. The harmonization of national human development policy with national migration policy proves the advantages of selective multiculturalism in providing spiritual and information mobility for a person and a state.

Key words: state policy of human development, spatial mobility, highly mobile society, migration, selective multiculturalism

JEL codes: O15, F22, J61

INTRODUCTION

The modern world is developing into an era of rapid growth in spatial mobility of populations, leading to the formation of so-called highly mobile societies. Such societies are characterized by a high proportion of persons making internal and external movements, usually for migration. Moreover, the population of mobile societies has a high migration capacity, that is, a desire

for displacement under favourable circumstances. Such tendencies require a scientific justification of new approaches to national regulations regarding population mobility, and to ensuring sustainable human development. High mobility is not perceived as negative. For most modern countries, it serves as a significant factor and indicator of the quality of the environment for human development, in the context of global competition for resources (human, financial, informational).

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Human development, in a general sense, reflects the enlargement of human freedoms so that all human beings can pursue choices that they value [United Nations Development Programme 2016]. The applied value of the human development category lies in its assessment. Substantiation of perspective vectors for human development implies its increasing “greening”, development of shared socio-economic pathways in trajectories for human development, and global environmental change [Van Vuuren et al. 2017]. Modern scientists-economists also pay much attention to the mutual influence of human development and economic processes, which acquires positive signs under conditions of sustainable economic growth [Mustafa et al. 2017].

The assessment of a country’s human capacity and development is one of the most important socio-economic problems in contemporary science and practice; the further technological progress of the whole world and individual countries depends on the conditions of human capacity development in today’s world [Churilova et al. 2019].

A methodology for assessing human development can be found in the United Nations’ Human Development Index (HDI). The HDI represents a compromise between comprehensiveness and measurability, because economic magnitudes alone provided too narrow a basis for assessing human development [Ghislandi et al. 2019].

Despite the disadvantages (most experts say that the gaps between the main indicators are not taken into account [Grimm et al. 2010]), the United Nations’ methodology is the most popular in the world. The HDI covers 189 countries, contributing to the formation of a global vision of the demographic, educational, and economic components of populations.

The conditions for the formation of a highly mobile society make the study of the interrelation of mobility and human development more relevant: mobility can be seen as a determinant of development, or human development opportunities can be seen as a determinant of mobility (spatial aspects of human resource quality assessment [Stepura 2020]). The theory of a population’s spatial mobility greatly expands the field of knowledge of migration science. A population’s spatial mobility, by its nature, is a characteristic which reflects

desire, willingness, and opportunity to change the place of residence in specified space-time coordinates, accompanied by the process of capitalizing on human capacity through the implementation of movement [Bil 2017]. Analysis of spatial mobility can be carried out by different vectors and scales. In this regard, human mobility networks, directly influencing the economic status of a person and the level of economic development of a society, are formed [Jiang et al. 2019].

The article aims to substantiate the relevance of the formation and implementation of national human development policy in a highly mobile society, in light of the modern imperative for a person’s right to freedom of movement and freedom of choice. It is necessary to determine the content of such a policy and the specifics of its implementation in a highly mobile society, as well as to distinguish the main provisions of the concept while specifying the blocks and the goals of its implementation at the national level.

Abstraction, analysis, synthesis, induction, and deduction were the general scientific methods used to achieve the aim of the article. They contributed to analysing the nature of national human development policy and its specificity for a highly mobile society. Methods of generalization and systematization were used to outline the provisions of the corresponding concept. The systematic approach made it possible to update the consideration of human development policy in the context of increasing population mobility, which significantly changes the conditions for ensuring economic growth, taking into account social priorities. The study hypothesizes that the formation and implementation of human development policy in a highly mobile society should be the dominant paradigm for managing relevant processes in the modern globalized world.

Theories of human development, as well as scientific views regarding the processes of mobility, form the research methodology. The interdisciplinary category of human development is widely used in many fields, gaining increasing popularity in psychology, sociology, ecology, public administration and law, and, importantly, in economics. Economic theories of human development are deepened at the intersection of resource, behavioural, and management approaches with the search for effective models of human

capitalization at different institutional levels. The scientific justification for mobility is also formed from an interdisciplinary perspective, combining the ideas of its impact on progressive changes (mobility as a sign of development) with the emergence of a mobile society, activation of migration, and development of related infrastructure (mobility channels). Mobility thus becomes a form of security when persons are given the opportunity to change their place of residence according to their needs of self-fulfilment and self-development.

RESEARCH RESULTS

Global trends in human development and population spatial mobility

Ensuring human development on a global scale is challenging. Its achievement requires a well-developed institutional environment capable of utilizing the capacity of the knowledge-based economy [Balcerzak and Pietrzak 2017], as well as the formation of corporate social responsibility (holistic responsibility and direct liability) [Renouard and Ezvan 2018]. At the same time, a sufficient level of a population’s legal culture should be formed.

Effective human development policy contributes to the growing global index – from 0.601 in 1990 to 0.731 in 2018 [United Nations Development Programme portal, n.d.]. The growth of the index confirms a positive trend on a global scale in terms of life expectancy at birth, number of years of education, and GNI per capita.

The number of international migrants also has a positive trend, which confirms the emergence of a highly mobile global society. While in 1990, the share of international migrants in the total global population was 2.8%, in 2018, it increased to 3.5%. In 2019, the number of international migrants reached 271.6 million, compared to only 153 million in 1990 [Migration data portal, n.d.] – Figure 1.

Such circumstances create new challenges for countries, especially as regards their competitiveness in the global space. The increase in population mobility is an irreversible process, forcing countries to take additional measures to improve the internal conditions of human development. There is a growing need to formulate national human development policies within countries, given the conditions of increasingly mobile societies, and this concept must be scientifically substantiated.

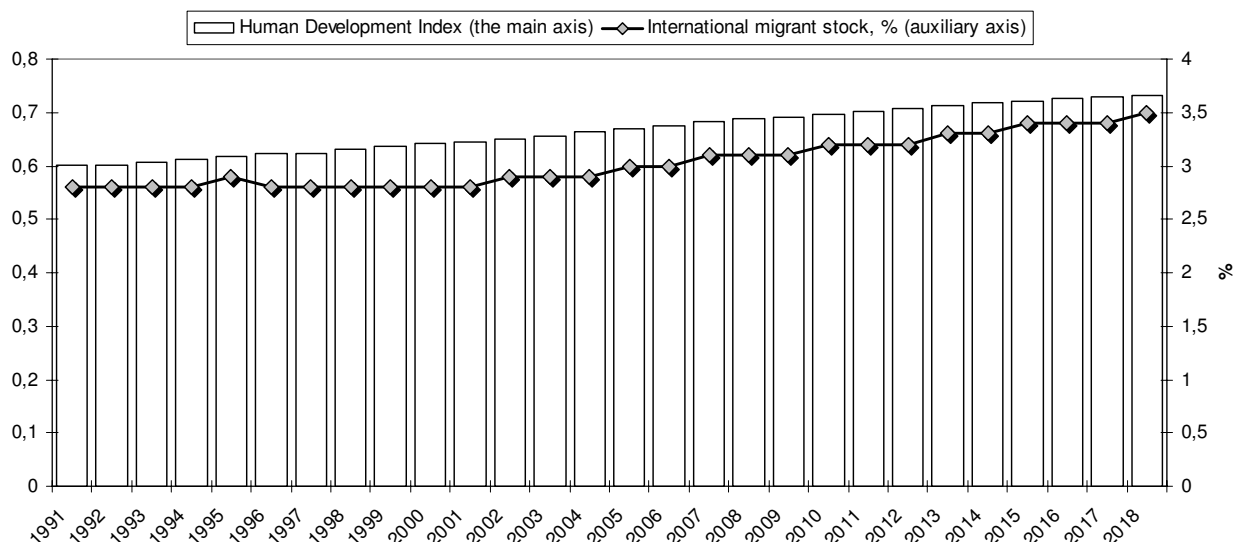


Fig. 1. Global migration trends and the growth of the HDI in the world, 1991–2018

Source: United Nations Development Programme portal database and Migration data portal database.

The content of human development policy in a highly mobile society

The human development policy should be seen as a comprehensive system of measures implemented by public authorities in cooperation with non-governmental organizations to provide demographic, valeological, educational, economic, ecological, and security conditions for a decent, socially just, and active life of modern populations. The human development policy must take on the characteristics of universalism in global space: human development is for everyone, and universalism is at the core of the human development concept and framework [Jahan 2019]. The educational component of human development policy also remains a priority: economic growth significantly depends upon the human development policy, and the government allocation for education is critical for economic development, more than for health care [Pradhan and Vinoy 2002].

The human development policy is implemented in the following areas: basic – demographics, health, education, employment, and income; and related – social protection, culture, civil society development, gender issues, and environment. The last period is marked by an increasing influence of political freedom on human development [Escosura 2019].

The state's human development policy in a highly mobile society is a set of measures with the imperative of a person's right to freedom of choice and freedom of movement. These measures aim at creating a favourable internal living environment while preserving the possibilities of return and protection of citizens regardless of their place of residence.

The content of such a policy manifests a certain antagonism since its purpose is to counteract the loss of human capacity, although it is focused on the creation and expansion of human capabilities, including the change of residence.

The scientific principles of the formation of a state's human development policy in a highly mobile society are defined by spatiology (the science of spatial organization of systems), which explains the movement of humans and accompanying resources in space; the science of time, which explains the movement of humans and accompanying resources in time (time perspective); the science of power, which defines

the principles of neoliberalism in the maintenance of social rights and personal guarantees.

The ideology of neoliberalism should underpin managerial influences on the human development environment of a highly mobile society. It serves as a platform for securing social rights and guarantees without which the freedom and decent life of the individual are impossible. These include ensuring equal access to education, creating safe working conditions, setting a minimum wage, unemployment benefits, creating a health care system for the poor, etc. [Kuts 2010].

Methodology of formation of the concept of national human development policy in a highly mobile society

The concept of national human development policy in a highly mobile society is a comprehensive long-term guideline in the legal form, which outlines the targeted priorities for improving the living environment of society while regulating the practice and consequences of its spatial mobility. The long-term implementation of such a concept allows the formation of a paradigm of human development for a highly mobile society.

The formation of the paradigm is the result of the consistent implementation of the relevant concept and sectoral doctrines – socio-cultural, political, legal, economic, and security (Fig. 2). The interrelation of concept and doctrines reflects the evolution of the human development paradigm of a highly mobile society, which requires outlining the conceptual foundations of the relevant policy. The latter, in turn, must be formed at the intersection of human development goals and priorities of regulating population mobility.

The concept should be formed based on the peculiarities of the regulation of the space of flows focused on a person with human needs, the right to choose, and freedom of movement. The introduction of a human development doctrine in a highly mobile society should lead to ensuring sustainable human development. Sustainability means gradualism and continuity in the face of new challenges. The focus on sustainable human development is also due to the fact that in 2015, following the implementation of the Millennium Development Goals, the further 2015–2030

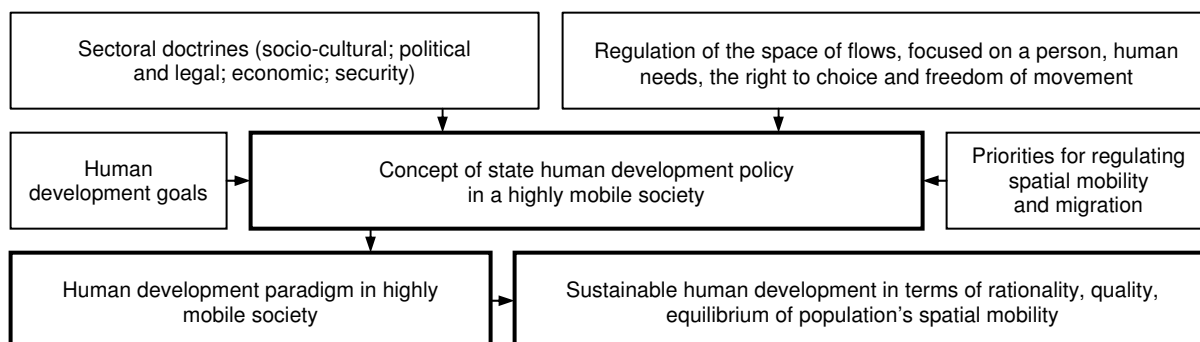


Fig. 2. The evolution of the human development paradigm in a highly mobile society

Source: Authors' own elaboration.

Sustainable Development Goals were approved. Thus, human development and sustainability are adjoining processes.

Sustainable human development of a highly mobile society means continuous improvement of its environment accompanied by rationality, quality, and equilibrium of processes of the population's spatial mobility. Mobility rationality is determined by the practice of using migration capital, by quality – the consequences of human capitalization as a result of displacement, and by equilibrium – ensuring demographic, labour capacity, financial equilibrium by migration flows.

Forming the conceptual foundations of a national human development policy in a highly mobile society should be carried out based on current political doctrines, and legally and institutionally enshrined (at the mental-value level of society). State regulation of migration plays an important role in these doctrines. In

this area, for most countries, many problems can be addressed by broadening the focus of managerial influence on spatial mobility.

Such considerations lead to the need to align the concept of state human development policy with the model of migration policy. Countries and integration groupings use different models, which boil down to conservative, liberal, and mixed traits (Table 1). If the policy is liberal, a society has greater possibilities to realize high spatial mobility, both from the viewpoint of emigration and immigration. Usually, a liberal model of migration policy is applied by countries that have certain economic, social, and migration peculiarities. Normally, these are economically developed countries; their populations have a high level of well-being and satisfaction of personal needs. There are countries characterized by high social unity, despite the multi-ethnic nature of their society. The liberal model is also acceptable for countries that depend on migration processes

Table 1. Models of migration policy in forming a concept of national human development policy in a highly mobile society

Features	Liberal model (cosmopolitan)	Mixed model	Conservative model (geopolitical)
The dominant concept	human rights	selective multiculturalism	concept of national interests
The basic principle	human rights priority	balancing human rights and national interests	concept of civil rights
The main regulator of migration	ensuring the exercise of the right to freedom of movement	creating choices	control over the population's size and composition

Source: Tiuriukanova and Zaionchkovska [2007].

in demographic, economic (migration capital, labour) and intellectual (attracting “brains”) terms.

Some countries are forced to resort to a conservative model of migration policy in the face of excessive loss of human capacity. The mixed model is a transitional one that promotes the concept of selective multiculturalism. Broadly, multiculturalism is used to refer to policies on ethnic, linguistic, religious, regional, sexual, and other cultural identities (usually ethnic) [Kolodiy 2011]. Multiculturalism has changed the idea of monoculturalism. Selective multiculturalism in a mixed model means the justification of liberal approaches to particular groups the country is interested in.

These models show that the exclusive dominance of the concept of human rights determines the degree of migration policy liberalization. Therefore, the question for modern countries is how to balance respect for human rights and national interests. The best option is to create a supportive living and development environment. Thus, indirect methods of influence can be used to secure the choice of the territory of residence.

Understanding of the need for the concept of state human development policy in a highly mobile society should be the prerequisite for its formation. The migration situation in the world and most countries requires increased state influence on the respective processes. It is possible to follow different scenarios. Below is the authors’ vision of the main ones:

1. No response. Such an approach is usually a sign of weakness in political will and inefficient governance. Under such conditions, market regulatory mechanisms are likely to “offset” current human losses for a country, if it has significant reserves in the size of population, but the risks of ignoring the problem of increasing international migration (labour, educational) are too high.
2. Solving acute problems. This approach is also a sign of inconsistent state policy with a high level of social formalism and a lack of adequate resources.
3. Work on the principle of benefiting from the migration situation with additional social pressure. Such a scenario is often observed in countries in the transformation period. The authorities of such countries may initiate taxation of the income of migrant workers abroad, introducing other obligatory payments. When the majority of the population is

forced to work abroad to ensure a decent standard of living, such government decisions are unacceptable and asocial.

4. Continuous improvement of migration policy and transition to new principles of migration process regulations through monitoring of the population’s spatial mobility. Following such a scenario requires the implementation of the following steps in the short term:
 - addressing acute migration issues – social protection for migrants, illegal employment, distant families;
 - stimulating the re-emigration of certain groups of migrants, especially young people studying abroad and persons with entrepreneurial abilities who are ready to invest migration capital into the economy of the country (region) upon their return;
 - comprehensive monitoring of the population on the readiness to travel abroad, especially young people, representatives of certain professional groups;
 - improving employment and training conditions in the country of origin, i.e. counteracting migration losses.

These priorities should underpin the development of an action plan for the implementation of national migration policy strategies. For a longer period, mobility should only be regulated through indirect methods. It is impossible to restrict the freedom to choose and the movements of the modern person. However, decent living and development opportunities at birth and residence place should be provided.

5. Formation of the newest human development paradigm of a highly mobile society on the basis of the conceptual principles of human development. This scenario reflects a far-sighted approach to strategic country development planning with a focus on sustainable human development.

Contents of the concept of the state human development policy in a highly mobile society

Let us consider the authors’ vision of the content of public human development policy in a highly mobile society, bearing in mind that it must take on a legal

nature. The concept should form the basis for the development of strategies for a specific period as well as an annual action plan for the implementing each measure. The concept should be a basic tool in fulfilling the human development policy goals of a highly mobile society (Fig. 3).

The goals of the foundational Block 1 of the concept should be oriented towards preserving social unity. Two powerful world processes are operating in parallel and their mobile equilibrium determines the modern trends of complex development of peoples and nations, their economies and cultures. The first is the globalization of the world, widespread manifestations of which are increasingly causing its heterogeneity and cross-communication. The second is the re-nationalisation of the world, the vector of which is aimed at preserving national identity and the exclusive

existence of every human being in the national environment and space that is necessary and comfortable for its development [Vovkanych and Ryndzak 2013]. Preservation of social unity is possible under conditions of increased spiritual and information mobility of a person and a nation. Spiritual and informational mobility is a permanent, natural and free social process of transmitting to the next generation, by contemporaries, the traditional information inherited from their predecessors. This information should be creatively enhanced not only to help preserve ethno-national identity, but also in order not to be left on the side-lines of scientific, technological, socio-economic or any other progress as a civilizational planetary phenomenon. This movement is carried out by people (community, society) through traditional transmission, “vertically” (from generation to generation) as an intangible trans-

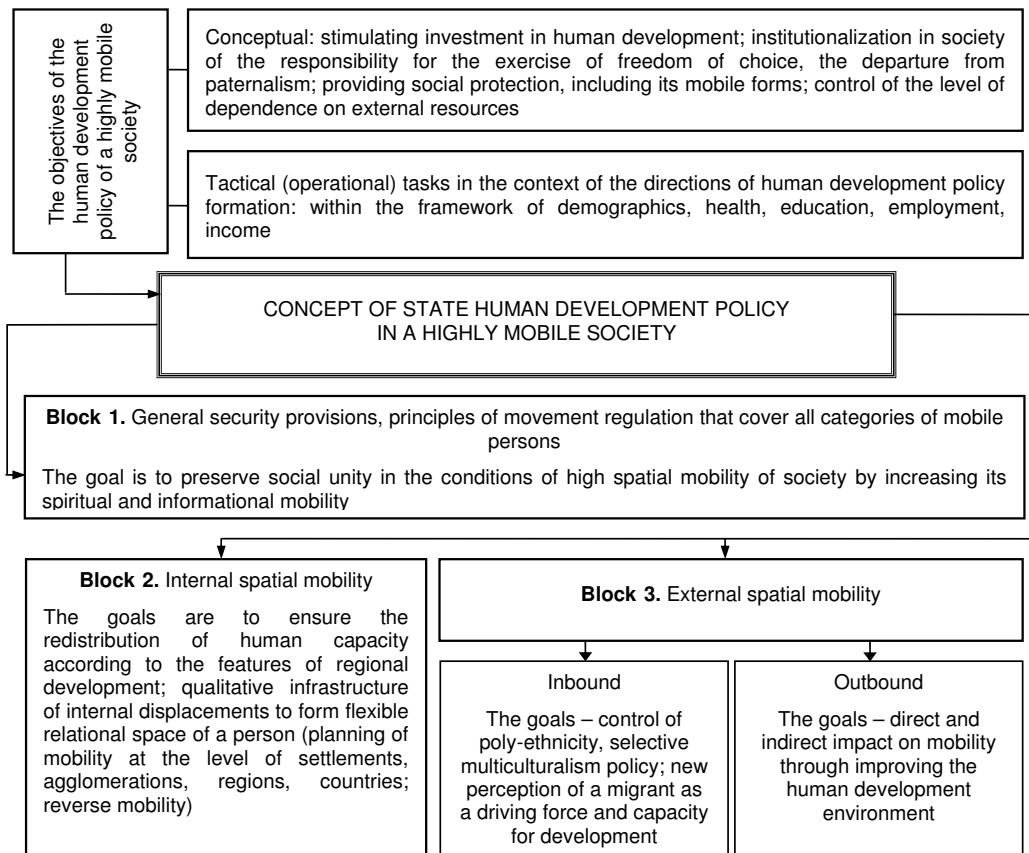


Fig. 3. The main blocks and goals of the concept of a state’s human development policy in a highly mobile society
Source: Authors’ own elaboration.

fer, and the creative “horizontal” production of new knowledge acquired at the level of one generation (or personality) [Vovkanych and Ryndzak 2013].

Enhanced migration has a strong impact on the preservation of spiritual and informational mobility. Knowledge, experience, traditions, culture, language, religious views are lost. The ability to adapt to new conditions contributes to the complete assimilation of migrants in 1–2 generations. To prevent this, it is necessary to support the activities of the Diaspora Institute. Saving social connections with representatives of the Diaspora is necessary not only economically (potential investors) and politically (lobby in other countries), but also spiritually and informationally – to preserve the movement of information in the integrity of the nation.

In the case of advanced spiritual and informational mobility of society, the impact of spatial mobility reduces the negative effects:

- for inbound mobility without breaking the nation’s identity frame;
- for outbound mobility, increasing propensity for circulating migration, maintaining a different kind of connection with the country of origin.

For highly mobile societies, Block 3 of the concept (Fig. 3) concerning external mobility is of particular importance. With regard to inbound mobility, the issues of poly-ethnicity and policy-making of selective multiculturalism are relevant. On the one hand, the way immigrants can be adapted to the receiving

society, while, on the other hand, the way to prevent them from being a burden as a result of such adaptation but rather a capacity and driving force for development should be clearly defined (Table 2).

Thus, a migrant should be seen by the receiving society as a driving force for development. For that matter, conditions for the effective use and development of human capacity should be created. This can be achieved by stimulating the migrants’ businesses in strategic types of economic activity and migrants’ productive innovation activity, which produces significant social, economic, environmental, and other effects. As a result, the permanent population will perceive migrants as not only seeking to be in their society, as an attractive environment, but also as being interested in developing the general society by improving the overall level of social well-being.

Certain conditions for the effective utilization of human capacity are also relevant for re-emigrants, in particular so-called second-generation migrants. The perception of economic development, political stability and the rule of law in home countries is critical to migrants’ decision-making about returning; without progress in the development of the home society, second-generation migrants who can be the engine of development in their home country are expected to be more willing to remain in host communities [Abbasi-Shavazi et al. 2017].

Block 3 of the concept (Fig. 3) identifies the goals for outbound external spatial mobility, which for most

Table 2. Targets for the perception of immigrants in the receiving society

Position	Conditions of positive consequences
Migrant – development driver	<ul style="list-style-type: none"> – effective use of labour (including intellectual), innovative capacity – motivation for business development and job creation – manifestations of civic activity overcoming social passivity
Migrant – development capacity	<ul style="list-style-type: none"> – improving demographic reproduction – possibility of migrant’s self-sufficiency as opposed to high paternalistic expectations (especially of permanent population) – development of social infrastructure with additional loadings
Migrant – link of social unity	<ul style="list-style-type: none"> – tolerant relationship between permanent population and migrants due to sound information policy – respect for the rights to equality, preservation of ethnolnational, cultural identity – selective multiculturalism policy for the purpose of long-term adaptation

Source: Authors’ own elaboration.

highly mobile societies acquires problematic and threatening features.

Outbound mobility, including migration, should be regulated in the following directions:

- direct impact;
- indirect impact by improving the conditions of the human development environment.

The priorities for direct impact on outbound external mobility are as follows:

- ensuring circulating migration;
- ensuring educational re-emigration;
- implementation of programs of migratory capital attraction in business (first of all, small);
- transparent migration regime (combating violations of border crossing customs procedures, in particular through video surveillance, which enhances public control);
- information support for migration regulation with the additional monitoring of the population spatial mobility (the practice of sampling surveys);
- ensuring the mobility of social protection for citizens abroad;
- ensuring systematic relations with representatives of the autochthonous and new diaspora to preserve national identity features in the host countries.

CONCLUSIONS

The concept of national human development policy in a highly mobile society is a complex ideological norm, which, providing for consistent implementation, ensures the formation of a corresponding paradigm. The concept should cover the system of goals and objectives by blocks – general approaches to security, and adherence to the principles of movement regulation of mobile persons; regulation of internal and external (inbound and outbound) population's spatial mobility. The content of the concept defines not only the targeted priorities for regulating the population's spatial mobility in different directions but also regulates the ideology of the development of a holistic society in the global mobile space. Deeply, such an ideology comes down to issues of social unity. A new stage of human development is likely to require the mobility of public administration (issues for further research of authors), following its actions regardless of the place

of residence of its citizens. Therefore, the conceptual justifications for the human development policy of a highly mobile society are needed today, to prevent negative effects in the long term and to refocus on the new challenges of progressive change.

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KRAJOWA POLITYKA ROZWOJU LUDZKIEGO W WYSOCE MOBILNYM SPOŁECZEŃSTWIE: METODYKA TWORZENIA I WDRAŻANIA KONCEPCJI

STRESZCZENIE

Celem artykułu było określenie znaczenia, kształtowania i wdrażania krajowej polityki rozwoju ludzkiego w wysoce mobilnym społeczeństwie w świetle współczesnego imperatywu prawa do swobodnego przemieszczania się i swobody wyboru. Polityka ta przewiduje zestaw narzędzi mających na celu stworzenie najlepszego wewnętrznego środowiska życia, a jednocześnie zachowania możliwości prawa do powrotu i ochrony obywateli niezależnie od ich miejsca zamieszkania. Badanie pogłębia teoretyczne podstawy krajowej polityki rozwoju ludzkiego. Artykuł uzasadnia dominację neoliberalnej ideologii w podejściach menedżerskich do wdrażania polityki oraz konieczność konsolidacji legislacyjnej krajowej polityki rozwoju ludzkiego w wysoce mobilnym społeczeństwie. Koncepcja obejmuje trzy kategorie i związane z nimi cele: ogólne przepisy bezpieczeństwa i zasady przepisów ruchu dotyczących wszystkich kategorii osób mobilnych; wewnętrzną mobilność przestrzenną; zewnętrzną (przychodzącą, wychodzącą) mobilność przestrzenną. Podejście to jest ważnym elementem wdrażania krajowych doktryn sektorowych (społeczno-kulturowych, politycznych i prawnych, ekonomicznych, bezpieczeństwa), które w perspektywie długoterminowej zapewnią ukształtowanie paradygmatu rozwoju człowieka w warunkach wysoce mobilnego społeczeństwa na rzecz zrównoważonego rozwoju ludzkiego. Harmonizacja krajowej polityki rozwoju ludzkiego z krajową polityką migracyjną świadczy o zaletach selektywnej wielokulturowości w zapewnianiu mobilności ludziom i państwom.

Słowa kluczowe: polityka rozwoju ludzkiego, mobilność przestrzenna, wysoce mobilne społeczeństwo, migracja, selektywna wielokulturowość

CRYPTOCURRENCIES AS A SUBJECT OF FINANCIAL INVESTMENTS. RISK ANALYSIS AND POTENTIAL BENEFITS ON THE EXAMPLE OF BITCOIN

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ABSTRACT

The cryptocurrency market has been developing dynamically in recent years. The rapid development of the market is the result of increased interest in cryptocurrencies both from the entities treating it as a means of payment and from investors acquiring cryptocurrency for speculative purposes. Blockchain technology, on the basis of which cryptocurrencies are created, has gained acceptance in the financial industry and many entities are conducting advanced work on its use in their operations. On the other hand, numerous supervisors, including the European Banking Authority, the European Central Bank, the National Bank of Poland, and the Polish Financial Supervision Authority warn against investing in cryptocurrencies, indicating the numerous risks associated with such investments. The aim of the article is to analyze the potential risks and benefits of investing in cryptocurrencies. The main risks related to investments in cryptocurrency were analyzed on the example of bitcoin, and the rate of return and correlations with changes in the currency prices of other financial instruments were analyzed.

Key words: cryptocurrency, bitcoin, financial investment

JEL codes: G11

INTRODUCTION

The cryptocurrency market has been developing dynamically in recent years. Market capitalization of all cryptos on 7 January 2018 reached a maximum value of USD 830 billion. Five years earlier at the beginning of 2013, this value was little more than USD 1 billion. The rapid development of the market was a consequence of an increased interest in cryptocurrencies, both from entities treating it as a means of payment and from investors acquiring cryptocurrency for speculative purposes. Blockchain technology, on the basis of which cryptocurrencies are created, has

gained acceptance in the financial industry. Therefore, many entities are conducting advanced work on its use in their operations. On the other hand, numerous supervisory authorities (including the European Banking Authority, the European Central Bank, the National Bank of Poland, and the Polish Financial Supervision Authority), warn against investing in cryptocurrencies, pointing to numerous threats related to such investments. When analyzing the status of these instruments in various countries, one can observe a very different approach from regulators. In some countries (Japan, Malta), bitcoin has become an acceptable means of payment, while others have taken steps to legalize or

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restrict the operation of exchanges and the possibility of buying such currencies (China). The aim of the article is to analyze the potential risks and benefits of investing in cryptocurrencies. The main risks related to investments in cryptocurrency were analyzed on the example of bitcoin, and the rate of return and correlations of changes in currency prices with other financial instruments were analyzed.

DEVELOPMENT OF THE CRYPTOCURRENCY MARKET

According to the definition proposed by the European Banking Authority [EBA 2013], digital currencies are: “an unregulated form of digital money that is not issued or guaranteed by a central bank and may constitute a means of payment”. Cryptocurrencies are a special type of digital money. They can be defined as [Piech 2016]: “a type of digital token based on cryptography used for digitally signing transactions and to control the growth of the supply of tokens”. Cryptocurrencies are based on a decentralized peer-to-peer network (P2P). Cryptocurrencies, due to their hybrid nature, can be used as a means of payment, investment (security tokens) and access (utility tokens) [Nabilou 2019].

Introduced into the market in January 2009, bitcoin is the most popular and most commonly used cryptocurrency. “It is a hybrid between commodity currency and fiat currency without intrinsic value and independent of any government or monetary authority” [Baur et al. 2018]. In recent years bitcoin has been a subject of

growing attention both from investors and academics, mainly due to its innovative features, transparency and simplicity [Urquhart 2016]. One of the main goals of the introduction of bitcoin was to enable free payments and transfers on a global scale without the participation of intermediaries, such as banks [Lo and Wang 2014]. The number of transactions which used bitcoin blockchain rose exponentially from around 1,000 per day in 2011 to around 300,000 per day in mid-2016 [Tasca et al. 2018]. However, as research conducted by ARK Investment and Coinbase shows, most bitcoin holders treat it as a financial investment – a means of storing value (thesaurization). In 2015, 64% of its owners perceived bitcoin as a means of storing value, in 2016 it was 54% [Burniske and White 2017]. Some studies show that bitcoin are mainly used as speculative investment and not as an alternative currency or medium of exchange [Baur et al. 2018].

The figure presents changes in the market capitalization of bitcoin. Starting from 2011, other cryptocurrencies competitive in relation to bitcoin started to appear in the market. The total market capitalization of cryptocurrency increased sharply in 2017 and at the beginning of 2018. At that time, the price of one bitcoin approached USD 20,000 and the total market value exceeded USD 800 billion. Since then, the price of bitcoin and the value of the entire market has been steadily declining. At the end of December 2019, the bitcoin market capitalization was USD 134 billion and market capitalization for all cryptocurrency was USD 196 billion [Coinmarketcap.com 2020].

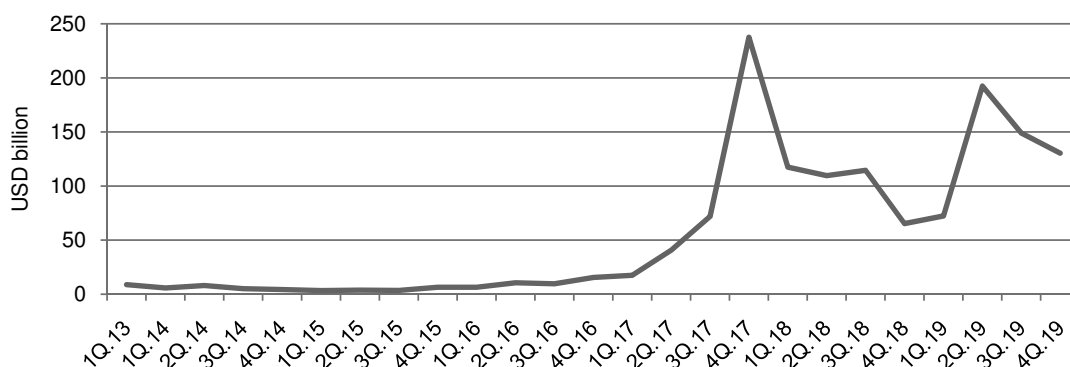


Fig. Capitalization of bitcoin market at the end of each quarter from 2013 to 2018
Source: coinmarketcap.com [accessed 15.01.2020].

