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ul. 26 Czerwca 68, 26-600 Radom,
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Kazimierz Pulaski University of Technology and Humanities in Radom
Faculty of Economic and Legal Sciences
ul. Chrobrego 31, 26-600 Radom, Poland
www.cer.uniwersytetradom.pl
e-mail: cer@uthrad.pl
tel. (+48) 48 361 74 59 fax: (+48) 48 361 74 77

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Tadeusz Sporek[1]

RISING SIGNIFICANCE OF GLOBALIZATION IN INTERNATIONAL RELATIONS

Globalization should be treated as a process of spreading, in the world scale, the connections which are typical for the local economic conditions. This phenomenon is associated with the creation of transnational culture and progressively deepening network of social interactions. The mass exchange of people, commodities, services and capitol on the global scale is carried out through modern means of communication and transport technologies. This process includes also long-distance migration of people. The globalization can mean both potential profits and new chances, but on the other hand, it can cause serious threats and huge challenges. A direction of its development and prevention from its negative results, depends on possibilities to influence this process by particular countries and grouping, including societies. It is obvious, that the present shape of the globalization bears injustice, increases inequalities and threats, so is must be corrected to a common favour.

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Introduction

Modern international relations are characterized by a big stimulation of economic and political cooperation processes. Their developing started after the cold war ended. Collapse of the double pole system enabled many countries to join a creation a new structure of international relations, by rising democratization, bringing a reform to open national economies, trade

[1] Professor of Economics, Departament of International Economics, University of Economics in Katowice, Poland.

liberalization and a flow of production factors, influencing their re integration with the world economy.

Global economy is an economic system, a new organism, in which there are global relations to act and lead economic activity, communicate and transfer in the whole globe (Oziewicz, 2006, p. 48). It is not a notion equivalent to the world economy. Like a traditional world economy was a progenitor of the present economy, the modern world economy creates basis to the global economy.

The world economy becomes the global economy by merging national economies into one organism. More and more subjects act in the global arena, creating bigger relation between them. At the time, a dominative role in development of economic relations don't have national countries, but over national institutions and structures. A dominative role of industry in the world economy is replaced by economy, based on knowledge.

A system of the global economy is realized by many changes, both in economy and in other branches. There are reforms opening Asian countries, especially China and India, joining economies of Middle East Europe into the world economy, significant fall of transport cost, multilateral liberalization of trade, de regulation of telecommunication markets, a fast progress in informatics and telecommunication (Sporek, Kozak, 2014, p. 36–54).

1. Globalization's characteristics

By the latest statistics of International Monetary Fund, in 2014, US strengthened its dominative position in gross domestic product, reaching an amount of 17.4 billion USD, and China got second position with 9.7 billion USD since 2008, overtaking Japan – 5.2 billion USD and Germany – 3.7 billion USD.

The full picture of 30 countries with their gross domestic product in 2014 presents table 1.

A growing number of member in the World Trade Organization, shows an increase of meaning of international solution, concerning trade and interest bigger number of countries in rules of WTO in economic relations. A number of trade agreements and economic group, registered in WTO, till January 2010, a number of regional trade agreements rose over 366. (Sporek, 2006, p. 129–131).

By A. Gwiazda, the global economy, meaning the economy, which work in the whole planet, where got to a total internationalization of different production factors, in a result of many various political, market and cost, is already

a fact. It happened thanks to private firms, especially over national corporations. (Gwiazda, 2000).

Table 1. Gross domestic product of the biggest world economics in 2014 (billion USD)

USA	17.438
China	9.761
Japan	5.228
Germany	3.747
France	2.862
Great Britain	2.627
Russia	2.215
Brazil	2.170
Italy	2.148
Canada	1.887
India	1.750
Australia	1.459
Mexico	1.396
Spain	1.394
South Korea	1.271
Indonesia	863
Turkey	851
Holland	830
Saudi Arabia	747
Switzerland	672
Sweden	579
Poland	544
Belgium	528
Norway	527
Taiwan	517
Argentina	497
Austria	440
Colombia	389
Venezuela	377
Republic of South Africa	371

Source: International Monetary Fund – World Economic Outlook 2015, value in present prices.

However we can polemicize, if the global economy, as a system fully integrated, works already today.

By W. Szymański, still existing customs, political barriers and infrastructural differences, as well as differences in economic politics between countries, still make impossible to get to a point, where everything could be manufactured in any place in the world. (Szymański, 2004) McKinsy Global Institute, which deals with researching the global economy, in its document containing