Since the inception of bitcoin, over 1,500 other digital currencies have appeared in the market, and more than 600 are currently traded [Alessandretti et al. 2017]. Most of the newly created currencies were identical to bitcoin, differing only in terms of value. Only a small few featured a development of this concept or introduced significant innovations (e.g. Ethereum) [Hileman and Rauchs 2017]. Table 1 shows the share of the most important cryptocurrencies in the total market capitalization of cryptocurrencies in 2013–2019. By 2017, bitcoin was the defini-

tive leader in the market, the share of which exceeded 75%. At the beginning of 2017, bitcoin’s market share began to decline, mainly in favor of ripple, litecoin and ethereum and a bit later also in favor of bitcoin cash. By the end of 2018, the share of bitcoin in the market started to increase again and from the minimum level of 32.8% (18 January 2018) increased to over 68.4% (December 2019).

Despite the creation of many new cryptocurrencies, bitcoin is still the currency with the largest capitalization and significance.

Table 1. Share of the three most important cryptocurrencies in total market capitalization of cryptocurrencies in 2013–2019

Date	Cryptocurrency	Market value (USD billion)	Share in the whole crypto market (%)
31 December 2013	bitcoin	9.1	88.3
	litecoin	0.6	5.8
	ripple	0.2	1.9
31 December 2014	bitcoin	4.3	76.8
	ripple	0.7	12.5
	paycoin	0.2	3.6
31 December 2015	bitcoin	6.4	92.8
	ripple	0.2	2.9
	litecoin	0.2	2.9
31 December 2016	bitcoin	14.4	87.8
	ethereum	0.6	3.7
	ripple	0.2	1.2
31 December 2017	bitcoin	237.5	38.8
	ripple	89.1	14.5
	ethereum	73.2	11.9
31 December 2018	bitcoin	67.5	51.7
	ripple	15.1	11.6
	ethereum	14.6	11.2
31 December 2019	bitcoin	134.6	68.4
	ethereum	14.7	7.5
	ripple	8.5	4.3

Source: coinmarketcap.com [accessed 20.01.2020].

BITCOIN AS THE SUBJECT OF FINANCIAL INVESTMENT

When considering bitcoin as a subject of financial investment, it is worth starting with an analysis of the characteristics of various investment assets. According to popular classification, investment assets can be divided into three basic categories [Greer 1997]. Capital assets – bringing to the owner a certain stream of financial flow. They are characterized by having value equal to the sum of the discounted future cash flow that they will generate in the future. Commodity assets – those that are traded in financial commodity markets. Such assets have a certain economic value, resulting from their utility value, but do not bring their owners financial flow, and cannot be processed or consumed. Assets that store value (thesaurisation function), do not generate income and cannot be consumed. They have a value resulting from their purchasing power or the game of market forces. The latter group includes bitcoin. Some examples of individual assets are presented in Table 2.

According to portfolio analysis, which is the theoretical framework for making investment decisions, the basic parameters characterizing various assets include: risk, expected rate of return and correlation with other assets [Elton and Gruber 1998]. To assess investment efficiency, usually both the rate of return and risk are taken into consideration. Therefore, typical ratios which are used include: Sharpe, Jensen and

Treynor [Żebrowska-Suchodolska 2018]. Investors strive to make decisions that will create an effective portfolio, i.e. one that will have one of two characteristics: (1) at the expected rate of return, there will be minimal investment risk or (2) with a certain level of risk, the potential return will be maximized [Jajuga and Jajuga 2015].

In addition to the risks typical of other financial assets, investing in cryptocurrencies carries other specific risks. The risks shared with other types of assets can include: market risk, volatility risk and liquidity risk. Numerous risk-specific cryptocurrencies are described, among others, by supervisory authorities overseeing the financial market. The National Bank of Poland and the Polish Financial Supervision Authority have issued public warnings to draw attention to the following issues [KNF 2017]:

- Cryptocurrencies are not electronic money, currency or legal tender (they do not meet the criteria set out in the Act of 19 August 2011 on payment services). They are only a “digital representation of the contractual values among its users”.
- Cryptocurrency holders are exposed to a significant risk of losing money due to theft. This may be as a consequence of cyber-attacks on entities running exchanges that trade in cryptocurrencies or provide customer storage services. For example, in 2014 one of the biggest bitcoin exchanges, Mt. Gox, collapsed and announced that 754,000 of its customers’ bitcoins were stolen by hackers.

Table 2. Examples of assets belonging to different categories

Specification	Financial assets	Commodity asset	Value storing asset
Stocks	x		
Debentures	x		
Properties that bring income	x		
Commodities – crops, energy resources		x	
Precious metals		x	x
Currencies			x
Works of art			x
Bitcoin and other cryptocurrencies			x

Source: Greer [1997].

- The market value of these bitcoins was at that time around USD 450 million [Böhme et al. 2015].
- Funds stored in cryptocurrencies are not covered by guarantees of state institutions (such as the Bank Guarantee Fund).
 - Prices of many cryptocurrencies are characterized by very high volatility (significantly exceeding other types of financial assets).
 - There is risk related to the possibility of fraud; some offers for investment in cryptocurrencies may have the character of financial pyramids.
 - A large number of institutions providing services related to cryptocurrencies operate outside the territory of Poland and the EU, which may significantly hamper the investigation of possible claims.

In addition, the Polish Financial Supervision Authority [KNF 2017] and the European Securities and Markets Authority [ESMA 2017] have drawn attention to the very high risk associated with investing in ICOs (Initial Coin Offerings).

The European Banking Authority [EBA 2013], like Polish institutions, points out that the majority of investors buying cryptocurrencies use stock exchanges or transaction platforms. Many of them operate without guarantees that would protect investor funds in case of financial problems which could occur for the institution: for instance, as a result of hacker attacks. In addition, the EBA has drawn attention to cases where money stored in digital wallets on a computer or smartphone has been lost. Given the generally low level of security protecting such devices, there is a risk of a hacker attack and loss of all the digital currencies stored in this way. Trading and exchanging digital currencies may also give rise to tax liabilities (VAT or capital gains tax), depending on the regulations that apply in individual countries.

The lack of unambiguous legal regulations, varied treatment of bitcoin in particular countries, and the possibility of unexpected changes in legal regulations can also create additional investment risk. An example of the realization of this type of risk can be seen in countries that have introduced a ban on payments using bitcoin, and a ban on exchanging bitcoin into traditional currency (China, Indonesia) [Bloomberg News 2018]. The actions of some states to limit the

possibility of using bitcoin may result, to some extent, from the fact that one of the basic advantages of bitcoin – anonymity in financial transactions – encourages people and organizations involved in criminal and terrorist activities to use it [Schuh and Shy 2016].

DATA AND METHODOLOGY

In order to calculate the basic parameters characterizing bitcoin as a potential investment, the historical monthly rates of return for the BTC/USD exchange rate were calculated for the period from 1 January 2011 to 31 December 2019. They were compared with the rates of return on the following instruments: gold (based on XAU/USD price of gold futures), the S&P 500 Index and the EUR/USD exchange rate. Then, standard deviations and the correlation of monthly returns for the above-mentioned instruments were calculated. The quotations data from the stooq.pl website was used for the calculations. For the calculation of rates of return, standard deviation and correlation, data from closing quotes was used.

Tables 3, 4 and 5 contain the data on historic returns on bitcoin investments in 2011–2019. The data was compared to the rates of return on other assets: gold, S&P 500 and EUR.

Table 5 also shows calculations for the average monthly rate of return from the assets for the entire analyzed period. In the years 2011–2019, bitcoin was characterized by a very high positive rate of return (18.1%), exceeding by several times the rate of return that could be achieved when investing in other assets. The rapid increase in the price of bitcoin was caused by rapidly growing demand (both due to speculative motives and related to its use as a means of transferring value), with limited supply and very low initial capitalization (low base effect).

It is worth mentioning that at the beginning of 2011, the price of bitcoin was around USD 0.3, which translated into a market value for the whole market of approximately USD 3 million. In 2017, it was estimated that the number of active holders of bitcoin portfolios ranged from 2.9 million to 5.9 million [Hileman and Rauchs 2017]. Table 6 presents data on the risk related to price fluctuations of bitcoin, gold, S&P 500 index

Table 3. Monthly rates of return from bitcoin, gold, S&P 500 Index and EUR in 2011–2014 (%)

Month	2011				2012				2013				2014			
	B	Z	S	E	B	Z	S	E	B	Z	S	E	B	Z	S	E
I	76.3	-5.7	1.1	2.6	29.1	11.0	4.4	1.0	51.1	-0.8	5.0	2.9	9.2	3.4	-3.6	-2.0
II	65.4	5.8	3.2	0.9	-11	-2.4	4.1	1.8	63.5	-5.1	1.1	-3.8	-32	6.3	4.3	2.4
III	-8.8	1.5	-0.1	2.6	0.0	-1.6	3.1	0.1	171	1.1	3.6	-1.9	-19	-3.0	0.7	-0.2
IV	267	9.2	2.8	4.5	1.8	-0.3	-0.7	-0.7	52.9	-7.5	1.8	2.7	-1.7	0.0	0.6	0.7
V	204	-1.8	-1.4	-2.8	4.7	-6.3	-6.3	-6.7	-7.9	-6.2	2.1	-1.3	36.5	-2.6	2.1	-1.7
VI	84.2	-2.3	-1.8	0.7	28.4	2.5	4.0	2.5	-25	-11.0	-1.5	0.1	4.6	6.1	1.9	0.5
VII	-16	8.3	-2.1	-0.6	40.6	1.1	1.3	-2.9	12.9	7.5	4.9	2.2	-8.3	-3.4	-1.5	-2.2
VIII	-39	12.3	-5.7	-0.1	8.7	4.8	2.0	2.2	26.2	5.2	-3.1	-0.6	-13	0.4	3.8	-1.9
IX	-37	-11.0	-7.2	-6.9	22.0	4.7	2.4	2.3	3.9	-4.7	3.0	2.3	-24	-6.1	-1.6	-3.9
X	-37	5.3	10.8	3.4	-9.6	-2.9	-2.0	0.8	49.6	-0.4	4.5	0.5	-12	-3.0	2.3	-0.8
XI	-8.6	2.3	-0.5	-2.9	12.2	-0.3	0.3	0.2	448	-5.2	2.8	0.0	11.3	-0.3	2.5	-0.6
XII	43.0	-10.5	0.9	-3.6	7.5	-2.2	0.7	1.6	-35	-4.0	2.4	1.3	-16	1.2	-0.4	-2.8

B – bitcoin, Z – gold, S – index S&P 500, E – rate EUR/USD.

Source: Author's own study based on data from the stooq.pl website.

Table 4. Monthly rates of return from bitcoin, gold, S&P 500 Index and EUR in 2015–2018 (%)

Month	2015				2016				2017				2018			
	B	Z	S	E	B	Z	S	E	B	Z	S	E	B	Z	S	E
I	-28	8.5	-3.1	-6.6	-12.8	5.3	-5.1	-0.3	0.7	5.2	1.8	2.6	-29.8	3.2	5.6	3.4
II	10.8	-5.6	5.5	-1.0	16.5	10.8	-0.4	0.5	23.4	3.2	3.7	-2.1	3.4	-2.0	-3.9	-1.8
III	-3.7	-2.3	-1.7	-4.0	-4.8	-0.5	6.6	4.6	-9.7	-0.1	0.0	0.9	-34.6	0.5	-2.7	1.0
IV	-3.4	0.1	0.9	4.4	9.5	4.9	0.3	0.6	20.3	1.7	0.9	2.1	35.2	-0.7	0.3	-1.9
V	0.2	0.5	1.0	-2.1	15.7	-6.0	1.5	-2.8	78.2	0.0	1.2	3.2	-18.1	-1.3	2.2	-3.2
VI	10.9	-1.5	-2.1	1.5	26.7	8.7	0.1	-0.2	10.3	-2.1	0.5	1.6	-22.1	-3.5	0.5	-0.1
VII	8.4	-6.6	2.0	-1.5	-1.6	2.3	3.6	0.7	12.8	2.3	1.9	3.6	31.1	-2.4	3.6	0.1
VIII	-19	3.6	-6.3	2.1	-12.9	-3.2	-0.1	-0.2	65.9	4.0	0.1	0.7	-8.7	-1.9	3.0	-0.7
IX	3.0	-1.7	-2.6	-0.3	5.8	0.7	-0.1	0.7	-12.6	-3.0	1.9	-0.9	-5.2	-0.6	0.4	0.0
X	35.1	2.4	8.3	-1.5	15.4	-3.1	-1.9	-2.3	53.3	-0.7	2.2	-1.4	-5.2	2.0	-6.9	-2.5
XI	18.3	-6.8	0.1	-3.9	6.1	-8.1	3.4	-3.4	53.5	0.3	2.8	2.1	-37.2	0.6	1.8	0.0
XII	13.8	-0.3	-1.8	2.7	29.5	-1.9	1.8	-0.7	46.6	2.2	1.0	0.9	-6.2	4.9	-9.2	1.3

B – bitcoin, Z – gold, S – index S&P 500, E – rate EUR/USD.

Source: Author's own study based on data from the stooq.pl website.

Table 5. Monthly rates of return from bitcoin, gold, S&P 500 Index and EUR in 2019 (%)

Month	2019				The average monthly rate of return 2011–2019			
	B	Z	S	E	B	Z	S	E
I	-7.5	3.0	7.9	-0.2				
II	11.0	-0.7	3.0	-0.7				
III	7.1	-1.5	1.8	-1.3				
IV	30.9	-0.7	3.9	0.0				
V	57.0	1.7	-6.6	-0.4				
VI	46.1	8.1	6.9	1.8	18.1	0.2	0.9	-0.1
VII	-18.4	0.2	1.3	-2.6				
VIII	-4.7	7.8	-1.8	-0.7				
IX	-13.6	-3.3	1.7	-0.8				
X	10.4	2.7	2.0	2.3				
XI	-15.1	-3.2	3.4	-1.2				
XII	-7.3	3.6	2.9	1.8				

B – bitcoin, Z – gold, S – index S&P 500, E – rate EUR/USD.

Source: Author’s own study based on data from the stooq.pl website.

and EUR measured by the standard deviation of the monthly rate of return.

When analyzing the data in Table 6, very high levels of standard deviation of bitcoin returns are noteworthy. This indicates the existence of a very high risk related to the volatility of the price of this asset. Table 7 presents data on the correlation of rates of return of bitcoin with other assets (gold, S&P 500 index and EUR/USD exchange rate).

The correlation ratios of bitcoin with other assets are very low. From the point of view of creating an investment portfolio, this is a very desirable feature. Investors are looking for assets with low correlation (preferably negative) for their portfolios, because it allows them to achieve a risk-diversification effect. From this point of view, bitcoin seems to be an asset that can be considered a good supplement to portfolios of classical financial assets.

Table 6. Standard deviation of monthly returns from bitcoin, gold, S&P 500 index and EUR/USD exchange rate in 2011–2019 (%)

Index	2011	2012	2013	2014	2015	2016	2017	2018	2019
Bitcoin (BTC/USD)	98.7	16.0	131.3	18.7	16.7	13.9	30.2	23.1	24.7
Gold (XAU/USD)	7.6	4.6	5.3	3.9	4.4	5.8	2.5	2.5	3.8
Index S&P 500	4.6	3.0	2.5	2.3	3.9	2.9	1.1	4.4	3.7
EUR/USD	3.3	2.6	2.1	1.7	3.2	2.1	1.8	1.8	1.5

Source: Author’s own study based on data from the stooq.pl website.

Table 7. Correlation coefficient for monthly rates of bitcoin, gold, S&P 500 index and EUR/USD exchange rate in 2011–2019

	BTC/USD	XAU/USD	S&P 500	EUR/USD
BTC/USD	1.0000	-0.0177	0.1267	0.0872
XAU/USD	-0.0177	1.0000	0.0375	0.3443
S&P 500	0.1267	0.0375	1.0000	0.3486
EUR/USD	0.0872	0.3443	0.3486	1.0000

Source: Author’s own study based on data from the stooq.pl website.

CONCLUSIONS

The introduction of bitcoin in 2009 – the first cryptocurrency – can be considered as a very important financial innovation. Since then, the cryptocurrency market has evolved considerably: both in terms of quantity and the overall value of existing currencies. In the background of this process, the entire ecosystem of entities dealing in mediation in transactions (cryptocurrencies), their safe storage (portfolios), mining (digging) and solutions related to payments has been created. At the same time, many entities are trying to implement blockchain technology for other commercial applications.

The analysis of the exchange rate of bitcoin in 2011–2019 shows that it is characterized by very high historical rates of return, which is also associated with a very high risk of price fluctuations. From the point of view of shaping an investment portfolio, an important and desirable feature of bitcoin is the low correlation coefficient between this currency and other investment assets. It is worth noting, however, that bitcoin investments are burdened with additional risks that do not exist for other types of assets. Among these risks is, for example, the possibility of losing some or all of the invested funds due to problems in the exchange market, since these intermediaries in the purchase of cryptocurrencies offer no guarantees for deposited funds. In addition is the added possibility of losing money stored in digital portfolios as a result of cybercriminal activities. Investors considering the purchase of bitcoin should be aware of the existence of such risks and should try to limit them by skillfully using the most secure intermediaries which operate in countries that regulate their operations, and

which use technological solutions that make it difficult or completely impossible to steal cryptocurrencies.

Acknowledgements

The article is the result of the project: International Scientific Conference “Financialization and Society”, implemented by the University of Information Technology and Management based in Rzeszów, in cooperation with the National Bank of Poland as part of the economic education program.

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KRYPTOWALUTY JAKO PRZEDMIOT INWESTYCJI FINANSOWYCH. ANALIZA RYZYKA I POTENCJALNYCH KORZYŚCI NA PRZYKŁADZIE BITCOINA

STRESZCZENIE

Rynek kryptowalut rozwijał się dynamicznie w ostatnich latach. Szybki rozwój rynku wynikał ze wzrostu zainteresowania kryptowalutami zarówno ze strony podmiotów traktujących je jako środek płatniczy, jak i ze strony inwestorów nabywających kryptowalutę w celach spekulacyjnych. Technologia *blockchain*, na podstawie której tworzone są kryptowaluty, zyskała akceptację branży finansowej. Z jednej strony wiele podmiotów prowadzi zaawansowane prace nad jej wykorzystaniem w prowadzonej działalności, ale z drugiej liczni nadzorcy, w tym Europejski Urząd Nadzoru Bankowego, Europejski Bank Centralny, Narodowy Bank Polski, Komisja Nadzoru Finansowego, ostrzegają przed inwestowaniem w kryptowaluty, wskazując na ryzyko związane z takimi inwestycjami. Analizując status tych instrumentów w różnych krajach, można zaobserwować bardzo odmienne podejście organów regulacyjnych. Celem tego artykułu jest analiza potencjalnego ryzyka i korzyści związanych z inwestowaniem w kryptowaluty. Główne ryzyko związane z tego rodzaju inwestycjami analizowano na przykładzie bitcoina. Przeanalizowano również stopy zwrotów i korelację zmian cen walut z innymi instrumentami finansowymi.

Słowa kluczowe: kryptowaluta, bitcoin, inwestycje finansowe

CAN INDIVIDUAL INVESTORS BENEFIT FROM TECHNICAL ANALYSIS IN MARKETS OF SOFT COMMODITIES? EMPIRICAL STUDY FOR 2010–2018

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ABSTRACT

After the 2008 financial crisis, many investors diversified their portfolios with different commodities, including the so-called softs. This paper aims to answer the question of whether individual investors can benefit from technical analysis on soft commodity markets. The empirical study is based on daily quotations of six soft commodities: coffee, cocoa, sugar, cotton, rubber and frozen concentrated orange juice from 2010 to 2018, and investigates the profitability of applying indicators and oscillators based on moving averages with different length. The results show that the application of five-day simple and weighted moving averages and momentum oscillators was most effective, providing positive returns in five out of six soft commodities markets.

Key words: soft commodities, technical analysis, profitability of technical rules

JEL codes: G11, G14

INTRODUCTION

Technical analysis is a method of forecasting price movements using past prices, volume and/or open interest. It is based on the assumption that markets are driven more by psychological factors than fundamental values. Its advocates are of the opinion that commodity prices reflect not only the underlying “value” of the commodity, but also the hopes and concerns of market participants. If the emotional attitude of investors does not change, then in a certain set of circumstances, investors will behave in a similar way to how they used to do in the past. As a result it is very likely that price moves will be the same. In other words: “history tends to repeat itself” [Lhabitant 2008, p. 392].

Pring provides a more specific definition. According to him, “the technical approach to investment is

essentially a reflection of the idea that prices move in trends that are determined by the changing attitudes of investors toward a variety of economic, monetary, political, and psychological forces. The art of technical analysis, for it is an art, is to identify a trend reversal at a relatively early stage and ride on that trend until the weight of the evidence shows or proves that the trend has reversed.” [Pring 2002, p. 2].

Geman quotes another definition, originally developed by Perfetti in 1992, that “technical analysis is the ability to identify trend changes at any early stage and to maintain an investment position until the weight of evidence indicates that the trend has reversed” [Geman 2007, p. 163]. It is worth noting that technical analysis is not aimed at forecasting trends in the economy nor at assessing the attitudes of investors toward those changes. Rather, it is focused on identifying turning points in market performance.

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The history of technical analysis dates back to at least the 18th century, when the Japanese developed a technique that is today known as ‘candlestick charting’. It was not introduced to the West until the 1970s [Park and Irwin 2008]. What is more, technical analysis has a long history and a widespread use in commodity markets. The technical approach to investment in commodity markets also relies on the same premise that prices move in trends determined by changing attitudes of investors toward a number of variables, including factors that dictate price movements in both physical and futures markets.

Over the years, numerous empirical studies have investigated the profitability of technical rules in a variety of commodity markets. For example, in his pioneering work, Smidt [1965] surveyed amateur traders in U.S. commodity futures markets and found that over half of the respondents used charts exclusively or moderately in order to identify trends. In more recent contribution, Miffre and Rallis [2007] present evidence that trend-following strategies perform well for commodities, consistent with previous results on the equity markets. Similar findings are obtained in Erb and Harvey [2006], Fuertes et al. [2008], Szakamary et al. [2010], Górska and Krawiec [2011], or Zaremba [2015]. The studies mostly focus on markets of gold, oil and some agriculturals, including single soft commodities, most often cocoa or coffee, and sometimes sugar. This paper investigates six basic soft commodities: coffee, cocoa, sugar, cotton, rubber and frozen concentrated orange juice. The empirical analysis covers the period from 2010 to 2018 and is aimed at assessing the profitability of investment strategies based on moving averages and oscillators applied in these markets.

METHODOLOGY

A first simple and intuitive approach to gather evidence that commodities exhibit persistent trends is to compute autocorrelation of returns of order h , that is:

$$\hat{\rho}_h = \frac{\text{cov}(r_t, r_{t-h})}{V(r_t)} \quad (1)$$

where:

$\text{cov}(\cdot, \cdot)$ – covariance,
 $V(\cdot)$ – variance.

If $\hat{\rho}_h$ is positive and significant at 5% risk level, this provides evidence that a given commodity exhibits persistence. On the contrary, if $\hat{\rho}_h$ is negative and significant, the commodity under consideration has a mean-reverting behavior, rapidly correcting its trajectory in case of a large positive or negative return. An asset or commodity with persistent returns will stand a higher chance of being affected by trends. When it goes through a shock, this shock will have long-lasting effects on the returns themselves. In other words: an asset with positively autocorrelated returns will stand a greater chance of displaying a performance of a similar sign over the following periods [Chevallier and Ielpo 2013].

Instead of testing the statistical significance of any individual autocorrelation coefficient, we can test the joint hypothesis that all the $\hat{\rho}_h$ up to certain lags are simultaneously equal to zero. This can be done by using the statistic developed by Box and Pierce [1970]. In 1978 this statistic was modified by Ljung and Box. The Ljung–Box (LB) statistic is defined as:

$$LB = n(n+2) \sum_{h=1}^m \frac{\hat{\rho}_h^2}{n-h} \quad (2)$$

where:

n – sample size,
 m – lag length.

In large samples LB statistic follows chi-square distribution with m degrees of freedom [Ljung and Box 1978]. According to Gujarati, “the LB statistic has been found to have better (more powerful in the statistical sense) small-sample properties than the Box-Pierce statistic” [Gujarati 2003, p. 813].

The basics of trend-following investment approaches should push investors to hold a long position (respectively short) into commodities with a positive (negative) past performance. Despite the simplicity of the approach, there are some important issues that should be considered. One of them is the horizon over which to compute the past performance of each asset – that is the past momentum. However, investors can choose between several alternative investment strategies that track this momentum effect in commodities. They are filters, moving averages or channel breakouts, momentum oscillators, etc.

Indicators are one of the most frequently used technical analysis tools. In simplified terms, it can be stated that technical indicators are mathematical formulas for which data is used to determine the changes in prices of stock exchanges and the volume of trading. The result of such an algorithm is the forecast of the trend as well as turning points on the market [Achelis 1998]. Most often, the indicators are presented separately or together with price on the charts. An appropriate intersection or positioning of specific lines relative to each other on the chart generates a buy or sell signal that should be reflected in investment decisions.

The faster the signals of market changes can be read, the greater the value an indicator has for an investor. As with charts, one can create indicators for data with a different time horizon. They constitute quite a large group of tools. Experts divide technical indicators, among others, into trend indicators and oscillators. The former are tools mainly used to identify a trend. In the literature, this group of tools is referred to as trend-following indicators. This is due to the fact that they are usually lagging behind the trend, i.e. they change direction after a trend change. They work better for long- and medium-term trends than for horizontal trends. On a flat market, they often give incorrect signals about turning points. For long- and medium-term trends, these indicators can confirm the trend, but also identify divergence, which is a warning signal for investors. This group of indicators includes moving averages (simple moving average, weighted average, exponential average) and MACD (moving average convergence/divergence).

Indicators that catch turning points more effectively are oscillators. They react simultaneously or even overtake price changes. Their task is to study the speed of these changes and generate signals informing about short-term changes in trends. That is why they work well in horizontal trends as well as in markets with high price volatility. This group of investment tools includes, among others, momentum and CCI (commodity channel index).

Moving averages (MA) are one of the most popular technical analysis tools. This average is a function that can be written by the formula [Wang et al. 2014]:

$$MA_t = \frac{1}{n} \sum_{i=t-n+1}^t p_i \quad (3)$$

where:

- n – number of days for which the moving average is calculated,
- p_i – today's price.

There are two objections to the simple moving average which question its usefulness. The first is that it is incorrect to give equal weights to data included in the average. The second plea relates to taking into account in the simple average only the period it covers, while the exchange rate may depend on a larger time horizon. The first complaint can be refuted by building a weighted average. As a result, subsequent observations can be assigned appropriate weights, e.g. the oldest observation will have a weight of one, and subsequent observations will have one more than the previous one. As a result, the structure will look like this:

$$\overline{MA}_t = \sum_{i=t-n+1}^t w_i \cdot p_i \quad (4)$$

where:

$$w_i = \frac{2i}{n(n+1)}$$

Both averages do not cover the entire study period.

In addition to simple moving averages, where all prices have the same weight and weighted average, the exponential moving average (EMA), which covers the entire study period, is used by market participants [Šonje et al. 2011]:

$$EMA_t = (p_t - EMA_{t-1})K + EMA_{t-1} \quad (5)$$

where:

K is the weight of the most recent observation

$$K = \frac{2}{n+1}$$

The most recent price, which enters the calculation last, has the greatest weight in calculation of averages, while the oldest price has the least weight. Hence, EMA reflects the current market situation more objectively than simple moving averages where the oldest and the latest price receive the same weight.

Moving averages form a large group of technical indicators that allow identification of a trend. It is difficult to indicate which average is the most effective because it depends on the market conditions. The most common uses of moving averages are to identify the trend direction and to determine levels of support and resistance. Although moving averages are useful in themselves, they also form the basis for other technical indicators such as the Moving Average Convergence Divergence (MACD).

MACD is a trend-following momentum indicator that shows the relationship between two moving averages of a security's price and triggers buy and sell signals for investors. Many research papers on technical analysis apply standard lengths for averages used in MACD [Apirine 2017, Wang and Kim 2018, Borowski and Pruchnicka-Grabias 2019]. MACD construction requires three exponential moving averages (EMA) to identify the continuation or reversal of a trend. It is generally accepted that the periods are 12 and 26 days for generating the first indicator:

$$MACD = EMA_{12\text{-day closing prices}} - EMA_{26\text{-day closing prices}} \quad (6)$$

The second indicator (signal line) is applying EMA to smooth the first indicator. The standard day setting for signal line is 9:

$$Signal = EMA_{9\text{-day MACD}} \quad (7)$$

A buy signal is generated when the MACD indicator (more volatile) crosses the *Signal* (less volatile one) from beneath. The sales signal is generated when the opposite condition occurs: when MACD indicator crosses *Signal* indicator from above.

Momentum is another of the basic tools from the oscillator group for measuring impetus. It measures the degree of buying out or selling out of the market. The design of this indicator is simple. In order to determine it, we use the following formula:

$$Mtm_k = p_t - p_{t-k} \quad (8)$$

where:

p_t – price at moment t ,

p_{t-k} – price from before k sessions from t .

It can be seen that the algorithm consists of counting the differences that inform how the price of the stock changes in relation to the price from a few days ago. As in the case of most indicators, here too one should consider the choice of parameter k . Of course, there is no universal size for this parameter. One often proposed value is a 10-day price comparison period. It should be remembered that higher values of this parameter will smooth the indicator, which will result in a smaller number of buy or sell signals. Smaller values will cause larger fluctuations of the indicator, which will generate more transaction signals.

RESULTS

In the first step of the research, to test whether soft commodities returns are independent, we plot the sample autocorrelation functions (ACFs) in the figure. Although some autocorrelations are statistically different from zero at the 5% level (e.g. at lags 18, 20, 21 and 24 for coffee; at lags 1 and 28 for cocoa, etc.), there is no systematic pattern of autocorrelations. To investigate it further, we compute the Ljung–Box test statistic of the joint null hypothesis that all of the first 5, 10, 20, and 30 autocorrelations are zero. The results obtained are given in Table 1. They show that regardless of the number of lags, we find statistically significant autocorrelation for cotton, frozen concentrated orange juice, and rubber returns.

In the second step of the research, standard (i.e. most commonly used) indicators with different parameters, recommended among others by Tarczyński [1997], Murphy [1998], Czekaj et al. [2001], Witkowska et al. [2008], Šonje et al. [2011], Wang et al. [2014] or Wang and Kim [2018], are calculated. They are:

- simple moving average: 5, 10, 20, 50 and 200 days,
- weighted moving average: 5, 10, 20, 50 and 200 days,
- exponential moving average: 5, 10, 20, 50 and 200 days,
- MACD: 8; 17; 9 and 12; 26; 9,
- momentum: 5; 9, 10; 9, 20; 9, 50; 9 and 200; 9.

A summary of the most important simulation results carried out for individual indicators and oscillators is given in Table 2, which contains information

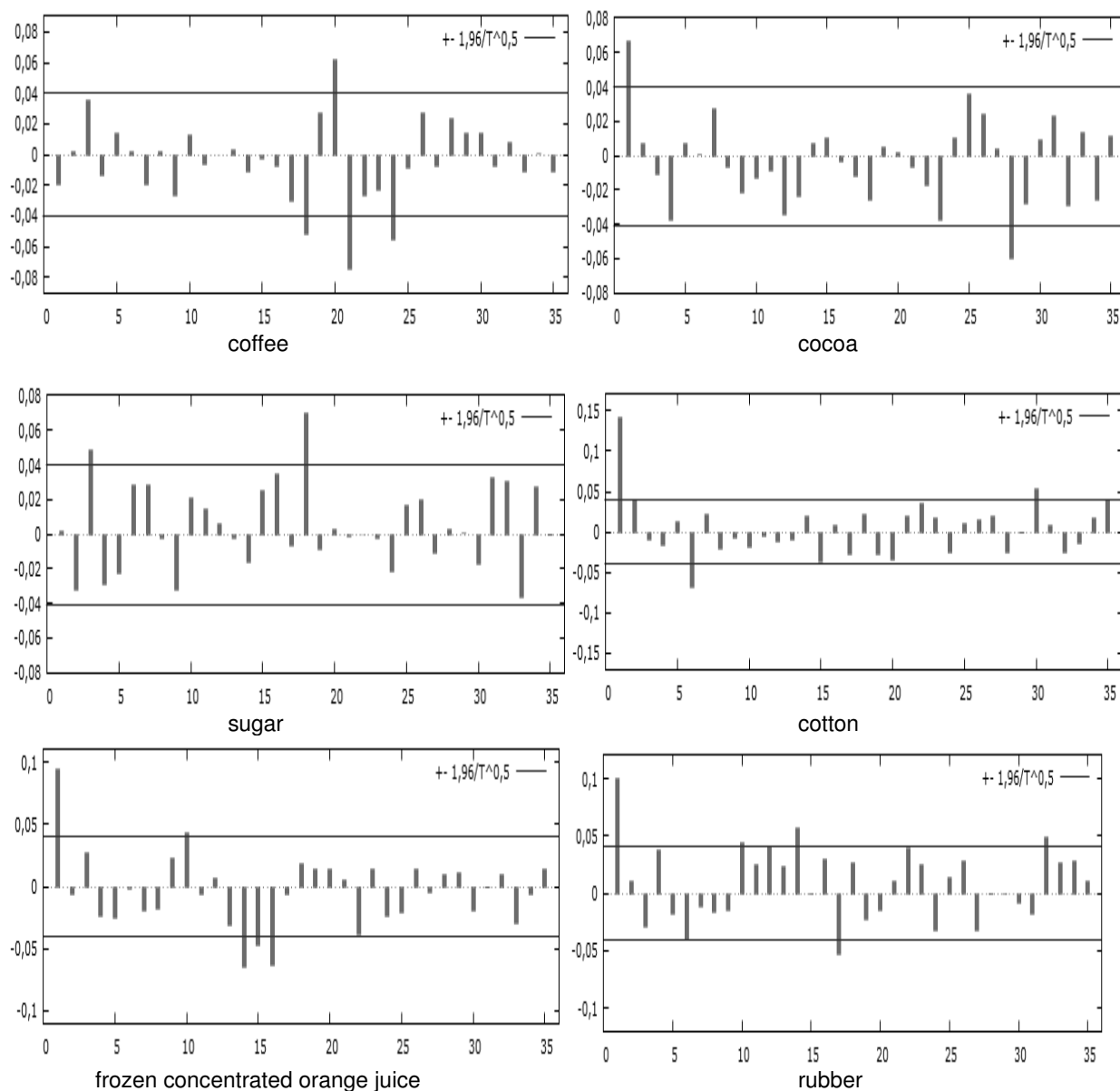


Fig. Sample autocorrelation functions (ACFs) for logarithmic returns of soft commodities

Source: Authors' own elaboration.

Table 1. Values of LB statistic for logarithmic returns of soft commodities

Commodity	Number of lags			
	5	10	20	30
Coffee	4.8438	7.8191	27.9081	55.8324*
Cocoa	14.3169*	17.8103	24.5074	44.1068
Sugar	11.3304	18.6346	36.0812*	39.8390
Cotton	52.4109*	66.3855*	79.3478*	95.5148*
Frozen concentrated orange juice	25.3462*	32.6107*	62.0841*	70.4830*
Rubber	30.2267*	40.2175*	66.7658*	80.1670*

*Denotes rejection of null hypothesis at 0.05 level.

Source: Authors' own calculations.

Table 2. Returns obtained as a result of using specific investment strategies based on indicators and oscillators in the markets of soft commodities (%)

Indicator or oscillator	Parameter	Commodity					
		coffee	cocoa	sugar	cotton	frozen concentrated orange juice	rubber
Simple moving average	5	25.00	10.83	-36.67	140.54	499.05	243.84
	10	-6.76	2.28	-32.30	80.04	154.08	157.18
	20	-34.94	-14.69	11.91	5.10	44.53	150.61
	50	2.44	-25.83	-15.36	-9.20	6.23	105.87
	200	8.73	-46.03	-41.71	-26.75	-29.87	-13.72
Weighted moving average	5	33.03	6.51	-21.01	183.07	587.31	195.46
	10	-11.31	1.88	-9.62	86.67	163.03	116.69
	20	-27.67	-22.72	19.01	27.93	76.60	108.07
	50	-25.02	-37.02	-2.99	-17.76	18.85	130.49
	200	-29.11	-18.30	-28.18	2.35	8.43	-11.81
Exponential moving average	5	13.12	-10.29	-31.95	121.08	229.38	117.20
	10	-11.99	-7.93	-11.34	91.15	211.23	131.01
	20	-43.95	4.78	8.18	-4.33	43.87	225.05
	50	-17.52	-31.95	-10.01	26.47	54.65	85.72
	200	37.77	-37.75	-25.61	22.16	-11.33	-4.74
MACD	8; 17; 9	-18.53	-14.66	-53.01	31.67	112.29	20.19
	12; 26; 9	-47.17	4.95	-22.69	-16.71	30.12	87.71
Momentum	5; 9	28.96	55.40	-50.54	182.02	367.13	73.36
	10; 9	38.10	57.40	-62.93	65.40	501.29	1.63
	20; 9	103.29	18.77	-12.56	75.97	185.27	26.59
	50; 9	-7.19	34.16	21.30	43.42	25.01	24.98
	200; 9	-0.64	42.35	-22.70	-5.14	13.88	-48.65

Source: Authors' own calculations.

on the rates of return obtained as a result of the use of appropriate investment strategies based on moving averages and oscillators with the above-mentioned parameter values.

Results given in Table 2 show that the application of the strategies was the most effective in the market of frozen concentrated orange juice, where 20 out of 22 strategies provided positive returns (the highest one

was generated by the 5-day weighted moving average and it is the highest return of all positive returns obtained in six soft commodities markets) and the least effective – in the market of sugar, where only 4 out of 22 strategies brought about positive returns (the highest one was obtained through application of momentum – 50; 9). Nevertheless, in the case of the coffee market, the highest positive return was generated by

momentum (20; 9), in the case of cocoa – by momentum (10; 9), in the case of sugar – momentum (50; 9), in the case of cotton – 5-day weighted moving average and for rubber – a 5-day simple moving average. We can also notice that the most effective was the application of 5-day simple moving and weighted moving averages, as well as of momentum oscillators, providing positive returns in 5 out of 6 soft commodities markets. Thus, although from an individual investor's perspective it is convenient to have moving averages that will rarely give signals to buy or sell and keep her/him within the trend as long as possible, here 200-day simple, weighted and exponential moving averages as well as momentum (200; 9) performed the worst. In most cases they brought positive returns only in 2 out of 6 soft commodities markets.

CONCLUDING REMARKS

Technical analysis in commodity markets is generally no different from that in any other financial markets. The strategies that are used to trade those markets can be transposed to trade commodity stocks, commodity futures and options, or commodity exchange traded funds (ETFs). The tools of technical analysis can also be used to predict commodity spot price movements. The basic assumption of technical analysis is that the fundamentals are already reflected in the prices and there is no need to focus on reviewing research reports and other fundamental factors, such as inventories, crops, weather, etc. Instead, it is reasonable to examine prices, volumes, and some patterns in commodity market performance in a certain time frame. By studying such recurring patterns, investors can get an idea of how the market will probably trade in the future [Balarie 2007].

Technical analysis contains a bundle of different trading strategies and forecasting techniques such as moving averages, technical breakouts, candlestick patterns, or other technical indicators. Our paper focuses on the performance of moving averages and oscillators in markets of six basic soft commodities, i.e. coffee, cocoa, sugar, cotton, rubber and frozen concentrated orange juice in the period from 2010 to 2018. The results obtained show that the application of the strategies was the most effective in the market

of frozen concentrated orange juice, where 20 out of 22 strategies provided positive returns. What is more, the most effective strategies were 5-day simple moving and weighted moving averages, as well as momentum oscillators, providing positive returns in 5 out of 6 soft commodities markets. Thus we can conclude that in the period under consideration, individual investors could benefit from technical analysis in soft commodities markets. This contradicts the efficient market hypothesis, according to which all information would already be incorporated in the prices, and the presence of synchronized changes and trends in the behavior of different commodity prices should not persist.

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CZY INWESTORZY INDYWIDUALNI MOGĄ OSIĄGAĆ ZYSKI NA RYNKACH SOFT COMMODITIES NA PODSTAWIE ANALIZY TECHNICZNEJ? WERYFIKACJA EMPIRYCZNA DLA OKRESU 2010–2018

STRESZCZENIE

Od czasu kryzysu finansowego z 2008 roku wielu inwestorów dywersyfikuje swoje portfele poprzez włączenie do nich towarów w tym tzw. *soft commodities*. Celem niniejszej pracy jest odpowiedź na pytanie, czy inwestorzy indywidualni mogą osiągać zyski w wyniku zastosowania analizy technicznej na rynkach *soft commodities*. Podstawę przeprowadzonych badań empirycznych stanowią dzienne notowania sześciu towarów z grupy *soft commodities*: kawy, kakao, cukru, bawełny, kauczuku i mrożonego koncentratu soku pomarańczowego, w okresie od 2010 do 2018 roku. Ich celem jest ocena efektywności zastosowania wybranych wskaźników i oscylatorów opartych na średnich ruchomych o różnej długości. Otrzymane wyniki pokazują, że w badanym okresie najbardziej efektywne było wykorzystanie pięciodniowych prostych i ważonych średnich ruchomych oraz oscylatora Momentum, przynosząc pozytywne rezultaty na pięciu z sześciu analizowanych rynków *soft commodities*.

Słowa kluczowe: *soft commodities*, analiza techniczna, efektywność reguł analizy technicznej

ECONOMIC AND NON-ECONOMIC PREMISES AFFECTING CONSUMER PURCHASING BEHAVIOUR OF FERMENTED MILK PRODUCTS

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ABSTRACT

The study aims to identify the factors that influence consumer behaviour on the dairy market, with particular emphasis on the yogurt market. Based on the available data and statistical studies, the main directions of changes in production and consumption as well as directions of changes in prices of dairy products in Poland were presented. The changes taking place on the yogurt market are also presented in more detail. The practical part of the study presents results of the survey conducted on the above-mentioned issues in a group of 465 intentionally selected respondents. According to the respondents, yogurt, milk and other dairy products are commonly consumed and purchase decisions are usually made routinely. According to the respondents, their consumption is influenced, among other things, by the possibility of direct consumption and their habits. The main determinants of purchasing these products included sensory impressions and expiry date, as well as brand loyalty. The main barriers related to the purchase were the high price of branded products as well as the lack of knowledge of different brands.

Key words: consumer behaviour, milk products, determinants of purchase

JEL codes: M31, L11

INTRODUCTION

The dairy market is a dynamically developing market for food products, whereas milk and dairy products are commonly consumed. These products are valued not only for their taste, but also for their special nutritional and preventive properties. Despite the large variety of dairy products on the market, there are still opportunities and the need for further development of this segment. In this situation, it is extremely important for entrepreneurs to get to know the consumer, his needs and preferences as well as the criteria he uses while choosing these products. The purchase of dairy products may be affected by various conditions, including:

economic, psychological, social, etc. An entrepreneur, in order to operate and be successful on the market, should look at his products through the eyes of buyers. It is necessary to constantly evaluate and analyse the company's range of products and to improve upon it. Nowadays, the producer is forced to encourage consumers to buy through various forms of promotion, such as advertising, price promotions, and tastings as well as the introduction of modified or completely new products.

Although the conditions affecting consumer behaviour on the dairy market have been the subject of numerous studies, the factors affecting consumer purchasing decisions are constantly changing. Therefore,

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the research should be repeated and constantly updated so that enterprises can efficiently adapt their products to current purchasing preferences.

AIM AND METHOD

The aim of the study was to attempt to identify factors influencing consumer behaviour on the dairy market with particular emphasis on the yogurt market. In the theoretical part, based on the available literature, the problem of consumer behaviour on the contemporary market was defined and the factors that buyers are guided by in everyday purchases of dairy products were analysed. These included both economic and non-economic factors. Attention was also paid to changes that have taken place on the milk and milk products market in recent years, both in terms of production, consumption, and trade in these products, as well as changes in price formation and their impact on the volume of consumption in various types of households in Poland. To outline this problem, the data was collected from the Statistics Poland (Główny Urząd Statystyczny), as well as the Institute of Agricultural and Food Economics (Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej). The time range of this phenomenon analysis was 2014–2019.

Theoretical considerations were supported by primary research conducted via the Internet. This was done from the beginning of October to the end of December 2019. The study involved 467 respondents, of whom, after initial selection, responses from 465 persons were referred for further analysis. The selection of the research sample was deliberate. The main criterion for selecting a sample for the study was the buyers' declaration of regular purchase and consumption of yogurt. The study aimed to identify factors influencing daily purchasing behaviour among surveyed consumers on the dairy market, especially yogurt. The research tool was a standardized questionnaire. It contained 24 substantive questions related to the examined issue, as well as 6 metric questions that allowed determining the gender, age, education, place of residence, professional situation and average income per person in the respondent's household. The survey questionnaire consisted of single and multiple-choice closed questions. To present the results of the study, the

induction and deduction methods and the comparative method were used, using for this purpose the results of research conducted on a similar topic by other authors. The results of market analysis and primary research were presented using tabular and graphical lists.

FACTORS DETERMINING CONSUMER ATTITUDES AND BEHAVIOUR ON THE MARKET

The consumer is an individual entity of consumption whose activity is focused on satisfying consumption needs. Shaping consumer attitudes on the food market can be influenced by factors related to the consumer (age, sex, education, income, place of residence, character, temperament) as well as factors related to the product itself (taste, smell, colour, freshness, brand, price, promotion) [Bartosik-Purgat 2017, Zalega 2019]. Similarly, the social environment in which the buyer is located (family, school, reference groups) and the market (legal regulations, economic situation in the region, etc.) are significant [Jeżewska-Zychowicz and Pilska 2006]. Along with the growing wealth and consumer awareness of societies, purchasing decisions have been increasingly determined by the assessment of product quality [Ozimek 2010, Cyrek et al. 2016].

There are numerous definitions of consumer behaviour in the literature, one of which states that it means "all activities related to obtaining, using and disposing of products", while others define them as the individual perception of needs. This includes all subjective and objective reasoning, as well as conscious and unconscious motivations while making decisions on the goods market [Rudnicki 2004]. The development of the theory of consumer behaviour meant that the assumptions of these concepts are becoming more and more relevant to the current market situation, and the diversity of goals and approaches is reflected in various definitions, thus indicating different types of behaviour on the market [Smyczek and Sowa 2003]. It should also be added that the concept of consumer behaviour gains various meanings depending on the scope and purpose of research. However, it should be recalled that the consumer and the buyer are two different concepts. Sztucki defines the consumer as an entity that consumes products once to meet basic needs and for a long time uses equipment and products

created to meet higher-order needs [Sztucki 1995]. On the other hand, buyers decide to accept or reject the offer. This applies to both individual and institutional buyers [Łodziana-Grabowska 2015].

Consumer behaviour is an important subject of marketing research and it is very diverse in terms of subject matter and scope. According to the American Marketing Association, consumer behaviour is a dynamic interaction of affect (feelings), cognition, behaviour and environmental variables through which people make changes in various areas and aspects of their lives [AMA Board 1985]. It reveals the actions and behaviour of the consumer and the decision maker in the market environment of products and services, which is usually described as an interdisciplinary field of scientific research trying to understand and describe such behaviour.

The consumer's behaviour concerns in particular the conduct in situations of searching, buying, using, etc. that meet his needs [Dąbrowska and Janoś-Kresło 2016]. Most often, two types of behaviour on the market can be distinguished. These are intentional and unintentional behaviours. Intentional behaviour is conscious, purposeful and meaningful. It reflects the consumer's specific beliefs and needs. On the other hand, unintended behaviour means actions carried out most often under the influence of the moment, not always purposeful and meaningful. Such behaviour often does not reflect the beliefs or needs of the consumer.

Purchasing behaviour research also conducted on the dairy market shows that the perception of a product

as healthy (including milk) is reflected in the declaration of a positive opinion about it, mainly in the cognitive dimension. Sometimes the aversion to products resulting from negative associations of the consumer, e.g. from childhood (taste of milk, layer of milk-skin on the milk, etc.), are not reflected in behaviour (the surveyed women declared that they consume milk mainly for coffee). Also, knowledge about the beneficial health benefits of milk affects the fact that it is widely used, including in child nutrition [Świątkowska and Bień 2005].

YOGURT MARKET IN POLAND COMPARED TO THE MARKET OF MILK AND OTHER DAIRY PRODUCTS

The production of milk and dairy products in Poland is a branch of agricultural production which is considered one of the most important. Unlike crop production, it provides a stable income for many farms. Poland is one of the leading milk producers in the European Union next to Germany, France and the Netherlands.

In recent years, the growing supply of raw milk and high selling prices were the main determinants of the increase in dairy production. According to the Statistics Poland data of 2019, the production of most dairy products increased, except for processed liquid milk, yogurt, whole powdered milk, processed cheese and liquid whey (Table 1). In the group of dairy products having a large share in the sales structure of the dairy industry, the largest increase was recorded in produc-

Table 1. Production of selected dairy products in Poland in 2015–2019 (thous. t)

Dairy products	2015	2016	2017	2018	2019
Processed liquid milk	3 198	3 345	3 519	3 454	3 490
Fermented milk drinks	7 173	702	690	720	750
Yogurts	429	397	374	372	375
Powdered milk	208	207	196	209	215
Curd cheeses	430	449	460	470	485
Sour cream and cream	362	349	376	388	400
Butter and milk fats	191	204	212	222	225
Whey	1 501	1 301	1 795	1 633	1 700

Source: Rynek Rolny 1 (275)/2014–12 (334)/2018, GUS [2019b], Rynek mleka. Stan i perspektywy 57/2019.

tion of whey powder (by 11%) skimmed powdered milk (by 9.4%), butter of 80–85% fat (by 8.9%) and fermented beverages (by 4.4%) [GUS 2019b]. Moreover, the increase in prices on the international market, including primarily skimmed powdered milk and ripening cheese, was a factor stimulating production to a large extent.

In 2020 it is expected that growth trends will continue to consolidate in the dairy industry's production. Supplies of raw material higher by 2.5% would be a growth stimulator. The structure of production would be largely determined by the economic situation on external markets. It is also expected that the production of cheese and curd, whey powder, butter and skimmed powdered milk will increase. The production of processed liquid milk as well as yogurt and milk drinks should be characterized by a small growth dynamics [Rynek mleka. Stan i perspektywy 57/2019]. According to European Commission forecasts, the production of hard dairy products will also increase throughout the EU, with the exception of whole powdered milk. The main reason for the increase in production will be higher supplies of raw material to the dairy industry (by 0.7%) and the growing demand for cheese and butter in the third countries [Rynek mleka. Stan i perspektywy 57/2019].

According to the Statistics Poland data, in 2018 balance-sheet milk consumption in Poland, including milk intended for milk products (without milk converted into butter) amounted to 224 l per person, and it was 2.8% higher than in 2017. The increase in consumption occurred in the conditions of a good economic situation on the international market and a real increase in dairy products in relation to total food amount, in particular in relation to meat and meat products. The factors stimulating the increase in consumption included, among other things, a good income situation of the population, related to the increase in wages and the increase in social benefits from the state (including Poland's Family 500+ program). The survey of Statistics Poland on household budgets shows that in 2018 the consumption of drinking milk decreased by 1.7% compared to the previous year. Changing trends were noted in individual assortment groups as well. The consumption of full-fat milk increased by 0.5%, while the consumption of low-fat milk decreased by 5.7%. The consumption of yogurts remained stable, whereas the consumption of cream dropped by 2.8%. Moreover, the consumption of cheese and curd increased by 1.2%, including rennet ripening cheese and processed cheese by 2.4%. The consumption of cottage cheese remained at the 2017 level (Table 2).

Table 2. Average monthly consumption per person of milk and milk products in households in 2015–2018

Dairy products	2015	2016	2017	2018	2018
	in absolute numbers				(2017 = 100)
Milk (l)	3.16	3.08	2.99	2.94	98.3
including:					
whole fresh	1.93	1.98	1.93	1.94	100.5
fresh low-fat	1.23	1.10	1.06	1.00	94.3
Yogurts (kg)	0.02	0.02	0.02	0.01	50.0
Condensed and powdered milk (kg)	0.50	0.53	0.52	0.52	100.0
Cheese and curd (kg)	0.83	0.85	0.86	0.87	101.2
Ripened and processed cheese (kg)	0.40	0.41	0.41	0.42	102.4
Curd (kg)	0.43	0.44	0.44	0.44	100.0
Sour cream (kg)	0.35	0.36	0.36	0.35	97.2

Source: Rynek Rolny 1 (275)/2014–12 (334)/2018, GUS [2019b], Rynek mleka. Stan i perspektywy 57/2019.

In 2018, the average monthly expenditure for the purchase of dairy products per person in total households accounted for 2.7% of the total expenditure of these households and 11% of the expenditure on food and non-alcoholic beverages. In recent years, drinking milk consumption increased in all groups of households except for self-employed persons, where consumption increased by 2.3%. The largest decrease occurred in farmers' households (by 9.4%). The consumption of yogurts remained at the 2017 level in all types of households except for the households of employees, where their consumption decreased by 1.9% (Table 3).

From January to September 2019, compared to the same period of 2018, retail prices of dairy products increased by 1.4%, while butter prices fell by about 2.9%. Concentrated and powdered milk (5.5%) was characterized by the highest dynamics of price increase due to high world prices of these products. However, the share of condensed milk and powdered milk in the structure of household consumption is minor. The increase in retail prices of yogurts (by 2.4%) and other beverages and milk desserts (by 2.5%) was also relatively high. Cheese and cottage cheese prices increased by 1.6%, including cottage cheese by 2.7%, and rennet ripened and processed cheese by 0.9%. Retail prices of cream increased by 1.7% [Rynek mleka. Stan i perspektywy 57/2019]. As for the yogurt market in Poland in recent years, it should be noted that their average consumption in the years 2014–2018 fluctuated slightly. In 2014–2015 it was at the level of 0.5 kg per person monthly, in 2016 it increased to 530 g and

then decreased by 100 g. There are also differences in the consumption of yogurt among households with different incomes. Statistics Poland divided it into five income groups, where the lowest-income households are included in the first group, and the highest-income groups in the fifth group. It can be seen that consumption increased along with the increase in household income. At the turn of the analysed years, the first three income groups showed a growing trend of yogurt consumption. In the fourth group, there was no clear trend, while on the highest-income farms the consumption of yogurt decreased over the years. In each group, 2016, in which yogurt prices were lower than in other years, was characterized by higher consumption than would result from the trends described above [GUS 2015–2019a]. In individual regions of Poland, yogurt consumption was similar. In each of the regions designated by Statistics Poland, consumption ranged from 14 to 19% of the total consumption of yogurt in Poland. Most were consumed in the north and south-west region, followed by the north-west and central region.

Analysing the directions of price changes on the yogurt market, one can notice a certain relationship between the price level and the amount of consumption of this type of product in subsequent years. As mentioned above, the lowest price level was achieved in 2016, which resulted in increased consumption [Rynek Rolny 1 (275)/2014–12 (334)/2018]. Producer prices were primarily affected by the purchase prices of milk as the basic raw material in yogurt production. Yogurt prices established by manufacturers, however,

Table 3. Average monthly consumption per person of milk and milk products by type of work performed in 2018

Dairy products	Households				
	total	employees	farmers	self-employed	retirees and pensioners
Milk (l)	2.94	2.71	3.49	2.66	3.53
Condensed and powdered milk (kg)	0.01	0.01	0.01	0.02	0.02
Yogurt (kg)	0.52	0.52	0.40	0.53	0.55
Cheese and curd (kg)	0.87	0.83	0.70	0.86	1.05
Sour cream (kg)	0.35	0.30	0.37	0.28	0.51

Source: Rynek Rolny 1 (275)/2014–12 (334)/2018, GUS [2019b], Rynek mleka. Stan i perspektywy 57/2019.

fluctuated more mildly than did raw material prices. The difference between the extreme prices dictated by producers for yogurts per 150 g was 0.12 PLN, which was 12.1% of the average price, and in the case of purchase prices of milk per 1 l – 0.28 PLN, which was 22.3% of the average price from 5 years (Fig. 1).

The average monthly expenses for yogurt have been increasing since 2016 (Fig. 2). As a result of the reduction in yogurt prices in 2015, the monthly expenses for this product decreased. Since 2016, along with an increase in the consumption of this product, buyers' expenditures increased, and in subsequent years they resulted only from changes in their prices [GUS 2015–2019a].

According to the Analysis and Strategy Office of the National Support Centre for Agriculture (Kra-

jowy Ośrodek Wsparcia Rolnictwa), in 2018 Poland was one of the leading producers of fermented milk drinks in the European Union. Only Germany, France and Spain were ahead of Poland in the ranking. Revenues from the export of yogurt and other fermented milk drinks amounted to 128.5 million EUR, which accounted for approximately 0.5 billion PLN. Most of the products were sold to European Union countries. Most of them were exported to the United Kingdom (16,000 t, i.e. 15% of the volume of fermented milk drinks exported), Hungary and the Czech Republic (11,000 t each; 10% each export volume of the analysed products), Lithuania and Spain (9,000 t each; 9% of export volume each), Romania and Germany (8,000 t each; 7% of export volume each) [KOWR 2019]. In the years 2014–2018, 13.2–15.4% of the production

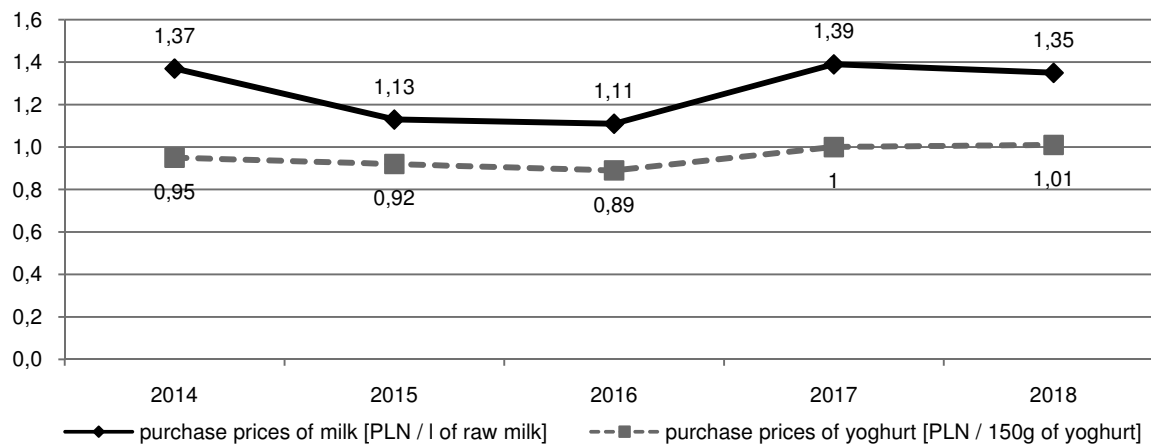


Fig. 1. Average purchase prices of milk and yogurt in Poland in 2014–2018

Source: Author's calculations based on Rynek Rolny 1 (275)/2014–12 (334)/2018.

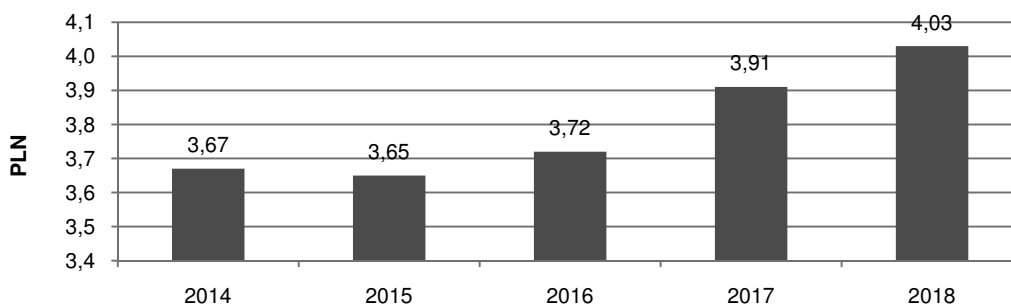


Fig. 2. Average monthly expenses per person for yogurts in households in 2014–2018

Source: Author's calculations based on GUS [2015–2019a].

volume of fermented milk drinks was exported. Until 2016, the volume of exports of yogurt and dairy drinks decreased, and after 2016 the situation on this market improved and gradually increased. A similar situation occurred in the case of the share of exports in the production of fermented milk drinks [Rynek mleka. Stan i perspektywy 57/2019].

RESEARCH RESULTS

Referring to the purpose of the study, which was an attempt to identify factors influencing consumer behaviour on the dairy market, with particular emphasis on the yogurt market, the author conducted the survey in which 465 people participated (women constituted 66% of respondents, while men constituted the remaining 34%). The most numerous group were people up to 25 years old, who constituted 65%. There were 21% of respondents aged 25–39, and 5% aged 40–49. Respondents aged 50–59 constituted 4%, while persons over 60 years old only 5% of respondents. Over half of the respondents, i.e. 58%, declared that their monthly income is at the level of 1,000–3,000 PLN per person monthly. About 28% indicated that their income is below 1,000 PLN per person monthly, while 14% of respondents stated their net income is above 3,000 PLN per person monthly.

Great interest in the consumption of yogurt proves that yogurt is a foodstuff for everyday use. It is in the average consumer's shopping basket at least several times a month. All the respondents declared that they are consumers of yogurt. The largest group (42%) de-

clared that they buy this product several times a week. Only 7% of respondents said that they buy yogurt less than once a month. The high frequency of shopping indicates the more important position of these products in the daily diet of respondents among other food products and their frequent consumption among surveyed consumers.

Purchasing these products, especially in self-service stores, allows consumers to spend more time in front of the store shelf, analysing the range of dairy products offered by producers. Self-service stores were the most frequently chosen place to buy yogurt among the respondents. As many as 77% of respondents shop there. Buyers preferred mainly flavoured yogurt, including fruit (36%), but also natural (23%). Greek type yogurts (8%) were the least frequently found in their shopping basket.

The surveyed consumers, when purchasing yogurts, drew attention to a number of functional features that enable them to make the right choice. The key feature of yogurt that prompts the consumer to buy is its taste (57%) and its quality (56%). The respondents also chose the price (36%), product composition (29%) and its nutritional value (28%). They paid less attention to the appearance of the packaging (12%), while promotional activities of enterprises were of little importance in the selection process among the respondents (2%) – Figure 3.

The results are in accordance with the research of other authors. In studies, among others, by Jäder [2014], taste was also considered the most important factor influencing the selection of dairy products,

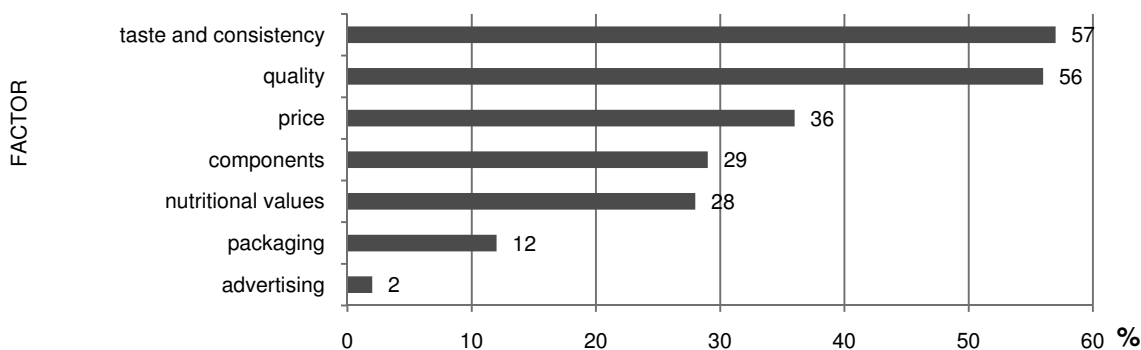


Fig. 3. Factors taken into account in the process of buying yogurt

Source: Author's research.

while advertising was considered the least important factor [Jađer 2014]. Ziarno and Hauzer [2009] gave the expiry date, price and name of the producer as the most important purchase factors. In turn, in the publication by Kudelka and Marzec [2004], half of the respondents placed the best before date (shelf life) first in the hierarchy of factors influencing the purchase of dairy drinks [Kudelka and Marzec 2004].

Trust in the brand is another important element that should be an indispensable advantage of an enterprise that is seeking to acquire new customers and retain existing ones. The brand should ensure that the product will guarantee stable quality. The study, however, shows that the importance of the brand for different consumers varied. About 13% of respondents said that this factor is very important, and 42% said that it is significant. For 34% it was of little importance, while for 11% it was of no significance. The surveyed buyers had specific expectations for branded yogurts. They expected that a higher price of the product would also correspond with high quality. To a large extent, they also believed that while maintaining the high quality of the product, the manufacturer would also ensure the lack of preservatives in their composition. They expected that they would be products of high repeatable quality (84%), without preservatives (60%). The buyers also expected that the higher price they pay for branded yogurt will reflect its high quality (60%). The least important role among the respondents is played by the fact that a brand may be fashionable

or the purchase of branded products may be associated with prestige or the material status of the buyer (4%). Details are presented in Figure 4.

Another factor buyers pointed out was the presence of new products in the selection process of dairy products. The innovativeness of such products can be perceived by consumers in various ways. That is why consumers were asked in the survey about their definitions of an innovative dairy product. About 60% of respondents said that such a product has a new taste, and 39% said that it has an additional health-promoting effect. According to 24% of respondents, an important feature of a new product is reduced fat content or better culinary use (21%). In the opinion of 16% of respondents, an innovative product should also be distinguished by its new packaging appearance. Almost half of the respondents said that they buy new products only when a friend recommends them. This may be due to the perception of a lower risk of a failed purchase when the product is recommended by others. Among the respondents were also people who are open to new products and buy them immediately after they appear in the store (2%), or buy them relatively quickly (27%). However, almost a quarter of respondents declared that they do not buy new products. From the research presented, among others in the publication of Bierzuńska et al. [2016], it also appears that innovation of dairy products was associated by consumers mainly with new product appearance (52.1%). Some people said they associated innovation with

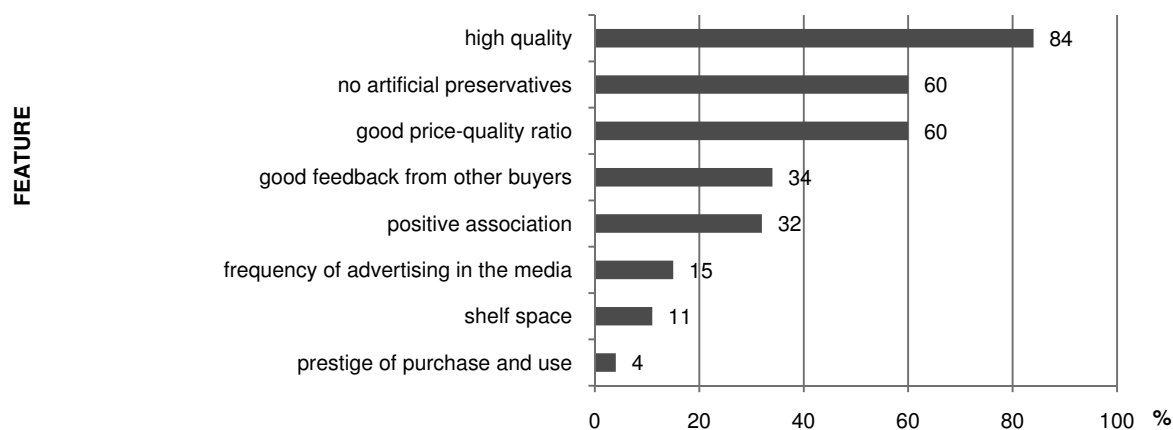


Fig. 4. Features of a good yogurt brand according to respondents

Source: Author's research.

a new taste (10.7%), or increased health (5.8%). For others, a new product was characterized by new or better culinary use as well as higher hygienic quality (0.8%) [Bierzuńska et al. 2016].

In addition to the above-mentioned factors motivating consumers to purchase dairy products, there are also other factors that affect the purchase of these products. Over half of the respondents said that the main demotivating factor when buying and consuming yogurt is a high price. The same percentage of respondents answered that the short shelf-life characteristic for dairy products can influence their purchasing decision. Insufficient product information (24%) also proved to be another barrier for respondents. Respondents also noted that the opinion of others (18%) was a factor, as was the desire to avoid high calorie content. About 12% of respondents also indicated a lack of knowledge of some yogurt brands as a barrier. Lactose intolerance turned out to be an important factor, although of course nowadays the offer of dairy products without lactose content is growing among most producers.

CONCLUSIONS

The yogurt market is still developing and creates many opportunities for producers of these products. This is supported by the state of Poland's economy and health-promoting trends developing in society. Due to growing consumerism and the search for new products by consumers, there is a possibility for increased market share among competing enterprises by offering new flavours or functional additions to yogurts. On the other hand, natural yogurts are becoming more and more desirable, especially those which use noble yogurt strains that have a positive effect on human health. The number of lacto-vegetarians is also growing, people who want to balance macro and micronutrients in their nutritional rations, and who willingly reach for dairy products. These factors mean that the demand for yogurts is growing and further interest in these products can be expected not only in Poland but also in other countries.

The analysis of the conducted survey allows shows that dairy products are commonly consumed by respondents. Among dairy products, milk and yogurt are the most popular among the respondents. Respondents

purchase these products mainly in supermarkets and hypermarkets that offer a wide selection. Purchasing decisions of dairy consumers are mostly routine, due to the high frequency of purchasing this type of product. The main reason for consuming dairy products is that they are suitable for direct consumption and affect the respondents' habits. In the hierarchy of factors determining the purchase of dairy products, the most important were sensory impressions and the best-before date. The barrier to buying such products is the high price and short shelf life. An important element of choosing a dairy product, as research has shown, is the product brand; while it is strongly differentiated in terms of many characteristics declared by buyers, it is mainly about high quality, trust and the right quality ratio of a given brand's product to its price. The vast majority of the respondents watched daily advertising of dairy products, but they thought it had little or no impact on their purchasing decisions. Most respondents identified an innovative dairy product with a new taste and additional health-promoting effects of the product.

To sum up, as research has shown, there is a large variety of features and a multitude of elements taken into account in the process of purchasing dairy products. Therefore, there is a need to constantly pay attention to the ever-changing purchasing preferences, which are a cluster of many different factors, not only economic but also non-economic.

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EKONOMICZNE I POZAEKONOMICZNE PRZESŁANKI WPŁYWAJĄCE NA ZACHOWANIA ZAKUPOWE KONSUMENTÓW NA RYNKU MLECZNYCH PRODUKTÓW FERMENTOWANYCH

STRESZCZENIE

Celem opracowania jest próba identyfikacji czynników wpływających na zachowania konsumenckie na rynku wyrobów mleczarskich ze szczególnym uwzględnieniem rynku jogurtów. Wykorzystując dostępne dane i opracowania statystyczne, przedstawiono główne kierunki zmian w produkcji i spożyciu, a także cen produktów mleczarskich w Polsce. Szerzej również przedstawiono zmiany zachodzące na rynku jogurtów. W części praktycznej opracowania przedstawiono wyniki przeprowadzonych badań ankietowych, dotyczące wspomnianej problematyki w grupie liczącej 465 celowo dobranych osób. Według badanych jogurty oraz mleko i inne przetwory mleczne są powszechnie spożywane przez respondentów, a decyzje o ich zakupie są podejmowane zazwyczaj w sposób rutynowy. Na ich konsumpcję zdaniem ankietowanych wpływa m.in. możliwość bezpośredniego spożycia oraz przyzwyczajenie. Głównymi determinantami zakupu tych produktów okazały się wrażenia sensoryczne oraz termin przydatności do spożycia, a także przywiązanie do marki. Głównymi zaś barierami związanymi z zakupem są wysoka cena szczególnie markowych produktów i nieznaną ilość marek wśród nabywców.

Słowa kluczowe: zachowania konsumenckie, wyroby mleczarskie, determinanty zakupu

THE EFFECT OF DEFERRED INCOME TAX ON A COMPANY'S FINANCIAL RESULTS

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ABSTRACT

The purpose of the article is to present the principles of deferred income tax and to show its impact on a company's financial result. The article contains a comprehensive, synthetic theoretical approach to the issue of deferred income tax and is enriched with examples of calculations, which means that in addition to the theoretical layer, it brings additional practical value. The essence of deferred income tax, the stages of its determination, and the significance of temporary differences as a basis for calculations, are presented. To implement the research problem, the authors used an example simulation in which the impact of deferred income tax on a company's financial results was presented. The conducted research showed that deferred income tax might have a positive or negative effect on the net financial result of a given entity, depending on whether the enterprise identifies more temporary negative or positive differences.

Key words: income tax, deferred tax, financial results

JEL codes: G3, H2

INTRODUCTION

Deferred income tax is a category of balance sheet law that is used to accurately and explicitly present financial statements. Its recognition is justified in those entities that are subject to two existing laws, namely the balance sheet and tax laws. The fulfilment of the reporting obligations of these laws requires a separate recognition of the tax consequences of events [Gierusz and Martyniuk 2015]:

- in accordance with the balance sheet law – for the balance sheet law;
- in compliance with the tax law – to fulfil fiscal obligations by the entity.

Deferred income tax is one of the most challenging issues faced by contemporary accountants. It re-

quires a good knowledge of tax and accounting (balance sheet) regulations, since temporary differences, based on which deferred tax is calculated, depend on the valuation of assets and liabilities following the Accounting Act and the Corporate Income Tax Act. This article aims to present the principles of deferred income tax and to show its impact on the financial results of an enterprise using a sample simulation.

The research was limited to Polish accounting and tax regulations – while the International Accounting Standards (also used in Poland) are uniform for all countries, the tax regulations in each country may be different. Comparing the impact of deferred income tax on financial results in Poland and other countries may be the subject of further research.

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THE ESSENCE OF DEFERRED INCOME TAX

Income tax can be divided into current and deferred income tax. Current income tax is the result of tax compliance by enterprises; it is calculated as the product of interest rate and taxable income earned: taxable revenues – tax costs. Deferred income tax is a balance category resulting from the application of accounting regulations; it is calculated as a product of temporary differences and the tax rate (more on temporary differences later in the article). The purpose of calculating and recognizing deferred tax is to show in the company's financial statements the effects of temporary differences occurring in the enterprise. Temporary differences result, among other things, from various methods of valuation of assets and liabilities and a different moment of recognizing revenues and costs for balance sheet and tax purposes [Poszwa 2015]. What at the moment might constitute a balance sheet cost or income is not always a taxable income or cost.

The obligation to recognize deferred income tax derives from Article 37 of the Accounting Act, which refers to the need to create deferred tax income and liabilities arising as a result of temporary differences¹. However, this does not apply to all entities, but only to those with the status of a legal person [Gierusz 2014b] (which are subject to the Corporate Income Tax Act) and whose annual reports are subject to an obligatory audit by a statutory auditor.

The entities who are subject to two laws (balance sheet and tax laws), are obliged to fulfil their obligations, including reporting. Since both laws pursue different purposes and serve opposite functions, they consequently apply various principles of value measurement [Gierusz 2014a]. In accordance with the principles of accounting (balance sheet law), enterprises determine their financial results and, in conformity with tax law, their taxable income. Through use of a different valuation method or a different moment when revenue and costs are recognized, so-called temporary differences can flow, i.e. differences between the balance sheet and tax valuation of a given asset or liability.

In pursuing the method of balance sheet liabilities, the determination and settlement of deferred income tax can be divided into several stages as presented:

- I. Determination of the tax and balance value of liabilities and assets at the end of the reporting period.
- II. Determination of temporary differences.
- III. Determining the amount of assets and provisions for deferred income tax.
- IV. Booking deferred income tax as a reduction or increase of the financial result burden.
- V. Recognition of deferred income tax in financial statement:
 - as an asset or liability for deferred income tax in the balance sheet;
 - as deferred income tax (increasing or decreasing the financial result) in the income statement.

In conformance with Article 37(10) of the Accounting Act, the simultaneous fulfilment of at least two of the three following conditions is necessary to determine deferred tax assets and liabilities:

- total balance sheet assets at the end of the financial year: PLN 25.5 million;
- net revenues from sales of goods and products for the fiscal year: PLN 51 million;
- average annual employment per full-time equivalent: 50 people.

Therefore, the deferred income tax applies only to large entities. However, economic entities whose statements are not mandatorily audited by statutory auditors, do not have to recognize deferred income tax in their accounting books and further in the financial statements.

The deferred method, which is based on the measurement of the income-cost result, i.e. mainly the principle of proportionality of these categories, assumes the “cleanliness” of the financial result for a given reporting period as the main goal of measuring deferred tax. The principles of valuation of assets and liabilities are subject to this measurement [Nurnberg 1969].

¹ Article 37(1) of the Act of 29 September 1994 on accounting. *Journal of Laws* of 2016, item 1047, as amended.

THE SIGNIFICANCE OF TEMPORARY DIFFERENCES FOR DETERMINING DEFERRED INCOME TAX

Other principles for the valuation of operating fixed assets for balance and tax purposes result in differences in tax and balance values of these assets [Seredyński et al. 2013]. Therefore, the calculation of a company's financial result, following the balance sheet law, often presents a different value than when calculating it in accordance with the tax law. If the accounting result is higher or lower than the tax result, positive or negative differences occur. Considering the time criterion, these differences can be permanent or temporary.

In compliance with the balance sheet law, the lasting discrepancies between revenues and expenses are irreversible. This means that certain costs that decrease the financial result are not recognized by tax law, thus increasing the tax base in relation to the gross financial result (the balance sheet recognizes the cost that reduces the financial result; the tax cannot recognize the cost, so taxable income is higher than the financial result). On the other hand, revenues constituting accounting income are free (exempt) from taxation, i.e. they reduce the tax base in relation to the gross financial result [Walińska et al. 2011]. The opposite situation is found in the case of costs – non-tax revenue will be included in the balance sheet, it will increase the financial result; in turn, it does not constitute income tax, so that the tax base will be lower than the financial result. Furthermore, if the differences are lasting, they are eliminated from the income tax base. In contrast, in the case of non-tax fixed assets, they increase the amount of current income tax, and reduce the current liability to the tax office from income tax with respect to permanently non-tax revenues. Most often, these differences have the nature of lasting negative differ-

ences (costs are shaping the financial result which is non-tax-deductible).

If the differences are temporary, they are the basis for determining deferred tax. Negative temporary differences arise when the carrying amount of the asset is lower than its tax base and when the carrying amount of liabilities is higher than their value as determined under tax regulations [Gierusz 2014b]:

$$CV_A < TV_A \text{ and } CV_L > TV_L$$

CV_A – carrying value of asset,
 TV_A – tax value of asset,
 CV_L – carrying value of liability,
 TV_L – tax value of liability.

As a result of the determined values of temporary differences, tax liability should be calculated in accordance with the applicable tax rate, as a result of which deferred income tax asset or liability is created (Table 1).

Periodic differences between the financial result and the tax stem from the fact that in conformity with the balance sheet and tax laws, moments of recognition of a given income as achieved and a cost as incurred, differ. These differences are evened out in subsequent periods. Therefore, it is necessary to settle tax over time (hence the name “deferred tax”) [Stemplewska 2015].

Furthermore, temporary differences, i.e. differences that result in taxable amounts taken into account in the determination of taxable income (tax loss) in future periods, when the carrying amount of an asset or liability is realized or settled, are therefore taxable differences in future periods [Borowska 2011].

The negative temporary difference occurs when an enterprise cannot recognize tax costs at the moment, but will be able to do so in the future (it will then gain

Table 1. Effect on the temporary difference in the financial result

Temporary difference	Positive	Negative
Liability/Asset	deferred income tax liability	deferred income tax asset
Effect on the financial result	higher tax = lower financial result	lower tax = higher financial result

Source: Authors' own work.

a tax benefit). If temporary negative temporary differences occur in an enterprise, the income tax charged on the gross financial result (adjusted by permanent differences) would be lower in a given period than the income tax calculated on the tax result [Frymark 2006].

THE POSITIVE AND NEGATIVE IMPACT OF DEFERRED INCOME TAX ON THE FINANCIAL RESULT

The amount of a company's financial result depends on the achieved revenues and balance sheet costs as well as the calculated income tax (including deferred tax). Enterprises, despite the application of national and international accounting regulations, retain some discretion e.g. in the selection of valuation methods, the method of settlement, or even calculation and activation of balance sheet costs. The possibility of legally influencing the final financial result also results from the fact that some balance sheet items (e.g. provisions) are determined based on projections and estimates [Michalczyk 2012]. Estimated categories also include deferred income tax, which is the effect of the so-called temporary differences and their probability of realizing (turning around) in the future. If there are more negative differences in an enterprise, a deferred tax asset is created, resulting in a reduced deferred tax amount, and when the entity has positive temporary differences, a deferred tax reserve is determined that increases the value of deferred income tax recognized in profit and loss account [Skrodzka 2017]. Therefore, the deferred tax asset has a positive effect on the company's financial result (because it reduces the amount of income tax in the current period, i.e. the net financial result is higher), and the deferred tax provision increases the amount of deferred tax causing the net financial result to be lower.

The National Accounting Standard No 2² defines deferred income tax asset as a value that will likely reduce the future income tax expense (profit), and which results from the temporary negative differences, losses and tax reliefs to be settled in the future³. A similar definition is provided in the International Accounting Standard No 12 on income tax⁴.

Deferred tax assets are calculated in accordance with the following formula [Walińska 2012]:

$$A_{DT} = DN \cdot R_{IT}\% \text{ or } A_{DT} = \text{tax-loss} \cdot R_{IT}\%$$

- A_{DT} – deferred income tax assets,
- DN – temporary negative differences,
- $R_{IT}\%$ – income tax rate applicable for the year in which the tax obligation arises (expressed as a percentage),
- tax-loss – tax loss to be settled in future periods, which, like a temporary negative difference, is the basis for determining the deferred tax asset.

Example of determining deferred tax assets from a temporary negative difference

An entity has a receivable with a nominal value of 50,000 recognized in the balance sheet. In compliance with the balance sheet law, it adjusts its value by revaluation write-downs of the receivable in the amount of 25,000, which means that the carrying value of this receivable is 25,000. For tax purposes, this receivable is valued at the nominal value, i.e. 50,000. Write-downs on receivables are not taken into consideration under tax law until the debt becomes probable [Palka 2011]. The carrying value and tax value of this receivable are as follows (receivables in the balance sheet are in the asset position, so to determine the value of temporary differences and deferred income tax, the formula for assets should be used):

² Announcement No 13 of the Minister of Finance of 22 June 2010 regarding the announcement of the resolution of the Accounting Standards Committee regarding adoption of the revised national accounting standard No 2 "Income tax".

³ Point II.2 of Resolution No 7/10 of the Accounting Standards Committee of 20 April 2010 regarding the adoption of the revised national accounting standard No 2 "Income tax", p. 4.

⁴ Commission Regulation (EC) No 1126/2008 of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council. OJ L 320/1 of 29.11.2008, as amended, p. 54.

$$\begin{aligned} CV_A &= 50,000 - 25,000 = 25,000 \\ TV_A &= 50,000 \\ 25,000 &< 50,000 \\ CV_A &< TV_A \end{aligned}$$

As a result, a negative temporary difference of 25,000 arises ($25,000 - 50,000 = -25,000$). The 19% tax calculated on it will be considered a deferred income tax asset.

$$25,000 \cdot 19\% = 4,750 \rightarrow \text{deferred income tax asset}$$

This amount would reduce deferred income tax disclosed in the profit and loss account in the current period by PLN 4,750. When the asset is realized, that is, in this case, e.g. receipt of a final court judgment regarding the enforcement of this claim, the value of the temporary difference, i.e. the amount of the write-off on receivables, would be included in tax costs, which would reduce the income tax payable. On the other hand, the deferred tax asset would be dissolved, which would result in an increase in deferred income tax by the same amount.

The asset calculated in conformance with the above rule is subject to recognition in the accounting books, provided that the entity is likely to achieve income in future periods allowing deduction of amounts resulting from negative differences and losses to be settled [Gierusz 2014a].

The deferred income tax liability is created based on temporary positive differences. In other words, the deferred income tax liability is the amount of tax that will be payable in future reporting periods resulting from the existence of temporary positive differences⁵.

Temporary positive differences increase the tax base in the future – this situation takes place in periods when the carrying value of assets is realized and the liabilities are settled⁶. It means that at the date of determining the temporary differences (end of the reporting period), the entity has balance sheet income that affects the financial result but is not recognized in the tax account at the same time. In the future, however, the tax revenue will be recognized, which will increase

taxable income and thereby increase the amount of tax liability in the future.

The deferred income tax liability is calculated in pursuance of the following formula [Walińska 2012]:

$$L_{DT} = DP \cdot R_{IT}\%$$

L_{DT} – deferred income tax liability,
 DP – temporary positive difference,
 $R_{IT}\%$ – income tax rate appropriate for the year in which the tax obligation arises (expressed as a percentage).

Example of determining deferred tax liability from a temporary positive difference

An entity has granted a loan of 100,000 to another entity, with interest to be paid in future periods amounting to 30,000. For balance purposes, the loan receivable should be shown in the amount due, i.e. principal receivable + interest, in the value of 130,000. Tax interest should be recognized as revenue at the moment of actual receipt. It means that, for the purposes of tax assessment, this receivable should be included in the principal amount, i.e. 100,000. Receivables in the balance sheet are in the asset position, so the asset formula should be used to determine the value of temporary differences and deferred tax.

$$\begin{aligned} CV_A &= 100,000 + 30,000 = 130,000 \\ TV_A &= 100,000 \\ 130,000 &> 100,000 \\ CV_A &> TV_A \end{aligned}$$

As a result, a positive temporary difference of 30,000 arises ($130,000 - 100,000 = 30,000$). The 19% tax calculated on it will be considered a deferred income tax liability.

$$30,000 \cdot 19\% = 5,700 \rightarrow \text{deferred income tax liability}$$

This amount would increase the deferred income tax recognized in the income statement by PLN 5,700 in the current period. The temporary difference will be real-

⁵ Commission Regulation (EC) No 1126/2008 dated as of 3 November 2008 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council. OJ L 320/1 of 29.11.2008, as amended, p. 53.

⁶ Point 2 of the Resolution No 7/10 of the Accounting Standards Committee dated as of 20 April 2010 on the adoption of the revised national accounting standard No 2 “Income tax”, p. 3.

ized when the company receives interest on the loan it granted. Then the tax revenue will be recognized for the interest received and the related need to pay current income tax. On the other hand, the deferred tax provision will be released (because the reserve has been used), which will reduce the value of deferred income tax.

Deferred income tax may have a negative impact on the financial result, such as the current income tax charge, which constitutes a liability to the tax office. Interestingly, deferred income tax may also have a positive effect on the financial result, as when its value is negative, it increases the financial result. Tables 2 and 3 present a simulation of two cases – the first showing the positive impact of deferred tax on the financial result and the other showing the negative impact on the financial result of an enterprise.

The deferred income tax asset caused by a temporary negative difference in the value of receivable, due to the write-down of receivable, decreased the income tax included in the accounting books and therefore the net financial result is higher than if the asset was

not present. At the same time, it should be noted that the amount of 19,000 should be paid to the tax office which is an obligation for the entity in respect to the current income tax. The example presented in Table 2 shows that deferred income tax is an accounting category that is not directly subject to settlement with tax administration authorities.

The opposite of the above may also occur, i.e. there will be an advantage of positive temporary differences in the entity, which will, in turn, increase the tax burden as depicted in Table 2.

The deferred income tax liability caused by a temporary positive difference in the value of the receivable due to a loan, stemming from the different moment of recognition of interest income on receivables, increased income tax recognized in the accounting books. Therefore the net financial result is lower than if this reserve was not present. Similarly to the previous simulation, in the example presented in Table 2, an amount of 19,000 must be paid to the tax office, constituting a liability for current income tax.

Table 2. The positive impact of deferred tax on the financial result

Procedure for calculating the financial result	Value (PLN)
Gross financial result (calculated under the provisions of the Accounting Act)	100 000
Current income tax (assuming that the taxable income is equal to the financial result)	$19\% \cdot 100\ 000 = 19\ 000$
Deferred income tax: Deferred income tax asset (the effect of a temporary negative difference from the write-down for receivables ^a)	$-25\ 000 \cdot 19\% = -4\ 750$
Total income tax (current and deferred)	$19\ 000 + (-) 4\ 750 = 14\ 250$
Net financial result (after deducting income tax)	$100\ 000 - 14\ 250 = 85\ 750$

^a The tax effect of the temporary negative difference caused by the write-down on receivable was presented earlier.

Source: Authors' own work.

Table 3. The negative impact of deferred tax on the financial result

Procedure for calculating the financial result	Value (PLN)
Gross financial result (calculated under the provisions of the Accounting Act)	100 000
Current income tax (assuming that the taxable income is equal to the financial result)	$19\% \cdot 100\ 000 = 19\ 000$
Deferred income tax: Deferred income tax liability (the effect of a temporary negative difference from the write-down for receivables ^a)	$30\ 000 \cdot 19\% = 5\ 700$
Total income tax (current and deferred)	$19\ 000 + 5\ 700 = 24\ 700$
Net financial result (after deducting income tax)	$100\ 000 - 24\ 700 = 75\ 300$

^a The tax effect of the temporary positive difference caused by interest on receivable from the loan granted was presented earlier.

Source: Authors' own work.

SUMMARY

Deferred income tax is an indication of the future tax benefits or liabilities in the current reporting period that will be implemented in the future. The differences between the determination of the financial result for accounting purposes and the taxable income in accordance with the tax regulations can be so large that they could significantly distort an entity's financial result. Deferred income tax is designed to show tax consequences of events recognized in compliance with the balance sheet law. Therefore, it serves as a means to eliminate distortions in the financial statements due to the need to use a dual approach: balance sheet and tax. The article contains a comprehensive, synthetic theoretical approach to the issue of deferred income tax, and by enriching it with examples of calculations, brings additional practical value in addition to the theoretical layer.

As research has shown, deferred tax may increase the income tax shown in the profit and loss account and, consequently, reduce the financial result. In economic practice, there may also be situations where deferred tax will have a positive effect on the financial result by reducing income tax (in part regarding deferral) in the profit and loss account. Hence, deferred income tax is often seen as either a cost or income for an enterprise. Deferred income tax is a kind of "buffer" that protects against sudden changes in the financial result due to events affecting income tax at another time. Entities obliged to demonstrate deferred income tax (and therefore deferred tax assets and provisions) protect themselves against the effect of positive or negative temporary differences. Due to the differences between balance sheet law and tax law, these differences in large entities are quite frequent.

Lawmakers narrowed the group of entities that are subject to this obligation to recognize deferred tax assets and liabilities by exempting from it natural persons who are conducting economic activity and other entities without legal personality, as well as legal persons whose financial statements are not subject to mandatory auditing by an auditor. In fact, this group now consists of large business entities in which both the accounting department and the registration system are usually very extensive.

Deferred income tax, in its essence, is quite complicated, as in addition to knowledge of accounting and tax regulation, it is based on the probability of future events. In some situations, the issue of probability can be difficult to determine. The most challenging task in the process of determining deferred income tax is identifying events that give rise to temporary differences. Then, the probability of realizing these differences in the future is determined and the correct valuation for balance and tax purposes is achieved (determining the amount of the temporary difference). Accountants responsible for calculating deferred income tax must be well acquainted, on the one hand, with the provisions of the Accounting Act (possibly in addition to National and/or International Accounting Standards), and on the other hand, with the Act on Corporate Income Tax. For this reason, deferred income tax is not an easy category, as it requires knowledge of many provisions from two seemingly similar, but different areas – balance sheet and tax law.

Investors can also use information about deferred income tax assets and liabilities as information about future liabilities or benefits due to income tax. Recognizing a deferred income tax asset indicates that an entity anticipates that income allowing this item to be realized will be generated in the future. Under the precautionary principle, in order to recognize a deferred income tax asset, it should be possible to obtain sufficiently high income in future periods, at least in the amount corresponding to temporary negative differences.

Since currently there are many discrepancies between accounting and tax regulations, it could be claimed that the role of deferred tax in the coming years shall not decrease. The long-term harmonization of accounting and tax regulations shall undoubtedly be a tedious and challenging process, which means that legal persons whose accounts are subject to obligatory audit by a statutory auditor shall not soon be able to forget about deferred income tax.

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WPŁYW ODROZONEGO PODATKU DOCHODOWEGO NA WYNIK FINANSOWY PRZEDSIĘBIORSTWA

STRESZCZENIE

Celem artykułu jest zaprezentowanie zasad funkcjonowania odroczonego podatku dochodowego oraz ukazanie jego wpływu na wynik finansowy przedsiębiorstwa. W artykule zawarto kompleksowe, syntetyczne ujęcie teoretyczne zagadnienia odroczonego podatku dochodowego oraz wzbogacono je o przykłady wyliczeń, co powoduje, że oprócz warstwy teoretycznej wnosi on dodatkową wartość praktyczną. Przedstawiono istotę funkcjonowania odroczonego podatku dochodowego, etapy jego ustalania oraz znaczenie różnic przejściowych będących podstawą jego wyliczeń. Aby zrealizować postawiony we wstępie problem badawczy, autorzy posłużyli się przykładową symulacją, w której przedstawiono wpływ odroczonego podatku dochodowego na wynik finansowy przedsiębiorstwa. Przeprowadzone badania wykazały, że odroczonego podatek dochodowy może mieć pozytywny lub negatywny wpływ na wysokość wyniku finansowego netto danej jednostki gospodarczej w zależności od tego, czy przedsiębiorstwo identyfikuje więcej różnic przejściowych ujemnych, czy dodatnich.

Słowa kluczowe: podatek dochodowy, podatek odroczonego, wynik finansowy

DEFICIENCIES IN THE SUPPLEMENTARY PENSION MARKET IN POLAND FROM THE PERSPECTIVE OF REGULATORY POLICY

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ABSTRACT

The supplementary pension market in Poland is regulated to a very limited extent and the range of pension plans available is relatively broad. The regulations in force relate primarily to ensuring financial security from the perspective of the operation of financial institutions, their solvency and liquidity. But efficiency and effectiveness of supplementary pension vehicles in delivering adequate incomes in old age are not regulated or regularly assessed. The most urgent regulatory changes include preliminary product assessment ensuring that only an “appropriate” vehicle is allowed to enter the market, i.e. contracts that meet minimum requirements in terms of design, efficiency and cost. The recommended amendments apply also to risk-sharing, forms of pay-outs, cost limits, market transparency and information policy.

Key words: old-age pension, supplementary pension system, pension product, individual pension plans, occupational pension plans

JEL codes: G22, G23, G28, G51, J26

INTRODUCTION

The supplementary pension market in Poland has not as yet developed to a satisfactory level, measured by the rate of participation in supplementary pension protection, despite the introduction of significant tax incentives. In general, low participation in supplementary pension plans may be the result of high benefits from the basic system, low income levels, insufficient state or employer support, low pension awareness or deficiencies in the pension market, including inadequate regulatory policies.

Previous studies on the functioning of the supplementary pension system in Poland have focused on detailed analysis of the pension system architecture, participation rates and the amount of contributions paid, accumulated funds and projected benefit levels [Adamska-Mieruszewska and Mosionek-Schweda

2015, Jedynak 2017]. Some analyses also refer to the characteristics and effects of tax incentives [Rutecka 2014, 2015, Rutecka-Góra 2019a], costliness [Han and Stańko 2020] and the efficiency of products [Berton et al. 2014, Marcinkiewicz 2015, Szczepański and Brzęczek 2016, Dopierała 2017, Šebo and Voicu 2018, Sołdek and Stachnio 2018, Rutecka-Góra et al. 2020]. However, there are no analyses assessing the impact of the regulations applied on the proper functioning of supplementary pensions, especially from the point of view of savers.

The aim of this study is to analyse the impact of supplementary pension market regulations on the development and operation of supplementary pension plans in Poland, in particular in terms of income adequacy they offer and their adjustment to the needs of individual consumers. The aspects reflected in legal regulations subject to the analysis are as follows:

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the characteristics of pension products in terms of the economic mechanisms applied, risk sharing and guarantees, efficiency and costs, market transparency and disclosure obligations. This study addresses additional retirement provision in Poland with particular emphasis on plans offered to individual recipients without support from an employer, i.e. individual retirement accounts (pol. *indywidualne konta emerytalne*, IKE) and individual retirement security accounts (pol. *indywidualne konta zabezpieczenia emerytalnego*, IKZE). Part of the analysis also covers employee pension plans (pol. *pracownicze programy emerytalne*, PPE), usually for comparative purposes. As the amount of time they have been functioning is too short and the data too limited in scope, the analysis excludes employee capital plans (pol. *pracownicze plany kapitałowe*, PPK), which were introduced to the Polish market in 2019. The main part of the study concerns the Polish pension system. In the final part, however, tools for stimulating and regulating the market for supplementary pension plans recommended by the OECD are also considered.

The research was conducted based on the extant subject literature, the reports of pension providers and data obtained from financial institutions conducting research on the Polish pension market. The following research methods were used: critical literature analysis and systematic review of research on the operation of supplementary pension markets, as well as analysis of statistical data and comparative analysis.

THE SUPPLEMENTARY PENSION SYSTEM IN POLAND

The supplementary pension system in Poland currently comprises four institutional elements:

- employee pension plans (PPE) introduced in 1999,
- individual retirement accounts (IKE) in operation since 2004,
- individual retirement protection accounts (IKZE) offered since 2012,
- employee capital plans (PPK), which have been gradually introduced since mid-2019.

Employee pension plans and employee capital plans are collective plans created as a rule by the em-

ployer. Individual retirement accounts and individual retirement protection accounts are individual pension plans established on the initiative of individuals and without the participation of their employers. Most solutions (PPE, IKE and IKZE) are based on voluntary account creation and enrolment in the programme. In PPK, on the other hand, the employer is required to establish programmes, combined with an automatic enrolment mechanism. At the end of 2018, the level of participation in PPE was 2.6% of the total number of working people, while in IKEs and IKZEs it was 5.8% and 4.3%, respectively [KNF 2019a, b].

Almost all of these solutions are offered under the TEE tax regime, which means that the contributions are taxed, and investment income and benefits paid are exempt from taxation. The exception is individual retirement protection accounts (IKZE), which offer tax deductibility for contributions, while withdrawals are taxed at a preferential rate of 10% (TEE tax regime), [more: Rutecka-Góra 2019a]. Due to tax relief in all institutional forms of additional pension protection, upper limits are applied to contributions, expressed in percentages (in PPE and PPK) of an individual's wage or in amounts (in IKE and IKZE, such a limit is also possible in PPE).

Employee pension schemes (PPE) operate in a form of group unit-linked life insurance, investment funds, employee pension funds or in a form of funds under foreign management. Employee capital plans (PPK) are offered as target-date funds, i.e. a range of funds is available with an investment strategy adjusted to different time horizons of saving tailored to the age of the saver. IKE and IKZE use the same economic mechanisms and operate in the following forms: unit-linked life insurance, investment funds, a bank account, an account at a brokerage house, a voluntary pension fund (pol. *dobrowolny fundusz emerytalny*, DFE).

Contracts for pension products/plans are not based on any uniform, standardised template set by legislators. The rules governing the supplementary pension system only specify the mandatory elements of these contracts and, for example, the minimum part of the insurance premium for the purchase of insurance capital funds (ICFs). Under regulations applying to investment activity, certain products (e.g. employee pension funds) specify the types of financial instru-

ments in which the fund's assets may be invested. In most cases, however, there are no specific guidelines for investment strategies (apart from the target-date funds offered in PPK) and the risk profile of the investment or pension funds offered in supplementary pension plans varies widely, ranging from money market and debt funds to aggressive equity funds. As a consequence, the design of pension products varies widely, although they are based on several main economic mechanisms, as mentioned above. Due to the lack of a uniform template shaping the content of individual pension contracts at least to a minimum extent, not all of the products available are similar in terms of their simplicity and transparency. This may cause significant problems with individual consumers' ability to compare offers and choose the one that best suits their needs. This is especially so as there are several dozen individual pension products offered on the individual pension market and the level of knowledge and financial competence seems to be insufficient to make an optimal choice [more: Cichowicz and Rutecka-Góra 2017]. The selection of an inappropriate offer may result in inadequate income at retirement. This problem is exacerbated by the lack of a register and official ranking of pension products.

Of the products analysed, the simplest is obviously the bank deposit mechanism, which would seem to be understandable to most savers, especially in the absence of investment risk and almost complete absence of fees charged to the account (except for liquidation fees). However, the rules of setting the account interest rate (a variable rate) and ways of interest capitalization may raise doubts and misunderstandings among savers [more: Rutecka-Góra et al. 2020].

Second in terms of transparency and comprehensibility would seem to be a voluntary pension fund (DFE), since under this plan, a single fund dedicated exclusively to pension savings is offered by a given financial institution (pol. *powszechnie towarzystwo emerytalne*, PTE). DFEs are characterised by a relatively simple fee system but the declared, very general strategy of active allocation may raise some questions among savers. It allows the asset portfolio to be shaped quite freely, which may mean that the current investment profile of the fund does not match the individual preferences of the saver [Rutecka-Góra 2019c].

The most complex and opaque products would seem to be pension products offered as unit-linked life insurance and investment funds. In the first case, the complexity arises from the combination of an insurance product with an investment product in a single contract and an extensive, sometimes multi-layer, system of fees. In the latter case, opacity is mainly linked to the multitude of funds available with different investment strategies and different levels of risk, as well as to a very complicated system of fees. Hence, the risk of making an erroneous pension decision is greater, especially when the level of financial competencies of individuals is low.

The inability of individual savers to evaluate products effectively and reliably is due, on the one hand, to their limited knowledge and competence and, on the other, to the inadequacy of information policies and their failure to provide savers with the necessary information in a way they can understand. In order to give individual savers the ability to eliminate inefficient products from the market by showing no demand for them, the pension contract terms have to be made understandable for them. Pension plans should therefore be comprehensible, both in terms of their clarity and economic design, above all to those who contribute to them and expect an adequate level of benefits after years of doing so. They should also be transparent, i.e. they should be easy to compare and evaluate, and free of unnecessary additional options that savers do not often use in practice but that are added automatically to these products and generate additional costs.

RISK SHARING AND GUARANTEES

All supplementary pension plans operating in Poland are based on a pure defined contribution formula. This means full exposure of the individual saver to many risks with the most important being the following [Rocha et al. 2011]: investment risk, inflation risk, liquidity risk, market timing risk, bequest risk, risk of outliving one's savings, risk of a substantial decline in consumption and living standard, longevity risk and bankruptcy risk.

The level of exposure to these risks obviously depends on the form of the pension plan, the investment strategy and the risk profile adopted. However, in a pure

defined contribution plan the entire investment risk and inflation risk is borne by an individual participant. Thus, risk sharing is virtually non-existent or extremely asymmetric, to the detriment of individual savers.

The level of risk exposure is also significant in the decumulation phase. Moreover, in the pay-out phase the longevity risk becomes a key one. But forms of benefits offered in the Polish supplementary pension system (a lump sum and a programmed withdrawal) do not offer any protection against longevity risk. This deprives savers of the ability to protect themselves in the event of a longer-than-expected life, as even the most cautious and conscious individuals may have problems with obtaining a life annuity instead of a lump sum.

The high level of exposure of plan participants to a wide range of risks and the lack of guarantees in pension products (plans) are clearly contrary to the expectations of individuals and, in the view of the author of this article, are not reflected in the types and level of fees charged by financial institutions. Extremely asymmetric risk-sharing may be one of the main reasons for the low-level of interest of individual savers in supplementary pension plans or their giving up on saving after a relatively short period of time, despite the tax incentives offered. When deciding on the purchase of a long-term savings product, Poles point to the guarantee of return on capital as the most important feature and consider the absence of a capital gains tax to be the least important [TNS Polska 2016]. Therefore, individual savers expect that the product solutions offered will be primarily aimed at protecting accumulated pension savings in the long term [Cichowicz and Rutecka-Góra 2017], i.e. they will include a guarantee regarding the rate of return.

Rate of return guarantees increase an individual's tendency to save for old age and the amount of funds invested in supplementary pension plans. It should be recalled, however, that these solutions cost money and may result in the application of more conservative investment strategies by financial institutions. This may lead to lower rates of return on pension savings, and thus lower benefits [FCA and The Pensions Regulator 2018]. A certain consensus on guarantees and risk

sharing is needed that would take into account the interests of all parties to the pension contract. The introduction of even partial guarantees would undoubtedly result in a more symmetrical sharing of risks, especially when the cost of pension products is high and usually independent of investment performance.

Hybrid solutions based on the defined contribution formula enriched with certain guarantees are already used in many developed supplementary pension markets, especially in Western Europe [more: Gierusz 2019]. It appears that, if the pure defined-contribution formula is revised towards a more “just” sharing of risk, the first options considered should include collective defined-contribution schemes (CDCs) and defined-benefit schemes with rate of return guarantees. An individual participant's exposure to investment risk may also be limited by the introduction of a target-date fund, as is the case in PPK. However, unlike the two previous ones, this solution does not result in a significant change in risk allocation from the point of view of the individual saver.

THE EFFICIENCY AND COSTS OF SUPPLEMENTARY PENSION PLANS

The primary objective of supplementary pension protection is to provide adequate supplementary income in old age. Since supplementary pension schemes are subject to tax reductions, they should be subject to thorough and continuous analysis as to their effectiveness in achieving this objective. However, there are no summaries of the effectiveness and cost of pension products/plans published by the supervisory authority or any other independent body operating in the pension market. Each financial institution separately communicates to their clients the rates of return achieved and the fees and commissions charged. However, the form of the published information does not allow easy assessment of IKE/IKZE efficiency and costliness, nor comparison of available plans¹. Meanwhile, the market for pension products should be monitored through both preventive control of contract templates and the possibility of product intervention if “dubious” offers appear on the

¹ This may be different for PPK. The Polish Development Fund (PFR) already publishes information on all available employee capital plans, including a summary and comparative list of costs (online at www.mojeppk.pl).

market, which practically exclude the possibility of an individual saver obtaining an adequate income in old age with the content of the pension contract offered.

The nominal and real efficiency of pension plans depends on the form of the product and the choice of specific funds in the third pillar pension market. Studies conducted to date on the efficiency of individual pension products [Dopierała 2017, Rutecka-Góra et al. 2020] have shown that the lowest rates of return were observed for IKE/IKZE in the form of bank accounts, and the highest for voluntary pension funds (DFEs). Conservative banking products did not produce high rates of return; however, they were characterized by low risk and the real interest rates on pension accounts were generally positive. In the case of DFEs, higher or even extraordinary efficiency [more: Rutecka-Góra 2019c] was associated with higher volatility of results and the need to accept negative rates of return in some years. The efficiency of products offered by life insurance companies and asset management companies depends on the strategy for premium allocation, i.e. the decision to allocate capital to specific investment funds or insurance capital funds. Hence, the nominal efficiency of these plans ranges widely, with the largest fluctuations observed in the case of equity and mixed funds, and relatively less volatility in the case of debt funds. But taking into account that DFEs achieved above-average investment results (with active allocation strategy) in the period when some funds of life insurers and asset management companies reported losses [Rutecka-Góra et al. 2020], one should conduct more deep analysis of selected pensions offers and even consider a product intervention procedure if they prove to be inadequate.

The final efficiency of supplementary pension plans is also significantly affected by the fees deducted from

contributions paid and then from pension assets. The products offered by banks with virtually no fees are characterized by the lowest costs, except for the liquidation (or transfer)² fee charged when the IKE/IKZE saver terminates the account within 12 months. The most costly, however, may be³ the plans in the form of a securities account in a brokerage house. Other plans are characterized by a very different level of costs, depending on the investment strategy and the management model adopted (internal or external), [more: Rutecka-Góra et al. 2020]. General pension societies, life insurers and asset management companies charge a distribution fee (up-front fee), a management fee and, in case of premature termination of the agreement, a liquidation fee. In the case of external management of an insurance capital fund, the management fee may be charged twice, i.e. by both the life insurer and external asset manager. In investment funds the distribution fee sometimes consists of two elements: a fee for opening the register (usually in the form of a specific amount) and a spread in the price of an investment fund unit (difference between the purchase and sale price). The system of fees can be quite complex, and the level of the overall fee burden can be difficult to calculate. Based on an estimate of the total cost ratio (TCR) indicating how much of the contribution paid by the saver is consumed by fees and commissions charged by the financial institution [Rutecka-Góra et al. 2020], it can be concluded that the most expensive are those plans that invest in aggressive instruments or aggressive funds and with high distribution and handling fees. For such plans, the total cost ratio may exceed 20% of the contribution paid.

The type and level of fees is not currently limited by law, except for investment funds with the maximum management fee introduced in 2019⁴ and fees charged by employee capital plans⁵. Most fees are charged

² This fee may even be equal to the total amount of interest due for the entire final saving period [more: Rutecka-Góra et al. 2020].

³ The formulation “may be” was used because there is no data on the activity of individuals saving for old age in this form. With an aggressive approach to investment and engaging in numerous transactions in the financial market, costs will be very high, as there is no upper limit on fees. However, if the holder of a securities account invests only in Treasury bonds, the level of management fees will amount to 0.1% of the value of assets per year.

⁴ Since 2019 the management fee cannot be higher than 2% of the fund’s net assets value per year, with this limit being introduced gradually. In 2019, management fees shall not exceed 3.5%, 3% in 2020 and 2.5% in 2021.

⁵ PPK may serve as an example and guide for desirable changes in the regulations concerning the operation of PPE, IKE and IKZE.

regardless of investment returns and may consume even above-average profits, leading to inadequate benefits in old age.

INFORMATION POLICY AND MARKET TRANSPARENCY

The information policy of pension institutions is defined by rather limited obligations on pension providers, mainly related to the regular submission of reports to the supervisory authority on investment portfolio, assets under management, number of plans, age and sex of savers and amount of contributions. Due to the lack of both an official pension products register and retirement product ranking, individuals who are interested in a supplementary pension plan must now obtain information about the plans by themselves and make product comparisons on their own. As stated in law, basic information together with the content of the agreement have to be provided by the financial institution before the conclusion of the contract, but this is usually prepared in a form and language that is incomprehensible to the average person (the content of most individual pension product agreements is incomprehensible to people with education less than a graduate or postgraduate level) [more: Rutecka-Góra et al. 2020]. Moreover, they have to be found in different types of documents, depending on the product form, which makes the comparison and understanding of contract terms and conditions almost impossible [Rutecka-Góra 2019b].

Regulations concerning the individual pension products, with special focus on unit-linked life insurance, indicate clearly that the information provided to individual savers should be understandable. In practice, however, these statutory requirements for the comprehensibility of the language used in documents regarding the operation of pension plans should be considered defunct because neither the supervisory authority nor any other institution operating on the financial market has taken any action to date, despite the obvious incomprehensibility of the content of agreements and other pension documents for the majority of savers.

The information policy of financial institutions is also very limited at the stage of execution of contracts

for managing IKE and IKZE. The saver is informed of the account balance, the number and value of units/financial instruments collected, paid contributions and other operations on the account. However, the vast majority of savers do not receive information about total fees deducted (also as a percentage of contributions or capital), the nominal and real rate of return (both annual and for the entire investment period) and profit (both nominal and real). Consumers thus do not receive key information on the actual performance of the pension plan and have no possibility to compare it with products of other institutions. Moreover, in the case of documents submitted during the contract period, there is usually no statutory requirement for transparency and intelligibility of the language used.

GOOD PRACTICES AND INTERNATIONAL GUIDELINES

On the basis of its own analyses and data collected from OECD member countries, in 2012 the OECD published ten features (recommendations) of a well-structured defined-contribution plan. They are the following [OECD 2012]:

1. Internal coherence of the plan.
2. Appropriate incentives to join schemes and to make contributions in the long term.
3. Effective tax incentives.
4. Stimulation of the development of low-cost pension products.
5. Default investment strategies and a choice of risk profiles.
6. Availability of life-cycle funding.
7. Support of the development of life annuities.
8. Ensuring competition on the life annuity market.
9. Appropriate information policy and availability of instruments facilitating the management of longevity risk.
10. Effective communication with participants.

A few years later, the UK financial supervision and pension supervision [FCA and The Pensions Regulator 2018] identified the availability of inadequate pension products (or the lack of adequate products) as one of the main risks of inadequate supplementary pension benefits in the UK. It was therefore emphasised that regular review of pension plans, occupational and in-

dividual ones, was essential to ensure that they offer adequate benefits in return for a contribution at a declared cost (value for money) [FCA and The Pensions Regulator 2018].

In Poland, however, only a few and fragmentary elements listed in the guidelines and recommendations described above are regulated by law. This situation may result from the lack of regular review of the supplementary pension system from the perspective of the needs and interests of individual savers⁶. The lack of interest in assessing the efficiency of supplementary pension plans in providing adequate income in old age, combined with the lack of appropriate regulation of this market, may result in a wide range of unsuitable pension products being available on the supplementary pension market. The supplementary pension system, even if participation rates are significantly increased, may prove to be a tool for a real redistribution of income from individual savers to financial institutions.

CONCLUSIONS AND RECOMMENDATIONS

Products offered on the supplementary pension market in Poland are rarely assessed in terms of their effectiveness in providing income for old age. No institution publishes the full list of pension products with their key characteristics, efficiency and costliness. Inadequate information is one of the deficiencies of regulatory policy that may cause huge problems and prevent the supplementary pension system from further development.

Another key problem of regulatory policy seems to be lack of control of contracts before they are introduced to the market or later control at the stage when they are in operation⁷. Such anticipatory control seems

to be highly desirable, and perhaps even necessary, if costly tax incentives are applied in products with no cost limits or investment guarantees. The lack of regulations ensuring that only an “appropriate” product is allowed to enter the market, i.e. contracts that meet minimum requirements in terms of design, efficiency and cost, jeopardises the achievement of the basic objective of supplementary pension plans, i.e. to ensure adequate income in old age. In the absence of control of the economic mechanisms applied and regular verification of the actual profitability of pension plans, products that affect the transfer of funds to financial institutions may operate on the market for many years. In particular, when individual savers are usually unable to assess whether and how profitable the plan in which they participate has proved to be [Šebo et al. 2019].

All supplementary pension plans operating in Poland are based on the defined contribution formula without any guarantees from financial providers. This brings about extremely asymmetrical risk-sharing that should be reduced by changing the regulations regarding the characteristics of the products offered, guarantees of return and types of fees (depending, to a greater extent on investment results) and by extending the pay-out forms to include life annuities. Pension products should offer individuals the possibility to adjust their investment portfolios to their own preferences, including age and “appetite for risk”. However, if a significant proportion of savers do not have adequate knowledge and competence to choose instruments that fit them best, the introduction of default solutions and encouraging the development of sound financial and pension advice is necessary. Moreover, the statutory requirements concerning the comprehen-

⁶ To date, the regular review of the Polish pension system has dealt almost entirely with the public system. Supplementary protection was analysed only in terms of the level of participation and amount of accumulated assets. However, the effectiveness or cost effectiveness of the pension products and, consequently, the efficiency of supplementary pension plans offered on the market were not assessed.

⁷ This type of control did exist several years ago regarding insurance products. This idea is now returning, albeit to a limited extent. On 29 October 2019 the Polish Financial Supervision Authority (Komisja Nadzoru Finansowego) adopted the principle of product intervention regarding unit-linked life insurance. Work on this procedure is to be completed in the second quarter of 2020 and concerns the limitation of the possibility of marketing, distribution and sale of unit-linked life insurance with features that the supervisory authority regards as unacceptable [KNF 2019c]. More in subsequent subsections of this article.

sibility of the terms of contracts provided to savers should be carried out more strictly to make a pension product understandable for an individual saver. In this respect, a procedure must be developed to test the content of financial agreements for clarity, unambiguity and comprehensibility of the message, which would be used throughout the financial market. The information policy also has to be more focused on individuals' needs. Otherwise, they would be discouraged from concluding any pension contract or any active participation in the pension market in general.

The introduction of changes to the regulations discussed above could contribute to the elimination of low coverage, exclusion from the pension market, the purchase and operation of inadequate (inefficient) products or redistribution towards financial institutions. The proposed changes would increase the transparency of the market for supplementary pension products, and make them easier to understand and adapt to the needs of individual savers. At the same time, supplementary pension plans should not be designed in isolation from other components of the pension system, as current trends in pension provision are making universal pension systems increasingly multi-layered and supplementary plans are starting to assume the functions of base systems, regardless of the nomenclature used and the entities managing the respective parts.

Acknowledgements

The article presents the results of the research *Deficiencies in the supplementary old-age pension market in Poland from the perspective of regulatory policy* conducted as a part of the statutory research of the Institute of Statistics and Demography entitled *Social, economic and health determinants in life cycle, inequalities and quality of life – a macro and micro perspective*, Warsaw School of Economics, funding: Ministry of Science and Higher Education (No KAE/S19/19/19).

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UŁOMNOŚCI RYNKU DODATKOWYCH PLANÓW EMERYTALNYCH W POLSCE Z PUNKTU WIDZENIA POLITYKI REGULACYJNEJ

STRESZCZENIE

Dodatkowy rynek emerytalny w Polsce jest regulowany w bardzo ograniczonym zakresie, a oferta dostępnych planów emerytalnych jest stosunkowo szeroka. Obowiązujące przepisy odnoszą się przede wszystkim do zapewnienia bezpieczeństwa finansowego z punktu widzenia funkcjonowania instytucji finansowych. Zbyt mało uwagi poświęcono natomiast regulacjom umożliwiającym skuteczną i efektywną alokację dochodu w cyklu życia z punktu widzenia indywidualnego oszczędzającego. Konieczna jest weryfikacja warunków planów przed ich wprowadzeniem na rynek, aby wyeliminować z niego produkty nieodpowiednie zarówno z punktu widzenia efektywności inwestycyjnej, jak i kosztowności. Istotnych zmian regulacyjnych wymagają takie obszary, jak: podział ryzyka, formy wypłaty, poziom kosztów, przejrzystość i polityka informacyjna.

Słowa kluczowe: emerytura, dodatkowy system emerytalny, produkt emerytalny, indywidualne plany emerytalne, pracownicze programy emerytalne

MANAGEMENT OF MANUFACTURING RESOURCES IN AN ENTERPRISE ON THE EXAMPLE OF HUMAN RESOURCES

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ABSTRACT

Human resources constitute a group of individuals that make up a company's employees. Human resources together with skills, knowledge, abilities and predispositions create human capital. Today, managing human resources is conditioned by many factors of economic, social, ecological-legal and technical-organizational nature. The aim of the article is to present the results of research on important determinants of professional work, and to identify factors of professional work that both positively and negatively affect the quality of life of employees. The article looks for the answer to the question: What values are important for an employee? Is the realization of dreams, job promotion, prestige and recognition important? The results of empirical research indicate the possibility of using mentoring and tutoring in human resource management. The authors begin the article by analysing literature and theoretical frameworks, ending with results and conclusions.

Key words: human resources, human resource management, mentoring, tutoring

JEL codes: M54, J24, J54

INTRODUCTION

Each service rendered, product manufactured, information provided, and action performed arises thanks to a person and their work carried out for the benefit of an economic entity. An enterprise does not exist only to provide people with work, but also to generate profit by using specific production resources, including human resources. Human resources constitute a group of individuals that make up a company's employees. Human resources together with skills, knowledge, abilities and predispositions create human capital. Human capital affects social well-being, individual earnings of employees, efficiency and effectiveness of entrepreneurs, as well as the amount of added value generated by the national economy. Human resources

comprise employees, people with creative attitudes and qualifications who are permanently connected with the enterprise, and who are able to cooperate [Harasim 2008, Pitt-Catsoupes et al. 2015]. Human resource management as well as effective and efficient use of the potential of employees is most often oriented towards: shaping the internal labour market, affecting human resources, rewarding effective work, and new management [Amstrong 2010, Wyrzykowska 2013]. The strength of a modern enterprise in the 21st century is determined by its ability to adapt to changes in the labour market, where cultural and generational diversity, aspirations of the young generation and individuality of human resources are increasingly noticeable.

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THEORETICAL FRAMEWORK

Employees are a company's most valuable asset. It is people with their knowledge and skills, professional experience, aspirations, motivations and attitudes that constitute the basis for ties, relations and relationships, level of trust, personal culture, norms and values. Human resources are the company's assets that are capable of generating specific values, and creating intellectual, social and emotional capital. People want to learn, are confident, clearly define the conditions and expectations of the employer, want to do what they are interested in and want to receive higher than average salary. They expect flexible working hours, value autonomy and independence, are great at using new technologies, and use access to diverse information. Such human resources should be managed with the use of modern instruments.

Human resource management is a method of attracting and retaining employees who are needed by organizations to conduct business [Pocztowski 2013]. It includes planning, recruitment, selection and integration of employees, interim evaluations, control, remuneration, motivating activities, training and termination of employment contracts [Harasim 2008, Drucker 2011]. Human resource management includes partnership relations between management, the board of directors and employees, preparing them for independent operation by raising their qualifications, shaping a new style of work based on transferring responsibility to them and ensuring participation in decision making. Enterprises that are able to develop their skills thanks to the talents of their managers and the involvement of well-prepared and motivated employees achieve high growth rates [Wyrzykowska 2013]. Human resource management is based on such assumptions as [Ludwiczynski 2000]: (1) Formulation of goals and tasks improving work; (2) Construction and implementation of a system of productive cooperation within the enterprise; (3) Modernization of information and incentive systems, including non-payroll; (4) Education and learning within the organization.

More on issues of human resources and human resource management can be found in the works of: Schultz [1976], Tissen et al. [1998], Torrington et al. [2004], Kędzior and Wójcik-Jurkiewicz [2008], Stor

[2010], Wójcik-Jurkiewicz [2011], Gadomska-Lila [2013], Sidor-Rządkowska [2018].

RESEARCH MATERIAL AND METHODOLOGY

The aim of the article is to present the research results on the determinants of professional work important for human resources and to identify factors that affect both positively and negatively the quality of life of employees. The article looks for the answer to the question: What values are important for an employee? Is the realization of dreams, job promotion, prestige and recognition important? The thesis of the study is: "Modern human resource management in an enterprise requires the use of effective methods such as mentoring and tutoring". By implementing the aim of the work formulated in this way, a review of the literature and the results of previously conducted research were carried out as an introduction to study. The article is based on data from the Statistics Poland (Główny Urząd Statystyczny) [GUS 2017]. The research process also included a questionnaire interview (standardized) conducted with managers who manage medium-sized enterprises located in Zachodniopomorskie Voivodeship. Thirty interviews were conducted among the representatives of business practice who were selected among post-graduate students conducted at the University of Szczecin and from among part-time students. The theoretically and empirically oriented article largely contains the authors' own research, reflections and opinions.

RESULTS AND DISCUSSION

Managing manufacturing resources, primarily human resources, is the subject of numerous critical comments and analyses. These comments apply to both theory and practice. The results of secondary research allow for distinguishing those factors listed as the most important in professional work, as shown in Table 1.

The most important factors in professional work include: lack of tensions and stress, job matching the skills, personal development and high independence. For women and men, good working conditions and the atmosphere at work are the most important. Job matching the skills is more important for men than

Table 1. Factors listed as the most important in professional work by sex, voivodeship, education level, social-vocational status in 2013 and 2015

Specification	No tensions and stress		Job matching the skills		Personal development		Independence	
	%							
	2013	2015	2013	2015	2013	2015	2013	2015
Sex								
Males	52.3	57.8	28.1	29.0	20.8	22.4	23.7	24.0
Females	54.8	61.7	26.9	27.1	24.7	25.8	18.0	18.7
Voivodeship								
Lubelskie	51.2	56.6	34.0	30.1	21.8	26.3	24.1	20.2
Podkarpackie	52.3	62.8	27.0	34.0	21.2	17.2	16.4	18.5
Podlaskie	50.7	58.0	31.7	29.5	16.1	24.5	21.5	19.8
Lubuskie	54.8	66.6	27.5	34.2	24.7	25.7	22.3	20.9
Wielkopolskie	57.4	67.2	29.0	26.0	21.2	22.7	19.0	20.7
Zachodniopomorskie	57.9	57.2	30.6	32.1	22.2	22.7	23.7	21.2
Level of education								
Tertiary and post-secondary	47.6	53.5	31.1	30.2	37.4	38.6	24.9	24.5
Secondary	57.1	63.9	25.1	26.1	20.1	19.6	20.1	21.7
Lower secondary and basic vocational	57.0	62.9	26.9	28.0	10.9	12.1	18.3	18.2
Primary and below	49.0	58.5	24.1	26.6	7.0	9.6	19.0	18.4
Social-vocational status								
Public sector employees	56.7	60.3	31.7	29.6	26.6	29.7	18.3	19.8
Private sector employees	56.6	61.6	24.6	26.0	24.2	24.00	17.6	16.7
Private entrepreneurs without farmers	45.1	54.2	28.9	33.1	22.7	24.7	41.6	44.6
Farmers	40.1	53.8	28.7	29.9	8.8	12.0	28.2	31.1

Source: GUS [2017].

for women. This factor is important mainly for employees in Podkarpackie Voivodeship (2015), and is less important for employees from Wielkopolskie Voivodeship. Also for these respondents, the most important factor in professional work is the lack of tensions and stress (especially for people with secondary education, employed in the private sector – 2015). The possibility of personal development is a more important determinant for women than for men, who in turn prefer more independence at work. The possibility of personal development is of key importance

for employees in Lubelskie Voivodeship (2015), especially in the group of employees with tertiary and secondary education employed in the public sector. On average, 20% of respondents living in selected regions indicate high independence as the most important factor in professional work. This category is important for private entrepreneurs with tertiary and secondary education.

Table 2 presents the most important professional factors that have a positive impact on the quality of life of employees.

Table 2. People who positively assess the impact of work on the quality of life by sex, voivodeship, education level, social-vocational status in 2013 and 2015

Specification	Job promotion in the previous year		Getting new skills in order to have higher salary		Take better paid or extra job		Starting own business in the previous year	
	%							
	2013	2015	2013	2015	2013	2015	2013	2015
Sex								
Males	6.3	6.2	13.7	13.4	9.9	11.0	2.4	2.1
Females	6.1	6.3	12.1	11.6	7.7	8.4	0.9	1.0
Voivodeship								
Lubelskie	7.1	6.0	14.3	10.6	8.2	9.1	1.4	1.4
Podkarpackie	2.8	7.2	13.4	10.0	7.8	8.5	0.7	0.9
Podlaskie	8.7	4.2	10.3	9.5	8.9	8.9	2.3	1.6
Lubuskie	10.3	6.4	12.1	13.6	12.2	14.7	1.7	2.9
Wielkopolskie	5.1	5.4	11.1	10.4	8.0	10.0	2.0	0.7
Zachodniopomorskie	8.3	3.7	12.7	12.1	10.2	10.5	1.2	2.1
Level of education								
Tertiary and post-secondary	10.1	10.2	27.2	25.3	15.3	15.2	2.7	2.9
Secondary	5.2	5.3	13.2	12.8	8.7	10.0	1.7	1.5
Lower secondary and basic vocational	2.9	2.3	6.5	5.7	6.5	7.3	1.2	0.8
Primary and below	1.9	1.6	1.8	1.5	2.6	3.2	0.6	0.5
Social-vocational status								
Public sector employees	7.7	7.0	23.7	24.0	12.4	13.1	0.8	0.7
Private sector employees	6.5	6.7	19.6	18.2	16.0	17.5	1.2	1.3
Private entrepreneurs without farmers	6.0	4.7	20.1	21.5	14.3	16.7	20.1	17.1
Farmers	0.2	0.6	4.3	2.6	4.2	3.9	1.6	1.1

Source: GUS [2017].

Both men and women gained new qualifications in order to receive higher salary. The best result was recorded: by voivodeships – among employees who work in Zachodniopomorskie Voivodeship; by educational level – among employees with tertiary and secondary education; by social-vocational status – among public sector employees and among private entrepreneurs (2015). Undertaking better paid or additional work by men was another factor determining the higher quality of life of employees. This factor is particularly impor-

tant for employees employed in Lubuskie Voivodeship who have tertiary and secondary education. The highest ratings are recorded among those employed in the private sector and among private entrepreneurs. Table 3 presents the results of studies on the negative assessment of the impact of work on quality of life.

On average, 20% of respondents cannot find a job after finishing school, with the number reaching as much as 48.4% in Podkarpackie Voivodeship (2015). Work has a negative impact on the quality of life when

Table 3. People who negatively assess the impact of work on the quality of life by sex, voivodeship, education level, social-vocational status in 2013 and 2015

Specification	Inability to find a job after completing school in the previous year		Not getting a promotion at work in the previous year		Transfer to a worse position in the previous year		Serious problems with the boss in the previous year	
	2013	2015	2013	2015	2013	2015	2013	2015
	%							
	Sex							
Males	22.5	18.0	7.3	6.3	2.7	1.8	6.0	5.0
Females	22.5	20.7	5.8	5.6	2.3	2.1	4.5	5.0
	Voivodeship							
Lubelskie	28.4	29.0	7.0	4.8	2.0	2.1	3.2	3.8
Podkarpackie	32.8	48.4	7.4	7.2	2.8	1.1	5.0	4.2
Podlaskie	16.3	21.7	8.7	16.4	1.5	1.5	7.0	5.6
Lubuskie	23.8	7.7	5.4	5.4	1.9	2.1	4.3	4.5
Wielkopolskie	25.0	13.5	5.0	3.1	2.6	1.8	4.7	2.8
Zachodniopomorskie	16.2	16.0	5.6	5.3	1.3	4.1	3.6	4.8
	Level of education							
Tertiary and post-secondary	23.0	15.9	8.7	7.1	3.1	1.5	6.5	6.1
Secondary	25.4	23.7	6.1	6.1	2.2	2.0	5.5	5.2
Lower secondary and basic vocational	22.0	17.6	4.7	4.8	2.1	2.3	3.7	3.4
Primary and below	26.7	24.4	3.9	1.9	2.5	1.6	4.0	2.8
	Social-vocational status							
Public sector employees	9.2	8.1	7.7	6.7	2.3	2.0	4.5	5.1
Private sector employees	13.4	13.8	6.4	6.3	2.5	1.8	5.5	4.6
Private entrepreneurs without farmers	13.4	9.1	2.7	3.7	2.0	2.0	6.1	6.3
Farmers	13.4	14.7	1.7	1.4	0.3	1.0	0.6	1.2

Source: GUS [2017].

an employee does not receive job promotion, which is usually pointed out by male employees mainly in Podlaskie Voivodeship. This factor is particularly important for public sector employees, less so for employees in the private sector. The respondents believe that the quality of their lives is negatively affected by a transfer to a worse job position, with about 2.5% of respondents sharing this view. This factor is of particular importance for employees employed in Zachodnio-

pomorskie Voivodeship (4.1% in 2015) who graduated from junior high school or have basic vocational education. Transfer to a worse position, being considered a negative factor of work, shows a decreasing tendency for two comparable years, with the situation looking different in comparison to other sectors only in the group of farmers. Serious problems with the superior at work are another determinant of the negative assessment of the impact of work on the quality of life of

employees. For 5% of men and women in the study group, this element is important. It is most often indicated by respondents with tertiary and post-secondary education employed in the group of private entrepreneurs in Podlaskie Voivodeship.

Agreeing with the thesis that modern human resource management in an enterprise requires the use of effective management methods such as mentoring and tutoring, the respondents were asked to express their opinions on known and used human resource management methods (the figure).

The respondents know traditional and modern methods of human resource management. Not all respondents participating in the survey use modern management methods. Mentoring and tutoring are rarely used by the respondents, as according to the authors, a stable and sustainable development of the organization is significantly impacted by each person, who in turn should be properly managed. The respondents were asked what management style they prefer and what particular elements of these styles are known to them, or used by them to manage human resources (Table 4).

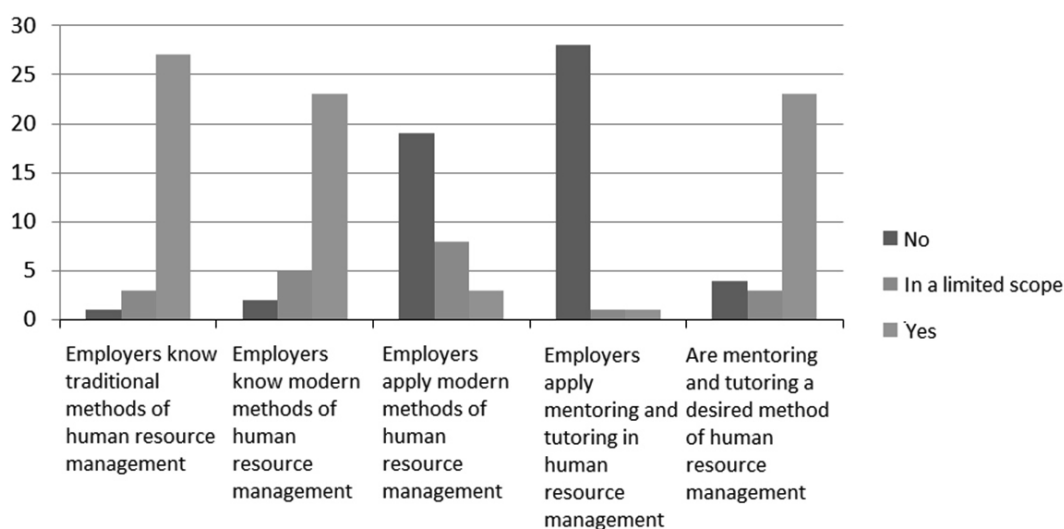


Fig. Opinion of respondents on known and used traditional and modern methods of human resource management

Source: Authors' own study based on the results of research.

Table 4. Management style in the respondents' opinion

Management style	Stages of the management process	Frequency of use			
		often	very rarely	rarely	never
Interactive	support		x		
	partnership / teamwork		x		
	responsibility centres / delegation of powers			x	
	participation			x	
Non-interactive	work consultations	x			
	open authoritarian / democratic style	x			
	closed authoritarian style	x			

Source: Authors' own study based on the results of research.

In the respondents' opinions, the interactive style which employs modern management methods, is still used very rarely or rarely for human resource management, while employers still mainly use known, traditional human resource management methods offered by the non-interactive style¹.

According to the authors, an enterprise needs a style of human resource management where employees have high intellectual sovereignty, are independent, well-informed and motivated, have the opportunity to interact and co-decide, derive personal satisfaction from their achievements and the achievements of the enterprise with which they identify. The most important elements of human resources are "skills, knowledge, abilities, attitudes and health" [Król and Ludwiczynski, 2006, p. 54]. It can therefore be seen that the idea of resources is to "treat every employee as a source of potential opportunities and benefits, as well as material and non-material profits. (...) However, a person should be situated in a place where their individual possibilities meet with a unique opportunity to do something special. It provides a picture of an optimistic vision based on the conviction that work is a place where human success meets the success of the world".

Today, professionalization of personnel activities is one of the most important principles of company and people management. People are a special resource that gives the company a unique character and makes it stand out, which is why it is necessary to properly use and manage the potential of human resources. It should be remembered that human resources are characterized by creativity, flexibility in action and emotional potential, which can be managed using the ladder of the employee management process (Table 5).

The ladder of the employee management process presents two management styles, the first one being a classic, historic, non-interactive style, where the authoritarian style of human resource management prevails and the democratic style is characterized only by providing information to employees, as well as limited consultations with middle management, while minimizing the decision-making factor of human resources, their creativity, ingenuity and freedom of choice or ex-

pression. The other style of human resource management is a component of modern concepts, methods and control instruments. Human resources are important to the employer to the extent that it becomes one of the key stakeholders of the enterprise by co-deciding and participating in creating its value and generating profit. The key role in the interactive style of human resource management is the concept of mentoring and tutoring as necessary elements of modern management.

Mentoring is based on taking care of the employee during development of their competences and implementation of the professional path. It takes place over a long time (1–3 years). It is the employee's relationship with a person who has much greater experience and knowledge and who supports the development of a worker with less experience and years of service. A mentor can be an employee with a high position in the organizational hierarchy who knows the scope of their colleagues' work well. It is believed that the essence of mentoring is "the art of supporting people who want to transform dreams into goals and make an effort to achieve them" [Megginson et al. 2008, Woźniak 2012, Sidor-Rządkowska 2014]. Mentoring is an investment in development, which is now becoming a recognized method of supporting the development of individuals and enterprises.

Tutoring is more than just passing on and verifying employee knowledge or skills. It is teaching independent thinking, making opinions and judgments based on knowledge and factual arguments; it is discussions and experiencing professional dialogue. Tutoring is based on a close relationship between a person, a tutor (employer) and a dependent (employee or team of employees). It is a personalized and holistic approach, which takes into account that each person (employee) is different. Tutoring is about discovering talents and developing the skills of independent thinking and creating value [Malm 2008, Budzyński et al. 2009, Kaczmarek 2013]. Professional tutoring is characterized by the employee's confidence in which direction they want to go. The employee knows perfectly well what professional field arouses their interests and will allow their further development. This type of tutoring forces

¹ Due to the small research sample, these results should be treated as pilot studies, which may indicate the direction for further in-depth empirical research in this area. They should not be generalized.

Table 5. Ladder of the human resource management process in the enterprise

Management style	inter-active	<p style="text-align: center;">Support</p> <p>employer provides employees with the necessary support, knowledge, finances, working time, and technology in response to changes proposed by the employee</p>	<p style="text-align: center;">Change initiator</p> <p>[tutoring]</p>	Role of employee
		<p style="text-align: center;">Employee partnership / teamwork</p> <p>employer cooperates with employees, owners, investors and the local community on an equal basis</p>	<p style="text-align: center;">Associate / Partner</p> <p>[tutoring]</p>	
		<p style="text-align: center;">Responsibility centres / delegation of powers</p> <p>employer creates responsibility centres or transfers the power to take specific decisions or implement tasks, strategies (policies) on a delegation basis</p>	<p style="text-align: center;">Co-decider / Jointly responsible person</p> <p>[mentoring]</p>	
		<p style="text-align: center;">Participation</p> <p>employer conducts a discussion on ways and forms of solving dilemmas or problems: discussion participants can independently define problems and suggest various solutions to a given issue</p>	<p style="text-align: center;">Consultant / Active stakeholder</p> <p>[mentoring]</p>	
		<p style="text-align: center;">Work consultations</p> <p>employer consults with middle management (a strictly defined group of people) about the project, investment, problem, task, presenting a predetermined number of acceptable options to choose from in order to make a decision</p>	<p style="text-align: center;">Consulted employee / Active stakeholder</p>	
	non-interactive	<p style="text-align: center;">Open authoritarian / democratic style</p> <p>employer formulates their strategy, internal regulations, management style, other policies in an independent manner; provides information to employees, convincing them to the proposed solutions</p>	<p style="text-align: center;">Employee as recipient of information / Non-active stakeholder</p>	
	<p style="text-align: center;">Closed authoritarian style</p> <p>employer makes all decisions independently and does not try to involve employees in the decision-making; does not inform employees about decisions made</p>	—		

Source: Authors' own elaboration based on: Swianiewicz et al. [2004], Szaja [2018].

the employee to search for their own wisdom, which is obtained by independent, logical thinking, asking questions and searching for answers.

Mentoring and tutoring at the top of the management ladder can be used for modern human resource management, as well as to strengthen competitiveness and human resources. By using these two concepts, the employer gives the employee the opportunity of professional promotion, acquiring new qualifications leading to better earnings, a chance to take on an additional job, but above all reduces tension and stress at work by creating a friendly atmosphere.

The ladder of the human resource management process in the company, together with new concepts that can be used in managing people, such as men-

toring and tutoring, is the company's (manager's) response to providing engaged employees with relevant values, such as:

1. Self-realization at work; fulfilment of dreams, passions, interest, challenges, new tasks, diversity, social bonds, respect, freedom of action, creativity, control processes.
2. Possibility of self-development: job promotion, leadership and management opportunities, raising qualifications, skills, competences, learning, improvement, co-creating new values.
3. Recognition: prestige, internal and external recognition, reputation, respect, personal satisfaction.
4. Financial aspect: remuneration and payments related to remuneration.

It is worth emphasizing, given the special role of managers in the process of motivating human resources, that influencing the attitudes and behaviour of people in the enterprise can be implemented not only directly, but also indirectly through their attitude and behaviour. Therefore, the attitude and behaviour of each manager seems crucial in the context of effective impact on employee motivations. Thus, a wise manager who applies modern management methods, such as mentoring and tutoring, achieves more, can gain more, and is better evaluated by employees. A tutor or mentor always remembers that employees are the organization's most important resource.

CONCLUSIONS

Effective human resource management is part of managing an organization. Today, these activities require cooperation of decision-makers with employees, open and free discussions and joint setting of goals, visions, missions, strategy of the enterprise, as well as means for their implementation, access to information, and partnership. This new human resource management system is an exchange transaction regarding initiative, capabilities, competences, and knowledge for opportunities. An enterprise should offer its employees the opportunity to achieve personal success, for which, in return, employees show initiative in creating value for customers, and thus multiply the enterprise's profit [Wyrzykowska 2013]. The strength of human resources in an enterprise is based on undisclosed abilities and skills, aspirations, dreams, personal deep motivation to work, the need for self-fulfilment and learning, creativity, organizational and logistic skills, readiness to take risks, ethics and a personal sense of responsibility for the success or failure of an employer. The results of the empirical research allowed the identification of important determinants of professional work for employees and codification of factors that affect both positively and negatively the quality of life of employees. Thus, the thesis of the study, "Modern human resource management in an enterprise requires the use of effective methods such as mentoring, tutoring or the ladder of the human resource management process", proved to be true. Although the results of interviews confirmed

their usefulness in human resource management, these methods are not often used by employers.

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ZARZĄDZANIE ZASOBAMI WYTWÓRCZYMI W PRZEDSIĘBIORSTWIE NA PRZYKŁADZIE ZASOBÓW LUDZKICH

STRESZCZENIE

Zasoby ludzkie to zbiór jednostek, które składają się na pracowników przedsiębiorstwa. Wraz z umiejętnościami, wiedzą, ze zdolnościami oraz z predyspozycjami tworzą one kapitał ludzki. Zarządzanie zasobami ludzkimi uwarunkowane jest współcześnie wieloma czynnikami o ekonomicznym, społecznym, ekologicznym, prawnym i techniczno-organizacyjnym charakterze. Celem artykułu jest prezentacja wyników badań dotyczących ważnych determinant pracy zawodowej, wskazanie czynników pracy zawodowej, które wpływają zarówno pozytywnie, jak i negatywnie na jakość życia pracowników. W artykule poszukuje się odpowiedzi na pytanie, jakie wartości są dla pracownika ważne. Czy znaczenie mają realizacja marzeń, awans stanowiskowy, prestiż i uznanie? Wyniki badań empirycznych wskazują na możliwości zastosowania mentoringu, tutoring w zarządzaniu zasobami ludzkimi.

Słowa kluczowe: zasoby ludzkie, zarządzanie zasobami ludzkimi, mentoring, tutoring

NEGATIVE EXTERNALITIES OF SHAREHOLDER VALUE ORIENTATION AND ITS IMPACT ON GLOBAL FINANCIALIZATION

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ABSTRACT

Value-based management (VBM), also often known as and connected to shareholder value (SHV), is the most popular management paradigm of the 21st century. This concept, despite bringing many improvements to companies, has opened the door to a discussion of its negative overall economic effects, especially regarding its impact on the strengthening of the financial sector. The main hypothesis states that SHV orientation is a financialization accelerator – it contributes to the increase in the size and importance of a country's financial sector relative to other parts of the economy. The study was based on a comprehensive analysis of the literature on the subject. The research method involves a theory-synthesis and general desk research, based on integrative review. Performed studies confirmed the main hypothesis and reveal that an SHV mindset contributes to the increase of global financialization. It is caused, among others, by reinterpretation of the original assumptions, which has paved the way for further, unsustainable corporate practices.

Key words: value based management, shareholder value management, financialization, value maximization, financial crisis

JEL codes: M21, O16, G32, D62, D63

INTRODUCTION

Development of financial capitalism has worldwide impact on economies. Financialization is one of its outcomes. It is a compound phenomenon, which is additionally accelerated by many contemporary factors. Malcolm Sawyer states that financialization has no clear and formal definition [Sawyer 2014]. Larry Epstein explains that: “Financialization refers to the increasing importance of financial markets, financial motives, financial institutions, and financial elites in the operation of the economy and its governing institutions, both at the national and international level” [Epstein 2001]. Financialization increases the significance of risk and profit-related factors in decision making, which leads to changes in both the business and the

social environment [Jajuga 2014]. One of the terms most linked with this issue is shareholder value orientation. This business approach comes from value based management (VBM). The core of this management philosophy entails orientating all processes and decisions, as well as the entire structure of a company, on creating value for the shareholders [Rapaport 1986]. Such shareholder primacy links the strategic goals of a company with the creation of maximum value for its shareholders [Brandt and Georgiou 2016]. Generally, historical data proves that this management approach had moved many enterprises to a higher level of development, by creating more aggressive growth strategies [Koller et al. 1990]. Despite the fact that company management incorporating shareholder primacy (shareholder value management) usually has a positive

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impact on the general wealth of a corporation, doubts regarding the potential external ramifications affecting society, and the economic system as a whole, can be justifiably expressed. This paper aims to evaluate the role of shareholder-value-oriented negative externalities in the contemporary financialization phenomena. For this purpose, the following research hypotheses were formulated:

- Shareholder value orientation is a financialization accelerator, while bad SHV practices and externalities are directly linked to the increasing financialization of economies.
- Currently, the original principles of shareholder value management have been misinterpreted and replaced by many hazardous management practices.

MATERIAL AND METHODS

The research method involves a theory-synthesis and general desk research, based on integrative review. The methodology assumed is based on an integration of the perspectives identified in various other empirical studies. This approach has significant capacity, which no other works have presented, and can lead to new findings [Snyder 2019].

In earlier studies, the shareholder-primacy mindset had been considered an almost flawless solution for development of business potential. The major limitations of shareholder orientation came to light after 2001. Doubts about this philosophy, however, have been particularly rising since 2008, when the search for the drivers of the global financial crisis began.

The most crucial part of the research entailed collection of the papers published at the early stage of VBM and comparison thereof with the sources that came to light after 2001 (especially after the global financial crisis of 2008). This methodology was oriented at identifying the mechanism in which SHV doubts and limitations rose over time and the manner in which the original principles have been misinterpreted. To achieve this aim and to verify the hypotheses, several papers were collected and analysed for each time interval (1970–2001 and 2002–2019). The literature study that was conducted had three auxiliary research effects:

- Identification of the shareholder-primacy-related doubts and limitations emergent over time;
- Extraction of the elements common (among others: negative externalities) for financialization and shareholder value orientation as well as evaluation of the relationship between them;
- Comparison of the original SHV principles with contemporary corporate practices, in order to identify the components that have been misinterpreted.

The papers used in the study were collected from well-known databases e.g. JSTOR, EBCSO, Harvard Database, Emerald and BazEkon, as well as from local sources. All conclusions have been synthesized into a table and a graph, in order to help readers visualize the findings.

RESULTS AND DISCUSSION

Negative externalities of the shareholder-primacy mindset can hardly be found in early publications on corporate value. Rapaport [1986] stated that shareholder management (SHM) constitutes an important factor in the creation of competitive advantage. Moreover, Koller et al. [1990] said that value maximization is the only proper business path for a company. A similar view is presented by Copeland and Weston [1988]: “The most important theme is that the objective of the firm is to maximize the wealth of its stockholders”.

Doubts and concerns began to appear in the papers published after 2000, with a peak focus on this issue in the years 2011–2017. In 2017, Hart and Zingales analysed one of the most influential articles on corporate value creation, entitled *The Social Responsibility of Business is to Increase its Profits*. The paper, which was published by Friedmann in 1970, had dramatic impact on the latter revision of businesses goals. Hart and Zingales [2017] found that the contemporary world needs a clear separation between the creation of shareholder welfare and market value maximization [Hart and Singales 2017]. These authors argue that the second approach usually generates many social externalities, thus they proposed their own model of internalization. This issue was also highlighted by Hausner, who claims that the biggest misinterpretation of shareholder orientation entails equal treatment of the terms “shareholder value” and “market value”

[Hausner 2019]. Stock market price cannot be considered a single driver of shareholder wealth. Nevertheless, the fact that the impact of SHV on financialization has its roots in the drive for value, is vital. A majority of managers nowadays are under pressure from shareholders' financial expectations: thus they focus strictly on maximization of short-term returns [Rudny 2018], through certain strategies of value-driven management. The outcome of that kind of pressure is obvious – top managers look for ways to continuously boost the value drivers, without considering the risk. It is not uncommon that such aggressive value-creation strategies are destructive for economies and societies.

Many papers have been published since 2010, in which authors strongly criticize value based management. For instance, Stout [2012] described this concept as “the dumbest business idea ever”. What is more, Stout [2013] claims that the whole idea of shareholder primacy is not consistent at all. Another concern associated with contemporary shareholder value orientation is short-termism. When relying on the stock market price as the ultimate indicator of business success, only a narrow group of people affiliated with a given corporation is favoured, and conditions for a conflict of interest emerge [Hausner 2019]. The main source of conflicts lies within the group of shareholders who are driven by short-termism, which in turn is accelerated by SHV. They rely on temporary changes in the market price of stock and they are not interested in long-term development of a given enterprise. Emergence of a conflict of interest resultant from value-based management (VBM) has also been confirmed by Pawłowicz and Rose [Rose 2004, Pawłowicz 2019]. Furthermore, Hausner presents extensive quantitative evidence of the negative impact VBM has on enterprises. From the beginning of the 20th century until 2019, the accumulated number of public companies in the US has decreased by 40%, while the average life span of stock-exchange-listed enterprises has decreased from 75 to 25 years [Hausner 2019]. Moreover, shareholder value orientation contributes to the rise in income inequality. In 1991, the average CEO of a large company in the US earned 140 times more than their average worker, whereas in 2003, this ratio was about 500 times greater [Halllock 2012]. Income inequality, as an externality of the

financialization caused by VBM, was also noted by Szczepankowski [2015]. The main factor associated with this issue pertains to aggressive management and motivational systems, which usually are linked with the market price of stock [Zarzecki 2017]. This kind of bonus system is focused on high returns achieved by great risk.

Filar [2019] states that one of the most significant factors of financialization are financial institutions which have increasingly become shareholders. Banks and investment funds are taking control of big corporations and thus have dramatic influence on corporate strategies. Usually, the financial institutions that own the majority of shares force companies to change their long-term strategies into short-term plans, which are rigorously focused on market-value maximization. This phenomenon constitutes another source of short-termism and accelerates the migration of investment from the real economy to the financial sector. This forced change of surplus distribution weakens an enterprise's ability for operational growth and strengthens the financial institution's position. As a result, new capital is not used for expansion of the real production potential but is rather directed towards financial operations, e.g. investment in risky assets or creation of value via stock buyback [Rudny 2018]. Palley [2015] confirms this and concludes that nowadays big corporations serve the interests of financial institutions. Olsen [2003] also adds that VBM ignores the organizational culture and the behavioural aspects of an enterprise.

An interesting perspective was also presented by Pawłowicz [2019], who has listed three negative factors of shareholder value orientation that contemporary economies are facing nowadays: (1) short-termism, (2) monopolization, and (3) moral hazard. The last factor needs to be particularly highlighted. Moral hazard has become an immanent part of shareholder value orientation, mainly by off-balance-sheet (OBS) financing. This type of financing usually has serious impact on the creation of additional value – but it also determines even greater risk for economies. One example of OBS is the infamous CDO (collateralised debt obligation), which before the global crisis of 2008 had been commonly used as a value driver and a risk transfer tool. Now, this tool has been widely and massively

replaced by CLOs (collateralized loan obligations) [Sławiński 2019], which is not an optimistic signal for the contemporary world. Risk transfer, which is generated by this type of instrument, has been accelerating the phenomena of moral hazard and global financialization. Another common contemporary mistake is the practice of linking management salaries with inappropriate, short-term indicators, e.g. the return on equity (ROE) [Pawłowicz 2019]. This usually leads companies to an unsustainable financial structure and results in managerial behaviour that is focused on higher financial leverage rather than on rational minimization of the cost of capital. Initial assumptions of SHV highlight the idea that this mindset can improve corporate transparency [Beck 2014], but in effect the opposite is true, and there is much evidence that management often tries to delay or hide bad corporate news while emphasizing only the good.

As Damodaran [2009] explains, the first principle of value-based management is to “choose a financing mix that minimizes the hurdle rate and matches the assets being financed”. Despite that, there is enough evidence that worldwide management practices have not been fulfilling this rule, especially before the financial crisis of 2008. Moreover, Kasiewicz [2009] states that the lack of integration between SHV and risk management could have contributed to the global crisis of 2008. It is worth highlighting that originally the SHV mindset was considered a path to more effective risk management. Additionally, value-based management assumes that creation of shareholder value provides benefits for all stakeholders. These days, however, there are many doubts about that [Wall and Greiling 2011].

Finally, and perhaps most importantly, proper selection of a value measure can be difficult [Pietrewicz 2008]. In the early stage of VBM, the wide selection of value indicators (e.g.: total shareholder return – TSR, economic value added – EVA, market value added – MVA) was enthusiastically supported by stockholders and managers. In practice, as it turned out, value

measures may have “cross-antagonistic” effects on each other. At the early stage of VBM, in line with the efficient-market hypothesis (EMH), it was believed that stock market price faithfully follows intrinsic value. Nowadays, many aberrations can be observed, so this rule cannot be deemed a certainty. There is much evidence for these doubts, such as the recently published studies which confirm the low or even negative correlation between EVA and MVA/TSR [Elali 2006, Panigrahi et al. 2014]. One more problem associated with SHV, which cannot be ignored, is the so-called measurement myopia causing “manage for the measure” [Court et al. 2002]. As mentioned above, introduction of a new system of measures is crucial in VBM implementation. Those measures are usually linked with managerial bonus systems, so it is widely common for managers to focus all efforts on improving a single measure – which in turn can boost the variable part of their salary – while ignoring other vital spheres of enterprise efficiency [Court et al. 2002]. The focus on market valuation, as a single indicator of enterprise success and a tool for boosting a future IPO (initial public offer), also results in an unsustainable strategy of growth, which is called blitzscaling¹ [Siciński 2019]. Bad SHV practices combined with blitzscaling are usually observed in high-tech companies and result in enormously risky projects being carried out. Unfortunately, many such FinTech projects assume “privatizing future profits and socializing potential future losses” [Aizenman 2019].

The author’s strategy to evaluate the role of value-based management in global financialization entails comparing its original assumptions with the above-mentioned contemporary facts and corporate practices. It is worth mentioning that the list of deviations from and deliberate misinterpretations of the original SHV principles is long and continues to expand. The table presents the original principles of the shareholder-value-management concept, in comparison with contemporary management practices and its externalities for economies and societies – all the aspects

¹ Blitzscaling is an informal doctrine of the high-tech companies located in Silicon Valley, USA. Its assumptions and concepts are simple: the path to growth entails market value management by aggressive expansion of the circle of users and consumers (empowered by, e.g. aggressive price strategies and viral referral programs). This strategy leads to a high enterprise IPO, despite losses and negative cashflows [The Economist 2019].

Table. What went wrong? Original principles of SHV versus contemporary practices – summary of literature overview

Corporate value management and SHV aspects	Original principles and assumptions of SHV	Contemporary reality in management	Negative externality affecting global economies and societies
Cost of capital and capital structure	(1) Selection of a capital structure mix that minimizes costs and matches the assets being financed (2) Better ability to control risk	Creation of value through financial leverage and D/E debt-to-equity indicator boosting	Spread of financial risk, higher risk of enterprise insolvency, greater risk of a bankruptcy spiral which could have serious impact on society
Financial instruments and risk management	(1) Financial instruments are considered as business support tools, due to better allocation of capital between the demand and the supply side (2) Better ability to control risk	OBS, securitization (e.g. CDO/CFO) and sophisticated derivatives, which create abnormal risk that is hard to control	Great transfer of risk onto economies and societies, higher probability of a global crisis, volatility, crisis of confidence in the banking sector
Value gap* and appropriate valuation of assets	(1) SHV could have positive impact on reduction of the value gap and can improve asset pricing (which is also driven by better enterprise transparency resulting from VBM)	VBM does not automatically guarantee greater corporate transparency; management/shareholders increase the value gap e.g. by de-laying bad news or spreading misleading information, as to protect their own, short-term interests	Information asymmetry, lower asset liquidity, low public trust in the capital market
M&A as a value driver	(1) The role of shares as facilitators of synergistic mergers and acquisitions (2) More efficient resource allocation, through rational M&A activity	Massive takeovers of competitors, creating huge conglomerates commonly considered as TBTF (too big to fail) and TBTS (too big to save)	Enormous burden for society: concentration, monopolization, moral hazard due to TBTF, higher market inefficiency due to artificially supported enterprises
Relation between managers and shareholders	(1) Reduction of the agency theory effect, which combines the interests and benefits of stockholders and managers through value management	Shareholders have little control over managers, while managers and stockholders place their own interests above the interests of the enterprise	Corporate conflicts of interest; untapped potential of enterprises
Motivational systems, employee bonus schemes and performance measures	(1) Motivational systems integrated with internal measures of value (e.g. residual income – EVA) (2) Implementation of a value-based approach to employee bonus schemes at all levels of enterprise (3) Measures are tailored to a particular department (even for lower level employees) but driven by the overall corporate strategy [Koller et al. 1990] (4) Combining financial and nonfinancial measures (e.g. customer satisfaction, product innovation)	Management contracts and motivational systems integrated with the market value and short-term indicators e.g. ROE (increased propensity to leverage); no benefits from value increase for lower-level employees, ignoring non-financial measures.	Increasing income inequality, lack of sustainable return for society, lack of real growth for lower-level employees, social unrest and undermining of the role of lower level employees
Shareholder's role in enterprise	(1) Equal rights for shareholders (2) Every single shareholder owns the company, so the role of management is to create proportional wealth for all shareholders	Financial institutions as major shareholders – taking control over enterprises, undermining the role of minority shareholders	Short-termism of profits, volatility, decreasing flow of investment to real economy, poor redistribution of surplus, low public trust in the capital market
Value paradigm	(1) Internal approach to value creation; return on invested capital is bigger than weighted average cost of capital (ROIC > WACC) as the main decision-making criterion in an enterprise (2) Internal value is positively correlated with market value, so creation of positive EVA/SVA will provide greater market valuation (market price follows intrinsic value)	Positive correlation between the internal and the market measures of value is doubtful, thus the market value usually is treated as the ultimate indicator of success	Short-termism, speculation, volatility, the blitzscaling phenomenon
Value for customers	(1) SHV can improve the value offer for customers; shareholder primacy is the simplest way to satisfy all stakeholders	Boosting of short-term operational margin drivers, e.g. cutting operational costs, product downsizing, lowering the quality to intercept more value; aggressive price segmentation powered by AI	Short life-span of products, low ability for customer-centric approach, lowering of consumer market surplus
Tax strategies as a value driver	(1) Ethical and legal activity focused on tax optimization (e.g. commonsensical management of revenues and costs as a value driver)	Aggressive accounting, creation of value through sophisticated finance engineering tools	Corporate involvement in politics, corporate influence on government, corruption

* Value gap means the difference between actual market value of a company and potential (maximized) value which can be reached by value based management approach.

Source: Author's own elaboration based on literature study.

mentioned have been linked with selected value-related spheres. The initial assumptions and principles listed derive from renowned papers and books, published between 1970 and 2001 [Rappaport 1986, Koller et al. 1990, Jensen 1993, Copeland and Weston 1998, Michalski 2001].

As the table shows, common contemporary SHV practices² greatly differ in comparison to the original principles. Many initial assumptions of SHV, which were thought to offer a sustainable way to improve enterprise efficiency, have been significantly reinterpreted. Additionally, according to the table, it is worth highlighting the VC/PE (venture capital/private equity funds) role in VBM. The majority are strictly oriented towards the most profitable results, usually ignoring the social value of investment. This practice causes capital to flow mostly to profit-oriented investments, which means that many projects which are more oriented toward social welfare and liveability, cannot be performed.

SUMMARY

The conducted study has shown that value-based management significantly contributes to the increasing global financialization. The wide range of externalities listed, which enormously strengthen financial institutions, is rooted in the value maximization approach. Nevertheless, SHV should not be entirely demonized. Most of its theoretical origins could still be useful (or even essential) for creation of company competitiveness. It is worth noting that the value approach is still far better and financially healthier than previous global trends in business objectives, such as net profit maximization or boosting of just one dimension, e.g. profitability. However, contemporary management practices associated with SHV require serious redefinition. Possibly, the only solution is to return to the roots and the principles of VBM. Perhaps, this kind of a global “examination of conscience” will pave the way to value creation and a more sustainable redistribution of value between companies and society. A similar view is expressed by Rappaport, who

highlights the fact that the modern world could turn back the awaiting [negative] financial future, through elimination of the short-termism form of SHV [Rappaport and Bogle 2011]. A global shift in any mindset is certainly difficult to achieve. Indisputably, there is no excuse for sitting on our hands. One way of dealing with financialization, which has been evidenced, entails systemic actions at the level of individual enterprises. In an article published by the “The Economist”, for instance, Paul Polman, who is the CEO of Unilever, propounded a number of strategies that can be used to reduce negative externalities of shareholder value orientation. One such strategy entails reducing short-termism and restricting the role of market value as a success measure, by ceasing to publish quarterly financial results [Schumpeter (The Economist blog) (2012)]. Moreover, there are many other strategies which can make value management more sustainable with respect to shareholder interests, e.g. creation of long-term-oriented motivational systems, in which the variable part of managerial salary is correlated with internal value measures. Such systems should also contain another component – the so-called bonus bank [Pawłowicz 2015].

In conclusion, in accordance with the research hypotheses, it is more than likely that shareholder value orientation accelerates financialization and the associated bad management practices which are strictly connected with the increasing financialization. Another crucial factor pertaining to this issue is the far-reaching misinterpretation of the original SHV assumptions. It is worth adding that a majority of these “misinterpretations” usually are based on conscious choices of managers who are pressured by financial institutions, which in turn are driven by short-term greed.

Acknowledgements

The article is the result of the project: International Scientific Conference “Financialization and Society”, implemented by the University of Information Technology and Management based in Rzeszów, in cooperation with the National Bank of Poland as part of the economic education program.

² The original assumptions and recommendations of SHV are presented in early publications, for instance in the form of steps to successful implementation [Koller et al. 1990].

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KOSZTY ZEWNĘTRZNE KONCEPCJI ZARZĄDZANIA WARTOŚCIĄ DLA WŁAŚCICIELI I ICH WPŁYW NA ZJAWISKO GLOBALNEJ FINANSJALIZACJI

STRESZCZENIE

Zarządzanie wartością (VBM, SHV) to najbardziej popularny paradygmat zarządczy w XXI wieku. Koncepcja ta, pomimo wniesienia wielu usprawnień do przedsiębiorstw, otwiera pole do dyskusji na temat jej negatywnych skutków gospodarczych, szczególnie w aspekcie wpływu na wzmacnianie pozycji sektora finansowego. Główna hipoteza głosi, iż koncepcja SHV pogłębia zjawisko współczesnej finansjalizacji. Badanie oparto na wyczerpującej analizie literatury. Z przeprowadzonego badania wynika, iż paradygmat zarządzania przez wartość prowadzi do wzmacniania zjawiska finansjalizacji. Jest to spowodowane między innymi znaczącymi reinterpretacjami początkowych założeń tej koncepcji, które zastąpiono wieloma niezrównoważonymi praktykami zarządczymi w spółkach kapitałowych.

Słowa kluczowe: zarządzanie przez wartość, zarządzanie wartością, finansjalizacja, maksymalizacja wartości, kryzys finansowy

NON-FINANCIAL REPORTING IN ECONOMIC PRACTICE

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ABSTRACT

Within the framework of legal regulations resulting from both the Directive 2014/95/EU, and the amended Polish Accounting Act, large entities and groups of entities were obliged to disclose, apart from financial information, also non-financial information. Legal regulations in this area are not exhaustive and leave some freedom for entities to interpret and perceive such information. The purpose of this publication is to measure the chaos that has resulted in terms of public release of non-financial information. The basic research method was quantitative and qualitative analysis. It referred to the verification of non-financial information in terms of the form of publication, the level of detail and the standards and guidelines used in this respect. The analysis of non-financial data was performed on the example of 30 companies included in the Warsaw WIG30 Stock Market Index. The study showed that non-financial reporting is characterized by great diversity.

Key words: non-financial information, non-financial reporting, corporate social responsibility

JEL codes: M41, M14, Q56

INTRODUCTION

In a changing legal, economic and business environment, the perception of businesses and the need to present information about their developments have transformed. The financial information published so far by companies, in light of ongoing changes and globalization, is no longer sufficient for both investors and society. Hence, the evolution of information from traditional financial to non-financial aspects of operations, allowing for a more comprehensive assessment of the operating conditions and position of a company, is becoming increasingly important. Thus, the role of non-financial information in the communication process between an enterprise and its external environment is growing [Słonec et al. 2017, Bek-Gaik and Krasodomska 2018]. The role of non-financial information is growing not only in the communication process

between the company and its external parties, but also in the investment environment. This is due to the fact that non-financial information not only provides valuable data about the enterprise, but often supports the interpretation of financial data [Błażyńska 2018]. It is a form of business information focused on financial and management aspects which in addition to presenting financial results also aims to provide information about the structure, business model, policies, risk management and other organizational solutions undertaken within the enterprise. Such information is an economic and business asset [Webster 2014] currently perceived as one source of a company's competitive advantage. Unfortunately, existing EU and national regulations, under which large entities are obliged to publish non-financial information, leave some leeway in disclosing it. This is reflected in the quality of published non-financial information and increases its diversity.

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The purpose of this publication is to measure the chaos in terms of public release of non-financial information. Within the framework of such an objective, an analysis of the non-financial information published by market operators in terms of its diversity was carried out. The study was conducted on a sample of 30 companies included in the WIG 30 Index, which are legally obliged to report non-financial information. Each of them was verified in terms of the form of publication of non-financial information, the standards used in this respect and the level of detail in the data presented. The basic research method was quantitative and qualitative analysis. The results of the study were used not only to assess the perception and interpretation of non-financial information, but also to assess the degree of diversity. There was also a discussion on the degree of lack of homogeneity in this area and its causes. The results of the analysis are the starting point for an extended study on publishing non-financial information and its comparability.

NON-FINANCIAL INFORMATION IN THE LIGHT OF THE LITERATURE ON THE SUBJECT

Information is an economic resource, a business asset, whose role and importance in the modern economy is highly significant [Dziekański 2012, Łęgowik-Świącik et al. 2016]. Both information and access to it are one of the guarantors of a company's competitive advantage. They improve the decision-making process both for the entity and its stakeholders. However, for this to happen, both parties must have the same level of information at their disposal, otherwise information asymmetry occurs, which, in the light of financial theory, is one of the determinants of the formation of the capital structure of companies [Hughes et al. 2007, Armstrong et al. 2011, Blajer-Gołąbiewska 2012].

Until not long ago, from the point of view of both market entities and stakeholder needs, financial information satisfied the needs of both these environments to some extent [Jędrzejka 2016]. Over time, however, it has become insufficient, and this has been met by the provisions of the EU Directive introducing an obligation for large entities to publish non-financial information in selected aspects in the form of a statement or a separate report. These legal changes have

a significant impact on the development of corporate reporting, which evolves from the strictly traditional financial data of an entity to the non-financial aspects of its activities relating to its resources, performance and creation of values [Krasodomska 2009]. This involves continuous complementation of financial reporting with elements such as additional information, commentary or management statement, with the ultimate aim of developing the currently binding form of non-financial reporting into the form of non-financial information reports [Walińska 2015].

It is worth noting that this form of reporting also includes aspects of corporate social responsibility, relating to the impact of corporate activities on society, which are reflected in employee and environmental issues of non-financial reporting [Stawicka 2016], and which should not be ignored in the company valuation process. Hence, non-financial information is currently not only an aspect that enriches the data presented in the form of a financial report, but one of the key communication tools [Zywnarska-Dworczak 2016]. Its role and importance are extremely important for the assessment of a company's situation. However, in order to be useful, it should be subject to certain generally accepted principles which will not only determine the area of its perception and presentation but also enable comparability of entities in this respect.

This problem is widely discussed in national literature [Matuszak 2014, Sobczyk 2017, Skoczylas and Dziadula 2018] as well as foreign literature [Arvidsson 2011, Erkens et al. 2015, Aluchna 2018, Stolowy and Paugam 2018], both from the point of view of reporting in the frame of corporate social responsibility and non-financial reports [Perrini 2005, Breitbarth et al. 2010, Sznajder 2013]. In the literature, the polemic regarding the perception of non-financial information and the chaos that accompanies it is examined [Monciardini 2016, Dumitru et al. 2017, Fijałkowska and Macuda 2017, Gulin et al. 2018]. In practice, this results in a diversity of data presented by market operators, which creates information asymmetry where the parties (the entity and its investors) do not have the same knowledge about the entity, necessary for management and investment decisions [Durtan 2014, Sroka 2016].

NON-FINANCIAL INFORMATION IN THE LIGHT OF LEGAL REGULATIONS

The reporting obligation for non-financial information was introduced by Directive 2014/895/EU amending Directive 2013/34/EU as regards disclosure of non-financial information and diversity information by certain large entities and groups. The provisions of the Directive established an obligation for a selected group of entities to include in their financial statements non-financial information relating in particular to environmental, social and labour issues, human rights and the prevention of corruption and bribery. The EU regulations require that an entity covered by the Directive should make public a correct and complete picture of its policies, performance and risks, in particular as regards environmental, social and labour issues, respect for human rights, and the fight against corruption and bribery, which is a type of non-financial information. The EU legislation does not indicate in a detailed and unambiguous way what the data are to be, it only gives examples of what they may concern [Directive 2014/95/EU]. The data should be presented in the form of a non-financial statement as a part of the management report and a statement of the non-financial information that constitutes the source of the presentation and its location, so that it is accessible to those concerned.

In the frame of the implementation of legal regulations, the EU legislators have also developed guidelines for reporting non-financial information, the so-called non-financial reporting methodology. Their aim is to help companies, both obliged and interested in non-financial information disclosure, to ensure that the information is relevant, useful, consistent and more comparable. The guidelines developed by the European Commission are a non-binding document, as companies can use other frameworks established at international, EU and national levels for non-financial reporting [Communication from the Commission C/2017/4234].

In order to implement the provisions of the directive in the framework of the disclosure of non-financial information, Member States are required to provide sufficient and effective measures by adapting their national law in this respect. Hence, Article 49 of the Ac-

counting Act has been introduced into Polish law. The regulations of the Act fully reflect the provisions of the Directive on the form of publication of non-financial information in a statement or report. Moreover, the non-financial issues included in the Act are equivalent to the Directive's records, however they indicate that this is not an exhaustive catalogue of information that the entity may publish in this respect. The legislators have left the entities some discretion by indicating items that "at least" should be included in the statement. Furthermore, under the 1994 Accounting Act, entities that are required to publish non-financial information present it only to the extent that is necessary to assess their development, performance and situation. This means that entities themselves decide on the significance and salience of some information over others.

EVALUATION OF NON-FINANCIAL INFORMATION PRESENTED BY MARKET ECONOMY ENTITIES WITHIN THE FRAMEWORK OF NON-FINANCIAL REPORTING

Assumptions for the research

The study of non-financial information published by companies was carried out on the example of companies listed on the Warsaw Stock Exchange included in the WIG30 Index. These entities are obliged to publish non-financial information in the form of a separate report or statement under both EU [Directive 2014/95/EU] and national regulations [1994 Accounting Act].

In order to verify the diversity of the data contained therein, they were analysed in detail, taking into account the following issues:

- place/form of posting non-financial information,
- type of non-financial reporting guidelines adopted,
- specificity of the presented information included in the description of the business model,
- policies and procedures as well as risks within the framework of legally required issues.

The study covered a period of two years. The year 2017, when the national law introduced the obligation of non-financial reporting and the year 2018, the last year for which the analysed entities provided non-financial reports. Previous periods were not included

in the study, as they were related to reporting under corporate social responsibility, and out of the analysed group of companies, only 57% publish CSR reports, which is related to their inclusion in the Respect Index.

Results of research

Non-financial information, in accordance with European Commission guidelines and the provisions of Articles 49b and 55(2b) of the Accounting Act, may be published in two documents. The first one is a statement on non-financial information which is a part of the management report. The second is a separate report relating to the same financial year as the management report, but equivalent in content to the Directive's requirements for the disclosure of non-financial information. The results of the analysis of the form of non-financial reporting among the surveyed entities are presented in Figure 1.

The data presented in Figure 1 indicate that in the first reporting year, 70% of entities published non-financial information in the form of a statement which is a part of the annual management report or, in some cases, the consolidated annual report. Only 30% decided to develop a separate document which would constitute a report on non-financial information. In the following year, some entities resigned from combining this document with a statement of operations or a consolidated report and decided to publish non-financial information in a separate report (37%). Still, 63% of the surveyed companies publish this information in

the form of a statement which is a part of the report on operations.

In non-financial reporting, the analysed entities use various guidelines and standards. Given that neither the EU nor the national legislation has indicated a closed catalogue of guidelines, for analytical purposes, the list of guidelines has been established taking into account only those demonstrated by the analysed companies. These include the Global Reporting Initiative (GRI), the International Integrated Reporting Council (IIRC), the UN Global Compact, the ISO 26000 standard of the International Organization for Standardization, as well as the Non-Financial Information Standard developed on the Polish ground as well as the companies' own standards not defined by name and type. Figure 2 shows which of them are used and to what extent.

The presented data indicate that the vast majority of the surveyed entities (73%) use Global Reporting Initiative (GRI) Standards for non-financial reporting, while 17% of companies use their own standards, however not defined in more detail. Additionally, entities that use GRI Standards also use other standards, such as the International Integrated Reporting Council (IIRC) (13%), UN Global Compact (3%), National Non-financial Information Standard (10%) or ISO 26000 (10%). On the other hand, 13% of the respondents did not include the source of the guidelines they used in non-financial reporting at all. It should be noted that the choice of reporting standards during the two-year reporting period did not change significantly. The changes concerned only two out of 30 analysed

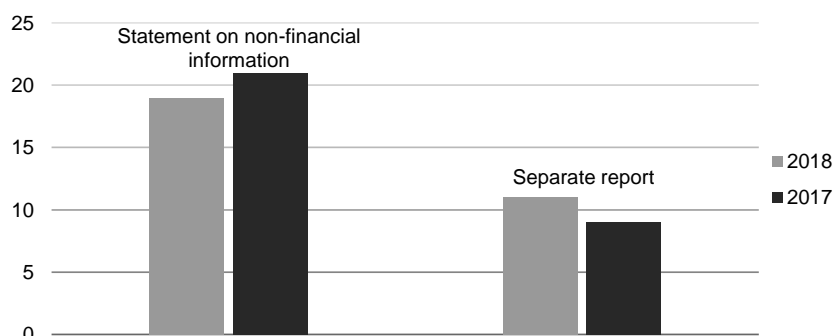


Fig. 1. Forms of publishing non-financial information

Source: Authors' own analyses based on consolidated annual reports and reports on the activities of management boards of companies included in the WIG30 indices as at 9 November 2019.

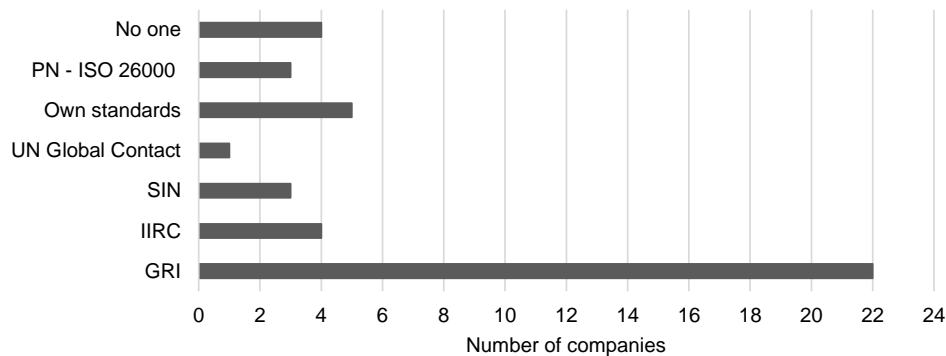


Fig. 2. Standards used in non-financial reporting

Source: Authors' own analyses based on consolidated annual reports and reports on the activities of management boards of companies included in the WIG30 indices as at 9 November 2019.

entities and were related to guidelines applied in addition to those adopted so far.

Non-financial reporting in accordance with the provisions of the Directive covers issues of employment, respect for human and social rights, environment, and anti-corruption. As already mentioned, a preliminary analysis has shown that all these issues have been included in the content of the reports examined. However, the level of detail of the information presented in this respect is diverse. From general statements and descriptions as well as the specification of several indicators to comprehensive descriptions supported by figures. Hence, the study verified the level of detail of non-financial reporting on selected issues such as description of policies, procedures and risks. The starting point in this respect was primarily to relate the

non-financial information contained in one statement or report to others within the same stock index group. The results of the study are presented in Figure 3.

The data presented indicate that the general form of the business model description was presented by 37% of the analysed entities, while the remaining 63% included a very detailed description of their own structure and activity. Policies and procedures functioning in relation to non-financial information in the indicated areas were adopted by almost all companies, of which 37% mentioned what activities are in force in the company in this respect, while 60% of the analysed companies described them in more detail. The risks within the presented non-financial issues was generally reported by 20% of those surveyed, and as much as 77% described it in quite a detailed way, as

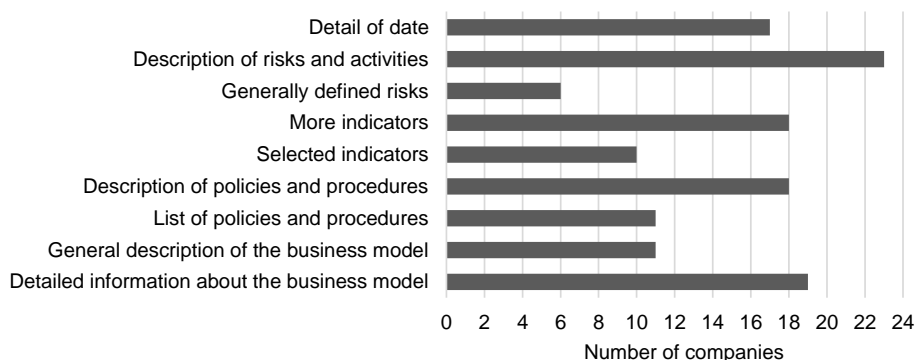


Fig. 3. Comparability of non-financial information

Source: Authors' own analyses based on consolidated annual reports and reports on the activities of management boards of companies included in the WIG30 indices as at 9 November 2019.

well as included information about countermeasures taken against them. As regards the described aspects, only one entity, apart from a concise description of the business model, did not refer to the remaining issues specified in the legal regulations, justifying its decision with the specificity of the industry.

Non-financial data were presented in detail by 57% of the analysed entities, while other entities published very general data or presented only to the description of the actions without referring to their actual results. This does not mean that more non-financial information means better compliance, but indicates a different approach to non-financial reporting, resulting in a lack of comparability of this information between entities of such a small but key group within the market economy.

With regard to several of the companies analysed, it was found that to a large extent the description of the business model included a list of awards won by the entities, and some of them paid significant attention to this in the report. According to the guidelines of the European Commission, within the framework of the business model description, companies should avoid disclosing irrelevant information of a promotional or aspirational nature. It is difficult to question the relevance of this aspect for a market player, but the high degree of concentration of some players on this aspect calls this issue into question. It is worth noting that the analysis has drawn attention to some good practices adopted in non-financial reporting among some entities. It implies that selected individuals engage in a social dialogue among investors as well as with employees of the company on the relevance of the inclusion of data in non-financial reporting. In addition, it was also indicated in relation to several entities that non-financial reporting was assessed by an independent auditor, in other cases, in the opinion of the independent auditor verifying the financial statements, there was information that the non-financial report in the form of a report or statement was prepared but was not subject to audit. The Directive in this respect indicates that the external auditor should only state whether a statement or report on non-financial information has been created [Directive 2014/95/EU]. Therefore, the inclusion of the external auditor in its audit should also be considered as some good practice.

The assessment of the details of the data provided with regard to their possible changes in the reporting year 2018 in relation to 2017 showed that during the two reporting periods, if the changes took place within the form of publication or applied standards, entities in most cases continued the once adopted reporting model with regard to the selection of areas and types of information provided within them.

CONCLUSIONS

The presented data analysis indicates different approaches of market entities to non-financial reporting, not only in terms of its form and guidelines used, but also in terms of the details of the information provided. It should be emphasized that the conducted research referred to the largest public companies listed on the Warsaw Stock Exchange. These are entities operating on international markets, whose activity, however, has a significant impact on the possibility of achieving the objectives of sustainable development in Poland. These, in turn, should be implemented through the publication of non-financial information ensuring the comparability of the data. Unfortunately, the current way of presenting non-financial data in practice, as well as the legal regulations and guidelines adopted in this respect are not sufficient to provide non-financial information with features that would ensure its transparency, homogeneity and comparability. The overly generalized nature of the provisions included in the legal regulations cause considerable information chaos in this respect.

The diversity of the information presented could be explained by the fact that the company would adapt to the information needs of its users. However, this is not convincing, as the information needs are different and it is not possible to create a strictly defined set of them. Nevertheless, in order to meet the needs of users of non-financial information, it is worthwhile to strive to develop a set of non-financial information based on consistent rules for its preparation, so as to enable and at the same time make it easier for its recipients to compare the economic situation of enterprises. This is because non-financial information has synergistic properties, which means that only by combining it with financial information

will the recipient receive a clear understanding of the company itself. Entities that communicate non-financial data constitute a much safer investment objective than those that do not. Therefore, each company should ensure the widest possible access to information for both its external and internal stakeholders. However, it is important to make the published information transparent and to ensure its comparability. Proper, comprehensive and reliable information is important for making appropriate investment decisions. Therefore, it is necessary to strive to reduce the lack of transparency in the presentation of non-financial data and thus the accompanying chaos that significantly reduces the usefulness of non-financial reporting. To accomplish this, it is reasonable not only to clarify this issue on a legal ground, but also to develop uniform standards covering a catalogue of non-financial information for all market operators or industry groups, including the possibility of its verification. However, this process should be correlated with the needs both of companies' management and of their stakeholders.

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RAPORTOWANIE NIEFINANSOWE W PRAKTYCE GOSPODARCZEJ

STRESZCZENIE

W ramach uregulowań prawnych, wynikających zarówno z dyrektywy 2014/95/UE, jak i znowelizowanej polskiej ustawy o rachunkowości, duże jednostki oraz grupy podmiotów zostały zobligowane do ujawniania obok informacji finansowych również tych niefinansowych. Regulacja prawna w tym zakresie nie jest wyczerpująca i pozostawia pewną dowolność podmiotom w interpretacji i postrzeganiu tego rodzaju informacji. Celem publikacji jest pomiar chaosu w zakresie upubliczniania informacji niefinansowych. Podstawową metodą badawczą była analiza ilościowo-jakościowa. Odniosła się ona do weryfikacji informacji niefinansowych pod względem formy ich ujawniania, szczegółowości, a także wykorzystywanych w tym zakresie standardów i wytycznych. Analizy dokonano na przykładzie sprawozdań niefinansowych 30 spółek wchodzących w skład indeksu WIG30. Przeprowadzone badanie wykazało, że raportowanie niefinansowe cechuje duża różnorodność.

Słowa kluczowe: informacje niefinansowe, raportowanie niefinansowe, społeczna odpowiedzialność biznesu

WILL THE DEVELOPMENT OF CASHLESS PAYMENT TECHNOLOGIES INCREASE THE FINANCIAL EXCLUSION OF SENIOR CITIZENS?

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ABSTRACT

The aim of this article is to assess the attitudes of senior citizens towards cashless transactions (with a particular emphasis on mobile banking). The literature on the subject presents the dissemination of non-cash payment strategies as an opportunity to reduce the problem of exclusion. Moreover, the researchers who focus on the topic of financial exclusion diagnose self-exclusion within this social strata who do not use modern technologies for current financial activities, additionally pointing to the significant impact of a group of factors: demographic, economic, psychological and social. The considerations are based on a query of the subject literature and an analysis of selected secondary studies. It is noted that there are huge psychological barriers conditioned by a person's lifestyle. Moreover, the continuous development of and technological progress in the banking sector hinders certain types of banking and deepens the level of financial exclusion of the oldest generation. Increased life expectancy means that the banking sector should not continue to ignore those who are aged 60+. It is necessary to focus CSR strategy, educational activities and product offers on marginalised groups, even if it may seem to be unprofitable for many banking strategies.

Key words: modern technologies, financial exclusion, senior citizens, cashless payments

JEL codes: D18, J14, L86, O31

INTRODUCTION

The phenomenon of financial exclusion, understood as the exclusion of individuals or households from using financial services in the realm of consumption, production and social cohesion has for a decade been a significant economic and social problem [Maciejasz-Świątkiewicz 2013, Polasik and Piotrowska 2014]. In light of the banking sector's increased use of new financial technologies (FinTech) and the introduction of new methods and tools, the author looks at people

who are physically and mentally separated from modern technologies, and who, as the basis of the fight against financial exclusion, constitute the main social group that financial sector support programmes seek to assist.

The study aims to assess the attitudes of senior citizens to cashless transactions (with particular emphasis on mobile banking)¹. An analysis of the results of secondary research allowed the author to formulate the following hypothesis (H1): modern technologies in non-cash payments deepen the level of financial

¹ Research conducted on the Polish market in the years 2010–2019 [Niemyzyk 2016, ZBP 2019] indicates the growing popularity of online banking among senior citizens. The author deliberately omits this thread in modern technologies because the strategies of commercial banks are now focused on the development of mobile services.

exclusion among seniors. In order to achieve the research goal, literature studies and analyses of available empirical studies were used.

The theoretical considerations are based on the theory by Schumpeter [1960], who claimed that economic development is a combination of three factors: (1) the existence of creative entrepreneurs, (2) the introduction of innovations to the market, and (3) the use of debt financing. Also, the theoretical aspect of financial and social isolation in the paper refers to social inequalities as a category of deficiency. Rousseau [1954] defined the inequalities conditioned by nature and the inequalities created and perpetuated by people. A person making only rational decisions was regarded as a “utopian figure”. The accuracy and rationality of decisions was undermined by the economists Keynes and Mill. In the opinion of these English economists, the notion of an economic man did not result from his rationality, which is based on his amount of knowledge, but from his life experience. Mill rightly pointed out that economic theories do not take account of all factors in the description of economic reality [Grobler 2006].

The structure of the article is subordinated to the research objective. The assessment of the activity of senior citizens and their attitudes to modern technologies will be analysed on the basis of the theory of behavioural economics, which uses the achievements of psychology and other social sciences to explain economic phenomena.

LITERATURE REVIEW

The financial sector is facing changes resulting from technological developments. The implementation of advanced IT systems, automatic economic events and data collection and processing is an opportunity for the banking sector to improve profitability and customer relations [Niemczyk 2016, Zalewska-Bochenko 2017]. The manifestation of the new phenomenon in “new combinations”, at a later stage in “enterprises”, results in the creation of innovations. Importantly, the implementation of innovation by an entrepreneur is a privilege of a rather narrow group of people with “higher than normal virtues of mind and will, and their behaviour will influence social history, will allow

shaping a new model of life and new value systems” [Glapiński 2012, p. 4].

The new model of life, and different life expectations, is causing changes in banking. Market observations give the impression that the availability of products and a wide range of banking services is not always the same for all social groups. According to Rousseau, the progress of civilization and the development of human reason have violated the equality between human beings and, consequently, contributed to the perpetuation of injustice. The development of new technology in the banking sector does not make adjustments for the age or (dis)ability of the recipient. Llewellyn [2009] examines innovations in banking based on the institutional paradigm, incomplete information, and the particular importance of risk management in the economy. Over the past decade, finance issues regarding senior citizens in have been analysed in the Polish literature, by, among others, the following authors: Czechowska [2013], Solarz [2014], Kłobuchowska [2016], Oziębło [2016], Czerwiński [2016a, 2016b, 2019], Olejniczak [2018]. Literature studies lead to the conclusion that the challenges of modern banking are not favourable to older generations and more attention to this issue is required. Bank decisions regarding the permanent updating of products and services are based on market needs and consumer behaviour models [Badowska and Rogala 2015]. The understanding of the mechanisms driving people to make financial decisions [Maison 2017] is based on an analysis of economic and, above all, psychological factors [Shefrin and Thaler 1988, Bąbel and Ostaszewski 2008].

The ageing population requires particular attention from the banking sector to groups at risk of financial exclusion: the elderly, the disabled and the youngest generation under 25 years of age. Since the first mention of financial exclusion [Leyshon and Thrift 1995], new views on this problem have been defined. Most often, the description of financial exclusion has focused on the causes and consequences [cf. Smyczek and Matysiewicz 2014], while at the same time proposing solutions to minimize financial exclusion [Donovan and Palmer 1999, Kempson et al. 2000, Sinclair 2001]. The problem has been identified within two aspects: narrow and broad [Anderloni 2007]. The narrow approach emphasises the lack of access to ba-

sic services for the individual. These services have an impact on home finances and security [Iwanicz-Drozdowska 2008]. The broad approach addresses the difficulties faced by individuals with low social status, low income, no bank account and no access to financial services, such as credit or non-cash payments.

The Polish market, in terms of its contribution to literature, is rich in short articles signalling the problem and a few compact items describing the phenomenon from the perspective of the Polish financial market participant [Solarz 2012, Maciejasz-Świątkiewicz 2013]. The literature on the subject develops the multi-threaded nature of the problem [Alińska 2011, Fila 2013, Warchlewska 2015, 2020, Frączek 2017, Polasik et al. 2018], which does not allow precise definition due to the introduction of interchangeable terms in the literature².

A critical analysis of available sources still does not exhaust the subject of the determinants of the problem. Apart from demand, supply, and social and psychological factors, the phenomenon should also be analysed taking into account the time factor. Moreover, an in-depth analysis of the primary and secondary nature of the problem of financial exclusion would make it possible to define the moment when financial exclusion and inclusion are conditioned [Kuchciak et al. 2014]. The identified research gaps are already the subject of the author's research.

METHODOLOGY

The paper uses a method of critical analysis of the literature regarding a diagnosis of the phenomenon of financial exclusion, and an analysis of review works that concern the subject of modern technologies in non-cash payments and the position of senior citizens in the world of finance. The author analyzes the results of selected empirical research on the attitudes and activity of seniors in the banking sector in the subject matter. The study is a starting point for further comparative research and a prelude to a bibliometric analysis of the problem of financial exclusion.

THE IDEA OF CASHLESS TRADING IN POLAND

Non-cash transactions are construed as the transfer of funds collected in bank accounts through the use of payment instruments. In practice, such transactions should include: credit transfer, direct debit, payment card or cheque transactions [Iwańczuk-Kaliska 2011]. The Non-Cash Trading Strategy for 2014–2020 [Koalicja na rzecz Obrotu Bezgotówkowego i Mikropłatności 2013] sets out key areas which allowed decision-makers to focus their attention on significant problems related to the promotion of non-cash trading. In accordance with the assumptions of the Programme, it is necessary to ensure the security and effectiveness of electronic payment instruments, broaden their scope, and develop innovative payment instruments [Koalicja na rzecz Obrotu Bezgotówkowego i Mikropłatności 2013, Warchlewska 2015].

During the Programme evaluation, the Polish Bank Association (Związek Banków Polskich), which flags the activities of the Coalition for Non-Cash and Micro-Payments (Koalicja na rzecz Obrotu Bezgotówkowego i Mikropłatności), presented four barriers to non-cash transactions [ZBP 2018] (the table).

The first three objectives are of a quantitative nature, with Objectives 1 and 2 focusing on the development of cashless transactions in extensive terms (increasing the number of individuals, entities and offices using non-cash transactions), and Objective 3 focusing on the promotion of non-cash transactions in intensive terms (increasing the frequency of using cashless transactions by existing users). Objective 4 is of a qualitative nature (increasing the innovativeness of cashless payment instruments while maintaining or increasing the level of security of their functions) [ZBP 2018]. It needs to be stressed that the most popular forms of non-cash transactions in Poland include payment cards (debit, credit, charge and prepaid) and electronic transfers. One of the latest proposals for non-cash payments is BLIK [Polish payment standard], i.e. the possibility to make transactions using a smartphone.

² In the literature, terminological interpretations of the same phenomenon, with different emphasis on its causes and depth, include, among others, the following notions: financial exclusion, financial inclusion, insolvency, shortage, insufficient insolvency.

Table. Barriers and objectives 2018–2020

	Barriers	Objectives
1	Too low level of banking saturation and cashless payment instruments	Increase in the number of individuals, entities and offices using cashless payment instruments
2	Too narrow scope of accepting cashless payment instruments	Increase in the number of entities and offices accepting cashless payment instruments
3	Too rare use of cashless payment instruments	Increasing the use of cashless payment instruments
4	Still existing areas and situations of lack of use of cashless payment instruments, resulting from low innovation of existing solutions or relatively low level of perceived security of these instruments	Providing support to the development of innovative, cashless payment instruments while maintaining or enhancing their operational security

Source: Author’s own elaboration based on ZBP [2018].

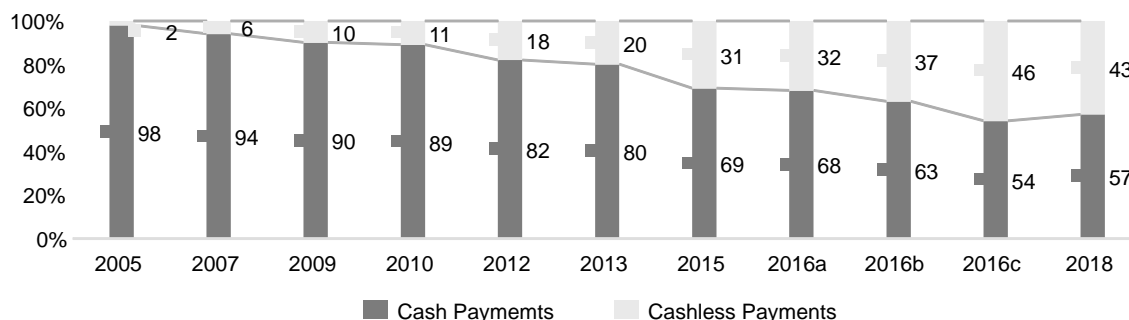


Fig. 1. Share of cash and cashless payments in the number of retail payments in Poland in the period of 2005–2018

Source: NBP [2019].

The development of non-cash payments is confirmed by data from the National Bank of Poland (Narodowy Bank Polski) [NBP 2019]. In the last dozen or so years (Fig. 1), the share of cash in the total number of payments has significantly decreased, and the importance of non-cash payments is systematically growing. In the case of cash payments, a decrease from 98% in 2005 to 57% in 2018 was recorded. The number of non-cash transactions has steadily increased from 2% in 2005 to 43% in 2018. Most transactions in 2018 were made using payment cards.

MODERN TECHNOLOGIES IN BANKING

In light of contemporary finance and a practical view of banking regulations, banking innovations have been categorized according to their effects. There are positive (sustainable, appropriate) and negative (harmful,

inappropriate) innovations. Llewellyn [2009, cf. Korzenik, 2017] interprets banking innovation in the light of the institutional paradigm, where innovation should help banks to better fulfill their role as service providers, such as bank intermediaries offering loans and deposits. The use of standardised products and services aimed at all consumers is dangerous, as product mismatch with the buyer or even “pushing” products into a package introduces negative emotions that are not conducive to long-term relationships.

Banks, in the paradigm of incomplete information, may reduce market imperfections (information asymmetry and opportunistic behaviour in the economy). Obtaining processed information on external and internal factors should be considered crucial for the development needs of the economy. All information requirements, monitoring or risk analyses should be regarded as positive innovations. Innovative solutions

will be perceived as harmful if they hamper the development of undertakings, caused by e.g. excessive banking secrecy. Successfully dealing with uncertainty and risk implies that banks have a cost advantage over other entities in the area of risk management. To this end, banks shall target their activities at offers aimed at reducing economic and financial risk and shall seek the best solutions based on cost reduction. Innovative orientation towards more efficient and effective actions in terms of costs should be considered positive, provided that they do not omit certain groups of the bank's stakeholders, e.g. through aggressive sale or mismatch between products and services and impairments of the buyer [Wrońska 2016, Korenik 2017, Wright 2019].

The most important trends based on modern technology solutions in banking include [Capgemini 2019]: digital banks – these are fully virtual treasury units, without branches and physical infrastructure; the voice assistant – a voice technology that meets the need for fast and easily accessible data; robots and robotics – these are automated internet platforms. Automation in response to a consumer question is progressing towards the elimination of the human factor. Biometrics is the most popular form of identity verification, acceptance of cashless transactions and ATM service worldwide. In banking practice, finger vein biometrics, palm vein biometrics, facial biometrics, finger print biometrics, voice biometrics, iris/eye biometrics and handwritten signatures are most often used. The introduction of biometrics to the banking services market aims to eliminate the risk of incorrect identity verification or customer identification. Moreover, it eliminates the risk of unauthorized access to the account. Theoretically, it is a solution aimed at improving the living conditions of senior citizens. Using biometric solutions helps overcome all disfunctions [Czechowski et al. 2015]. Artificial intelligence – is the use of advanced data analysis to help banks collect customer information to improve and expand their services. The main objective of artificial intelligence is to match the product to the needs of the customer and to prevent abuse.

Noteworthy are the activities in the area of mobile education of seniors who are known as students of the University of the Third Age [Korenik 2017]. It is on the initiative of seniors themselves that classes are held with the use of smartphones, which indicates that seniors are aware of the fact that they live in the age of technology and they are increasingly willing to undertake computer education. According to demographer P. Szukalski, seniors in Poland are victims of ageism, i.e. depreciating and discriminating against people because of their advanced age. It is therefore necessary to make the banking profession aware of the fact that old age is only a phase in life and does not deserve the current lack of attention of the banking sector in mobile education and modern technologies. On the contrary, old age should be seen as another creative phase of people's lives [Jankowska 2014].

SENIORS IN THE FINANCIAL WORLD – AN OUTLINE OF THE PROBLEM

The age of 60, and more and more often of 65 years, is used as a metric threshold for old age. Demographic data indicate that the number of people aged 65 and over will continue to increase over the next 20 years. In addition, life expectancy will gradually increase, contributing to an increase in both the number and percentage of the elderly population in the overall population figures of Poland.

Seniors are one of the groups of recipients of banking sector services. According to data of Polish Bank Association [ZBP 2019], the number of pensioners and disability pensioners in 2017 amounted to 8.9 million, of whom 6.5 million were pensioners. Older people are becoming increasingly positive about banking services, particularly in terms of the traditional personal account (95%). A Polish Bank Association study [2018] shows that seniors are becoming active participants in the payment card market (52%). Every fourth respondent sees an insufficient product offer addressed only at the elderly, and on the other hand only 6% of respondents see online banking as a problem. It should be pointed out that the Polish Bank Association survey³ is optimistic

³ Sample $N = 529$ individuals aged 60–69. Survey conducted by the CAWI method by the Pollster Research Institute.

one, according to which as many as 94% of respondents have access to the Internet and declare that they use it actively, with 68% of them doing so at least once a week. They use Internet banking to make transfers. The greater the technological advancement, the lower the percentage of seniors declaring their activity. More than a half, or as much as 56%, of the respondents, do not use such facilities. Rare use of mobile applications results from the complexity of the service and the lack of smartphone skills [ZBP 2020]. Traditional seniors are characterised by a search for stability and a routine that guarantees a sense of security, which is impossible to achieve with the strategy of introducing modern banking services (Fig. 2).

In addition, the high percentage of respondents active on the Internet creates a need to raise awareness of cyber threats. 55% of respondents assessed their knowledge of safe use of the Internet as average (Fig. 3) [ZBP 2019].

Research on financial education and inclusion presents the concept of the Silver Economy [Kuchciak et al., 2014] on the basis of respondents in the age group 50+. The research refers to the younger age group because the concept of the silver economy is addressed at people over 45. Financial needs are

correlated with the motives of the recipients. The Lindqvista model [1981] depicts the basic motives behind household cash management. The model is used, among other things, to model consumer behaviour on different markets and assess their liquidity. As regards seniors, the leading motive is to maintain liquidity and make simple financial transactions using a transfer order or using a payment card for cash and cashless transactions. Subsequently, seniors aim to provide financial resources for unforeseen events and to secure themselves financially for their retirement years. The results of the survey [Kuchciak et al. 2014] divide seniors into traditional and modern ones, with the former being predominant. The perception of old age in relation to traditional seniors is a physical feature, while as regards modern seniors, it is a state of mind. The starting point for the construction of a banking offer for senior citizens should be their attitude to novelties.

When it comes to seniors with a modern approach, new experiences and challenges allow for high financial activity, also in the area of modern technologies. A study [cf. Kuchciak et al. 2014] confirms that average financial literacy is decreasing by about 1% each year after reaching the age of 60. With age, cognitive

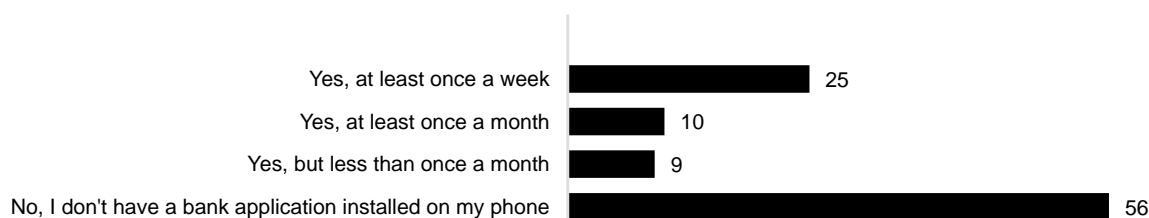


Fig. 2. Using of mobile banking among seniors (%)

Source: ZBP [2019].

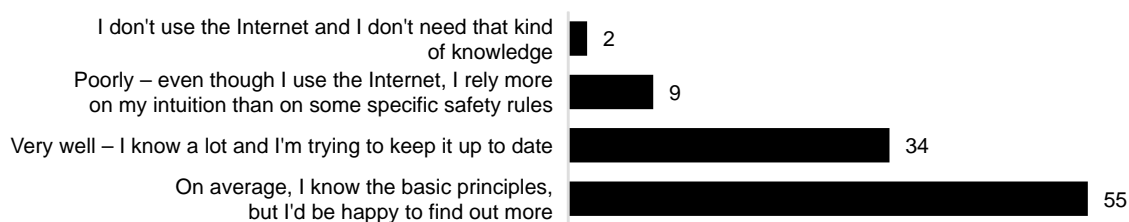


Fig. 3. Self-assessment of the level of knowledge about cyber security (%)

Source: ZBP [2019].

skills deteriorate and incorrect financial decisions increase. In addition, the problem-solving skills required to make financial decisions decrease with age. The gradual withdrawal of offers of bank accounts for senior citizens does not have a positive impact on the image of and trust in banks. The maximum procedural simplifications for senior citizens were a bargaining chip aimed at winning over this target group. Numerous reports and studies by the National Bank of Poland⁴ on the attitudes of Poles towards non-cash transactions indicate that card payments are becoming more and more popular within the 55–64 age group. Only in part is the group covered by the analysis in this study [NBP 2017].

Quantitative analyses indicate that people over 65 years of age are still at risk of total or partial financial exclusion. Moreover, the factors determining cashless activity include demographic and psychological factors, including: self-assessment of financial knowledge, trust in banks, cash cult and openness to new technologies. Having no account is connected with age, education and low prevalence rates of having a bank account in the respondent's environment. Significantly, banking saturation within the population, which has risen to 83% in the last 7 years, was due to other than psychological reasons.

Seniors' dilemmas often concern the basic banking services: not enough time to clarify details of an operation with bank staff, failing to understand the specialist banking language, anxiety and fear of asking questions, hearing, speech and movement impairments that disrupt conversation, being attended to in noisy rooms, too much information in a single voice message or written word, lack of specialised staff to deal with people with impairments, and too much emphasis on making sales, without giving basic financial education [Świecka et al. 2019].

The development of modern technologies introduces an element of anxiety among senior citizens about digital threats, identity theft, fraud, unauthorized transactions or harassment via the Internet. Protection with strong passwords and specialized software is a basic precaution. Moreover, it may cause social exclusion

[Szewczyk-Jarocka 2019]. This is a problem that prevents or significantly impedes the legitimate exercise of social roles by an individual or group, such as the use of public goods and social infrastructure, the accumulation of resources and the generation of income in a dignified way. Consequently, if these inequalities are manifested by a total lack of access to the financial services market and a situation in which an entity may use the offer of financial products and services, but on worse terms than others, financial exclusion may occur. It is pointed out that among social groups threatened by financial exclusion, in addition to the poor, the unemployed, the poorly educated, the disabled, the rural population, and women and young people, there are also elderly people.

DISCUSSION

The phenomenon of financial exclusion is not homogeneous and can take different forms depending on the causes that influence its occurrence. The literature sources present the problem by area (payment, savings, credit, investment, insurance, pension) and by type (graphic, availability, conditions, price, marketing or self-exclusion). A diagnosis of financial exclusion is affected by a combination of demand, supply, and social and psychological factors. The situation where a consumer decides to opt out of financial services on his own is referred to as self-exclusion. There is no doubt that discussions on exclusion from access to banking products and services can also be undertaken in the context of digital exclusion (this is not, however, the subject of this study). It is worthwhile to discuss and further consider whether self-exclusion from the banking sector results from life, cultural or other beliefs, or whether it is not preceded by external factors imposed by financial institutions. Nationwide educational activities and regional initiatives can block the secondary exclusion of parts of society, and financial education can affect those who are already excluded. More knowledge and learning through experience gives a greater sense of freedom in the financial world, which seniors still lack.

⁴ The research concerned the attitudes of Poles towards non-cash transactions towards finance. The research has been conducted in national trials since 2009 [Maison 2017].

CONCLUSIONS

Although the banking sector can defend itself by saying that it does not block access to modern payment solutions, it does not do enough to popularise modern solutions among the elderly. The increasing average life expectancy does not bode well for the banking sector's abandonment of the current 60+ age group at such a significant level [Iwański and Warchlewska 2020]. This leads to the conclusion that too much emphasis on online banking education will not allow seniors to fully prepare for financial activity in the digital world. The pace of process and product changes, combined with the self-education of seniors, has no chance of success. The hypothesis (H1) is therefore that modern technologies in non-cash payments deepen the level of financial exclusion among seniors. In the author's opinion, banks should focus their CSR strategies on marginalised groups, although this may perhaps be seen as unprofitable for many banking strategies.

The author is aware that this subject has not been fully exhausted. It poses a further research area for the banking sector with the aim of creating educational tools targeted mainly at senior citizens by using the method of personalization of offers in relation to perception, analysis of individual customer needs or assigning a bank advisor to a specific employee empowered to provide services to senior citizens. Moreover, the author points to a research gap in the description of the phenomenon of financial exclusion, wondering whether a client who does not have a bank account (the payment area), but has a credit card (the credit area) and vice versa, can be considered an excluded entity. The depth of the phenomenon requires further exploration.

Acknowledgements

The article is the result of the project: International Scientific Conference "Financialization and Society", implemented by the University of Information Technology and Management based in Rzeszów, in cooperation with the National Bank of Poland as part of the economic education program.

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CZY ROZWÓJ TECHNOLOGII W PŁATNOŚCIACH BEZGOTÓWKOWYCH ZWIĘKSZY SKALĘ WYKLUCZENIA FINANSOWEGO SENIORÓW?

STRESZCZENIE

Celem artykułu jest ocena stosunku seniorów do korzystania z transakcji bezgotówkowych (ze szczególnym uwzględnieniem bankowości mobilnej). Piśmiennictwo w przedmiotowym temacie przedstawia upowszechnienie strategii płatności bezgotówkowych jako szansę na minimalizację problemu. Ponadto autorzy, którzy swoje badania koncentrują na temacie wykluczenia finansowego, diagnozują samowykluczenie wśród osób niekorzystających z nowoczesnych technologii do bieżących rozliczeń, wskazując dodatkowo na istotny wpływ grupy czynników: demograficznych, ekonomicznych, psychologicznych oraz społecznych. Rozważania oparte są na kwerendzie literatury przedmiotu oraz analizie wybranych badań wtórnych. Należy zauważyć ogromne bariery psychologiczne uwarunkowane stylem życia danej osoby. Co więcej, niestanny rozwój i postęp technologiczny w sektorze bankowym hamują „ubankowanie” w obszarze płatniczym (nowoczesne technologie) oraz zwiększają skalę wykluczenia finansowego najstarszej generacji. Sektor bankowy nie powinien nadal ignorować osób w wieku powyżej 60 lat, gdyż tzw. oczekiwana długość życia ludzi (potencjalnych klientów banku) się zwiększa. Konieczne jest ukierunkowanie strategii CSR, działań edukacyjnych oraz oferty produktowej na grupy marginalizowane, które w wielu strategiach bankowych są klasyfikowane jako nierentowne.

Słowa kluczowe: nowoczesne technologie, wykluczenie finansowe, seniorzy, płatności bezgotówkowe

ECONOMIC AND ENERGY EFFICIENCY OF AGRICULTURE IN POLAND COMPARED TO OTHER EUROPEAN UNION COUNTRIES

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ABSTRACT

Modern agriculture is dependent on external energy sources. Non-renewable energy sources play a dominant role, which contributes to greenhouse gas emissions and, as a consequence, to environmental degradation. Therefore, it becomes obvious to strive to improve energy efficiency and change the structure of its sources. One of the main research goals was to determine the economic and energy efficiency of agriculture in EU countries and assess its energy consumption by analysing energy consumption per employee or 1 ha of utilized agricultural area. The work analyses changes in energy consumption in agriculture of the European Union and its members. Eurostat data was used for the analysis.

Key words: economy, energy, efficiency, agriculture, EU

JEL codes: O13, Q1, Q4

INTRODUCTION

One of the resources conditioning the functioning and development of humanity are limited natural resources. The problem of management and scarcity of natural resources concerns not only modern society. Although this problem has not always been dealt with in the theoretical sphere, it has practically always been present, but to varying degrees. People have always managed environmental resources, but at first, they did not do it consciously. This led to over-exploitation and limited resources, which became a barrier to the further development of the community. In the period before globalization, such phenomena were of a regional and incidental nature [Schefold 1985].

The economic theory of natural resources management deals primarily with the study of the optimal distribution during the exploitation of renewable or non-renewable natural resources [Fiedor 2002]. This refers to their limitations in dynamic terms.

In the case of resources, the most important is the rationality of management, which is one of the key concepts in economics [Bochenek 2008]. The purpose of allocating limited resources is to maximize benefits.

According to Kulawik [2008], rationality consists of the optimal selection of the proportion of individual expenditures taking into account the limited resources. It involves, among other things, the difficulty of obtaining some raw material because it is a rare good or because its limitedness is associated with high costs [Kulawik 2008]. Rationality takes on special significance

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in the 21st century in the context of natural resources, which, apart from capital and human resources, have become the basis of management [Piasecki 2011].

An example of a natural and rare resource is the energy obtained from both renewable and non-renewable sources. In classical economics, energy was treated as a free good [Czaja 2002], but this understanding of energy does not currently meet the needs of economic practice. As a result of the development of civilization and the huge increase in material production, energy has lost the nature of a free good and, like the vast majority of natural resources, has become an economic good, which because of its limited nature is an object of management.

The increasing dependence on energy imports and the limited energy resources, as well as the need to slow down negative climate change, contribute to the fact that the issues of energy efficiency, in particular the search for solutions enabling energy savings, creates an obligation for theoretical and experimental research [Szczeplaniak 2014].

An example of research on energy efficiency in individual sectors of a given country is the study of de Castro Camioto et al. [2014]. The authors assessed the effectiveness of industrial sectors in Brazil in 1996–2009 in the field of energy consumption using the data envelopment analysis (DEA) method. The input variables were the ability to reduce energy consumption and carbon dioxide emissions from fossil fuels, while the output variables were the GDP growth in the employment and personal expense sectors. It was found that the most effective sector in Brazil under the adopted assumptions was the textile industry. The next places were the following sectors: food and drink, chemical, mining, paper and cellulose, non-metallic and metallurgical.

When it comes to the energy efficiency of agriculture, it is worth paying attention to the research of Alluvion et al. [2011]. These researchers presented energy efficiency in three crop systems: low input, integrated, and compliant with EU regulations and traditional conventional. It was found that compared to the last system, in the first two, the energy efficiency increased by 32.7% and 31.4%, respectively.

Noteworthy is the study by Uzal [2013], which compared the energy efficiency of milk production in two farms: in the first, dairy cattle were reared in a free-

-standing system, in the second in a free-range system. It was found that in both cases the largest percentage of energy expenditure came from feed and electricity consumed. Total energy consumption per hectare was lower on farms using a free-standing system. The research results of Gronroos et al. [2006] are also interesting. Energy consumption in traditional and organic milk and rye bread production in Finland was examined. The basic energy consumption in traditional milk production was 6.4 GJ per 1,000 l of milk and 4.4 GJ in organic production. For rye bread production, it was 15.3 and 13.3 GJ per 1,000 kg of rye bread, respectively. Meul et al. [2007] examined the energy efficiency of farms specialized in milk, pig and plant production. These farms were located in the Flemish region in Belgium. It was found that the most energy-efficient farms specialized in milk and pig production were intensive production farms that combined high productivity with low energy inputs. In the case of plant-based farms, unambiguous relationships could not be indicated, as energy efficiency depended strictly on crop rotation.

In the study of Mousavi-Avval et al. [2011], the results of research on the energy efficiency of rapeseed production and analysis of the costs of this production depending on the production volume in Iran were presented. It was found that along with the increase in farm size, energy expenditure per hectare increases. At the same time, the highest yields were recorded in medium-sized farms, which were additionally characterized by the highest energy efficiency and the best ratio of revenues to costs.

The DEA method is a popular tool used for research on the energy efficiency of agriculture. Firoozi et al. [2014] used it to evaluate and optimize energy consumption in growing cucumbers under shelter in Iran. It was found that by improving inefficient elements, it is possible to save over 18% of energy expenditure. A good example of the use of DEA is also the research of Chauhan et al. [2006], where a method was used to determine the efficiency in terms of energy consumption in rice production in India. During the research, a sample of farmers using energy efficiently and inefficiently was determined. Inefficient energy applications were identified and, based on solutions used in the most effective crops, energy-saving solutions were developed. It was finally found that it is possible to save around 12% of the energy used to produce rice.

MATERIAL AND METHODS

The research aimed to recognize the efficiency of energy use in agriculture in individual EU countries and changes in the share of agriculture in total energy consumption in these countries. Another important research task was to assess the efficiency of energy used in agriculture in EU countries. To this end, two original economic and energy efficiency indicators (*GIEEE*, *GIREEE*) were used. The limitation of the study was to consider only one input and one output, which does not allow a comprehensive assessment of the effectiveness tested. Calculations and analyses were made based on Eurostat data from 2016. Due to the lack of data, Germany was not included in the study.

Global indicator of economic and energy efficiency (*GIEEE*)¹ of agriculture was calculated according to the formula:

$$GIEEE = \frac{GVA}{E}$$

where:

GVA – gross value added of agriculture (million EUR),
E – energy consumption in agriculture (thousand toe).

The indicator was used to assess the economic and energy efficiency of agriculture in EU countries.

Global index of relative economic and energy efficiency (*GIREEE*) of the economy (agriculture) sector against the country's economy as a whole:

$$GIREEE = \frac{\frac{GVA_r}{E_r}}{\frac{GVA}{E}}$$

where:

GVA_r – gross value added of agriculture in a given country (million EUR),

GVA – gross value added of the country (million EUR),

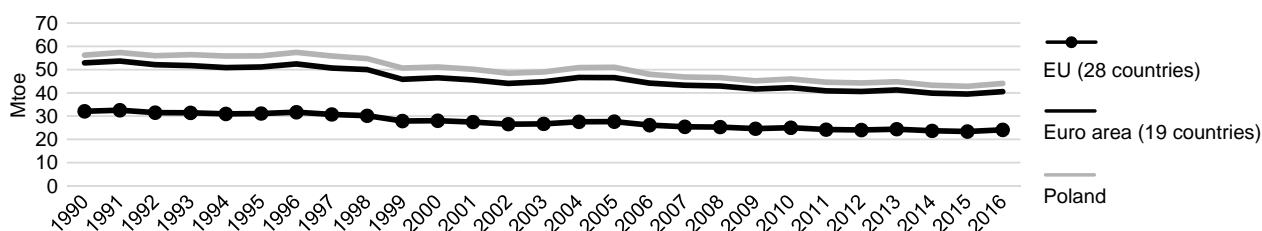
E_r – energy consumption in the agriculture of a given country (thousand toe),

E – energy consumption in the country (thousand toe).

The indicator of relative economic and energy efficiency was used to assess the effectiveness of agriculture against the economy of a given EU country. An index that is above unity means that the economic and energy efficiency of agriculture is greater than the overall economy.

RESULTS AND DISCUSSION

As part of the study, it was found that the final energy consumption in EU agriculture was characterized by a decreasing trend – from 1995 to 2016 consumption on average across the European Union decreased by 27%, in the euro area by 22.7%, while in Poland by 2.6% (Fig. 1). In 5 out of 28 countries, an increase in final energy consumption in agriculture was noted: Cyprus (increase by 806.5%), Luxembourg (by 110.5%), Belgium (by 47.9%), Spain (by 34.8%) and France (by 18.3%). The greatest reductions were made in Lithuania (reduction of consumption by 87.7%), Estonia (by 81.4%), Slovakia (by 78.7%), Bulgaria (by 76.5%) and Greece (by 75%).



Data for Germany are incomplete since 1999. Consumption for Slovenia (until 1997) and Malta (until 2008) is not included.

Fig. 1. Final energy consumption in agriculture in Poland, Euro area countries and EU-28 in 1990–2016

Source: Authors' own study based on [Eurostat 2018a].

¹ The indicator can be used for direct comparisons of countries, branches of economy, enterprises.

In 1995–2016, the share of agriculture in total final energy consumption on average in the EU fell by 0.7 p.p., while in the euro area countries by 0.6 p.p. (to the greatest extent in Greece – by 4.8 p.p.). The reverse trend was observed in 5 countries: Cyprus, Estonia, Latvia, France and Luxembourg. By far the largest share of agriculture in total energy consumption in the EU took place in the Netherlands and Poland (Table 1).

The final energy consumption in EU agriculture per employee in 2016 amounted to an average of 2,306.33 kgoe² and was higher by over 273 kgoe than in 2004. This is mainly due to the decreasing number of people employed in agriculture. Three countries were leaders in this respect: the Netherlands, Belgium and Denmark, i.e. countries characterized by relatively low employment and intensive agriculture, which determines the increased demand for energy. On the other side of the list, there are countries where the share of those employed in agriculture is one of the largest in the EU, there is a small concentration of production, and agriculture is often extensive – Romania (223 kgoe), Bulgaria (296 kgoe) and Greece (586 kgoe). In 2004–2016, energy consumption per employee dropped most in Greece (71.3%), Sweden (57.6%) and Ireland (33.6%) – Figure 2.

Another important indicator is the final energy consumption in agriculture per 1 ha of UAA (Fig. 3). In 2016, the leader was the Netherlands (2,052.93 kgoe per 1 ha), consuming nearly 4 times more energy per 1 ha of UAA than the second in ranking Belgium and over 15 times more than the average in all EU countries. This is due to very intensive agriculture and a high share of greenhouse production requiring high energy expenditure. The lowest final energy consumption per 1 ha of UAA was observed in Romania (33.5 kgoe per 1 ha), Lithuania (35.3 kgoe per 1 ha) and Bulgaria (36.8 kgoe per 1 ha). The largest improvements occurred in Greece (83.2%), Sweden (53.5%) and Ireland (38.2%). In Poland, both indicators increased in the period considered.

A simple indicator was proposed to assess the economic and energy efficiency of agriculture in individual EU countries, in which the gross value added of agriculture was divided by the energy consumption in

Table 1. Share of agriculture in total final energy consumption in 1995, 2005 and 2016

Country/group of countries	Share of agriculture in total final energy consumption (%)		
	1995	2005	2016
EU (28 countries)	2.9	2.3	2.2
Euro area (19 countries)	2.7	2.2	2.1
Austria	2.5	2.0	2.0
Belgium	3.2	2.2	2.0
Bulgaria	3.4	3.0	2.0
Croatia	3.8	2.9	3.1
Cyprus	0.4	2.1	2.5
Czech Republic	4.7	2.1	2.5
Denmark	5.0	4.4	4.5
Estonia	3.3	3.6	4.8
Finland	3.4	2.8	2.8
France	2.5	2.7	2.9
Greece	6.4	5.5	1.6
Hungary	4.1	3.1	3.3
Ireland	4.3	2.7	2.0
Italy	2.6	2.2	2.3
Latvia	3.2	3.1	4.1
Lithuania	4.4	2.2	2.0
Luxembourg	0.4	0.5	0.6
Malta	x	x	0.9
Poland	7.6	7.6	5.3
Portugal	3.5	2.7	2.2
Romania	3.7	0.9	2.1
Slovakia	2.7	1.4	1.5
Slovenia	x	1.5	1.6
Spain	3.4	3.2	2.8
Sweden	2.2	2.2	1.1
Great Britain	0.9	0.6	0.8
Netherlands	8.3	7.2	7.4

x – no data or incomplete data.

Source: Authors' own study based on [Eurostat 2018b].

² Kilogram of oil equivalent (kgoe) is a unit of conventional fuel. According to the definition contained in the Act of 15 April 2011 on energy efficiency, kgoe is equivalent to 1 kg of crude oil with a calorific value of 41,868 kJ.

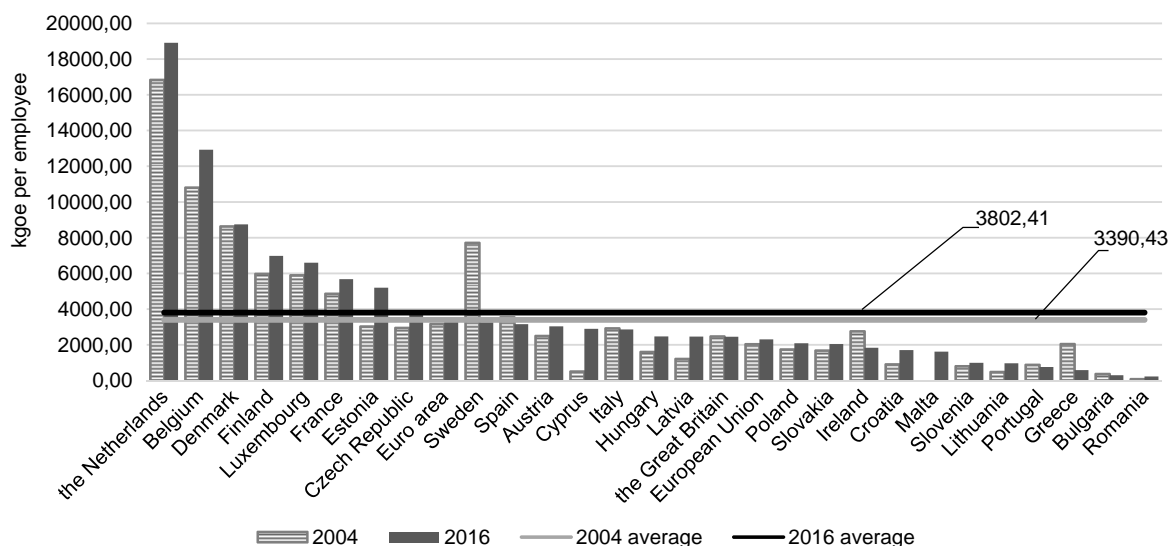


Fig. 2. Final energy consumption in agriculture/forestry in 2006 and 2016

Source: Authors' own study based on [Eurostat 2018c].

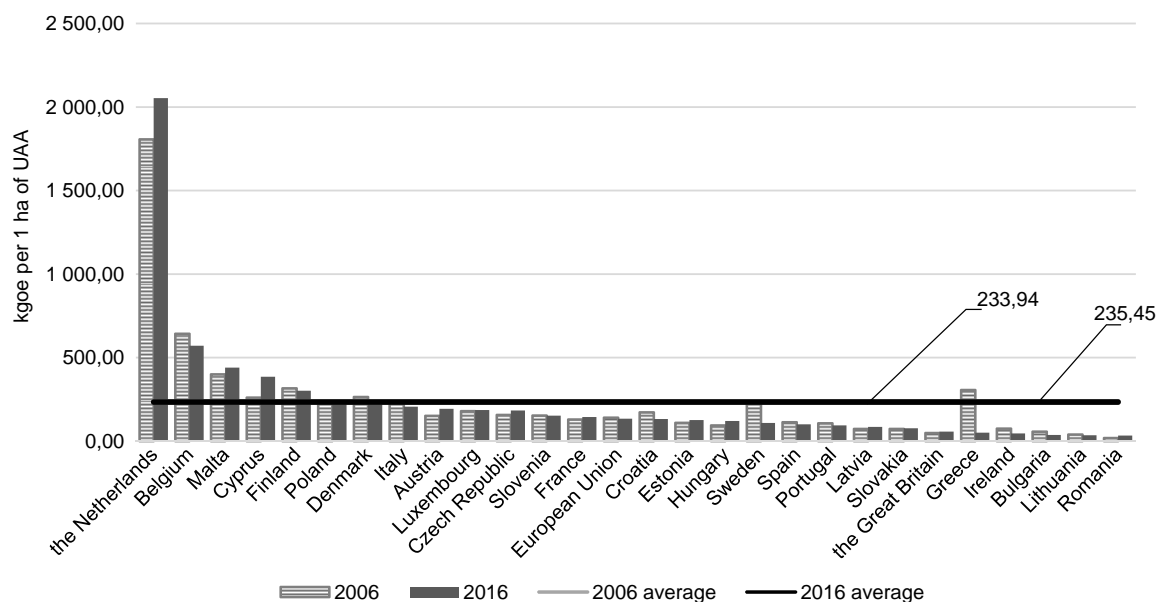


Fig. 3. Final energy consumption in agriculture/forestry in 2006 and 2016

Source: Authors' own study based on [Eurostat 2018d].

this sector (Table 2). In 2016, the highest values of the indicator were observed in Greece and Slovakia, with the lowest in Poland and Estonia. In the years 2004–2016, the value of the indicator increased in 21 EU countries, which is a positive phenomenon indicating

increasing energy productivity. Interesting was the decline in the indicator in Romania. The reasons can be seen in the progressing intensification and mechanization of agriculture in this country and as a result of increased energy expenditure.

Table 2. Economic and energy efficiency of agriculture in EU countries in 2004–2016

Country/ /group of countries	Gross value added in agriculture – current prices (million EUR)		Final energy consumption in agriculture (thousand toe)		Economic and energy efficiency indicator for agriculture (million EUR·toe ⁻¹)		Change of indicator 2004 = 100
	2004	2016	2004	2016	2004	2016	
EU (28 countries)	197 881.20	209 115.70	27 519.60	24 078.10	7.19	8.68	20.78
Euro area (19 countries)	151 315.70	158 601.90	19 057.80	16 450.30	7.94	9.64	21.43
Belgium	3 037.00	2 696.20	816.00	772.80	3.72	3.49	-6.26
Bulgaria	1 769.90	1 951.50	276.00	185.10	6.41	10.54	64.41
Czech Republic	2 213.50	3 641.90	557.00	639.80	3.97	5.69	43.24
Denmark	3 284.30	2 810.70	690.70	629.70	4.76	4.46	-6.13
Estonia	334.70	452.40	104.80	127.30	3.19	3.55	11.28
Ireland	2 455.80	2 537.10	314.00	207.30	7.82	12.24	56.49
Greece	8 282.10	6 313.40	1 114.50	270.70	7.43	23.32	213.84
Spain	26 478.00	30 096.00	3 340.50	2 404.20	7.93	12.52	57.93
France	31 059.00	32 323.00	4 290.10	4 216.10	7.24	7.67	5.90
Croatia	1 498.30	1 462.60	206.40	205.90	7.26	7.10	-2.15
Italy	33 962.90	31 802.60	2 960.90	2 650.20	11.47	12.00	4.62
Cyprus	429.80	356.00	9.80	43.30	43.86	8.22	-81.25
Latvia	500.90	802.60	124.80	165.60	4.01	4.85	20.75
Lithuania	760.30	1 195.50	105.20	104.50	7.23	11.44	58.29
Luxembourg	154.80	119.40	21.40	24.40	7.23	4.89	-32.35
Hungary	3 597.50	4 410.40	586.00	647.40	6.14	6.81	10.97
Netherlands	9 878.00	12 513.00	3 771.10	3 687.60	2.62	3.39	29.54
Austria	3 578.20	3 963.90	546.60	520.10	6.55	7.62	16.42
Poland	6 733.00	10 154.90	4 292.60	3 540.40	1.57	2.87	82.87
Portugal	3 956.10	3 643.00	534.80	341.90	7.40	10.66	44.04
Romania	7 674.40	6 920.90	231.60	453.30	33.14	15.27	-53.92
Slovenia	633.10	785.10	74.00	73.20	8.56	10.73	25.36
Slovakia	1 264.40	2 731.80	161.60	148.40	7.82	18.41	135.27
Finland	3 778.00	5 143.00	736.80	687.40	5.13	7.48	45.91
Sweden	4 874.70	5 189.40	761.60	329.40	6.40	15.75	146.13
Great Britain	14 922.10	13 969.80	859.80	996.80	17.36	14.01	-19.25

Source: Authors' own study based on [Eurostat 2018e].

The global index of relative economic and energy efficiency (*GIREEE*) of agriculture against the country's economy was also calculated (Fig. 4). This indicator allows determining the effectiveness of agriculture in comparison with the effectiveness of the entire economy of the country. In 2016, the EU average was 0.746, which means that EU agriculture obtained a 25% lower gross value added per 1 t of oil equivalent than the EU economy as a whole. It is worrying that the indicator in 2006–2016 decreased, which means that the effectiveness of agriculture compared to the entire economy is relatively decreasing.

Noteworthy are 3 countries – Bulgaria, Greece and Romania, where the indicator was definitely above unity, which indicates that agriculture is relatively more energy-efficient than the entire economy. The reasons are relatively low energy consumption, which is the result of extensive agricultural practices, and lower production costs, which affect the amount of gross value added used in the calculations. On the other side of the list, there are countries with large-scale agriculture and high specialization (the Netherlands, Denmark). Nevertheless, the gross value added generated required several times higher energy expenditure than that generated in the whole economy.

CONCLUSIONS

Based on the conducted research, the following conclusions were formulated:

1. Energy consumption in EU agriculture has decreased for 25 years by around 30%, which, along with the growing value of gross production, is a positive phenomenon in the context of energy efficiency. The share of agriculture in total final energy consumption also decreased from 2.9% in 1990 to 2.2% in 2016. The highest share in 2016 was recorded in the Netherlands and Poland, at 7.4% and 5.3% respectively.
2. The most energetically intensive agriculture in the EU, calculated as final energy consumption per 1 ha of UAA, occurred in the Netherlands (nearly 4 times more energy per hectare of UAA than the second in Belgium and over 15 times more than the average in all EU countries). This is the result of very intensive agriculture and a high share of greenhouse production requiring high energy expenditure.
3. The agriculture of Greece and Slovakia had the highest economic and energy efficiency, generating the most gross value added from 1 ton of oil equivalent. These countries, together with Swe-

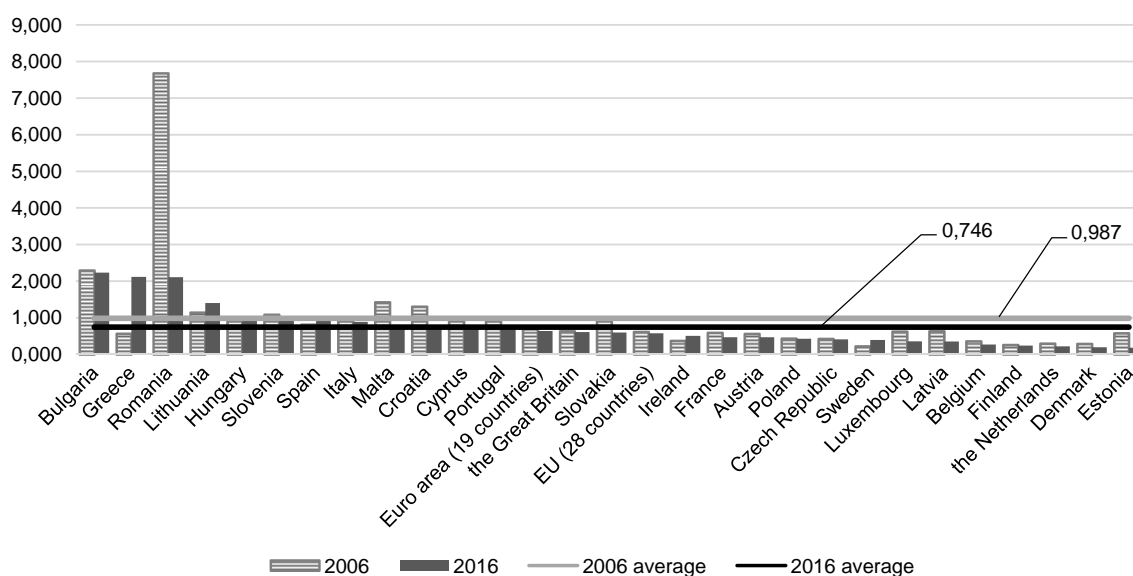


Fig. 4. Indicator of relative efficiency of final energy consumption in 2006 and 2016

Source: Authors' own study based on [Eurostat 2018f].

den, also had the greatest efficiency improvement in 2004–2016. Poland had the lowest efficiency in all EU countries. The high position of Greece may result from the structure of agriculture. The country is dominated by crops that generate high added value (citrus fruits) and use extensive production techniques, involving relatively less energy. In Slovakia, this may result from a high concentration of production, which in the case of energy consumption may have a positive impact and be a positive effect of scale.

4. The economic and energy efficiency of agriculture in the EU was on average 25% lower than the efficiency of the entire economy of the European Union. In three countries: Bulgaria, Greece and Romania, the indicator was definitely above unity, which indicates that agriculture is more effective there than the entire economy of the country. The reasons for this were relatively low energy consumption as a result of extensive farming practices and lower production costs that affect gross value added.

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EFEKTYWNOŚĆ EKONOMICZNO-ENERGETYCZNA ROLNICTWA W POLSCE NA TLE KRAJÓW UNII EUROPEJSKIEJ

STRESZCZENIE

Współczesne rolnictwo jest bezwzględnie uzależnione od zewnętrznych źródeł energii. Dominującą rolę w tym zakresie odgrywają nieodnawialne źródła energii, co przyczynia się do emisji gazów cieplarnianych i w konsekwencji degradacji środowiska naturalnego. Oczywiście staje się więc dążenie do poprawy efektywności wykorzystania energii oraz zmiany w strukturze źródeł jej pozyskiwania. Określenie efektywności ekonomiczno-energetycznej oraz ocena energochłonności rolnictwa w krajach UE były jednymi z głównych celów badawczych pracy. W artykule przeanalizowano zmiany zużycia energii w rolnictwie w przeliczeniu na zatrudnionego lub 1 ha użytków rolnych w całej Unii Europejskiej, a także w poszczególnych krajach członkowskich. Do analizy wykorzystano dane Eurostat.

Słowa kluczowe: ekonomia, energia, efektywność, rolnictwo, UE

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Chełkowski, Z. (1966). Introdukcja troci do rzeki Gowienicy. *Gosp. Ryb.*, 1(2), 18–19.

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Patkowska, E., Konopiński, M. (2008a). Pathogenicity of selected soil-borne microorganisms for scorzonera seedlings (*Scorzonera hispanica* L.). *Folia Horticul.*, 20(1), 31–42.

Patkowska, E., Konopiński, M. (2008b). Pathogenicity of selected soil-borne fungi for seedlings of root chicory (*Cichorium intybus* L. var. *sativum* Bisch.). *Veg. Crops Res. Bull.*, 69, 81–92.

Turski, W. (1972). Projektowanie oprogramowania systemów liczących. *Mat. konf. Projektowanie maszyn i systemów cyfrowych*. Warszawa 2–5 czerwca 1971. PWN, Warszawa, 132–139.

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ISSN 1644-0757



1644 0757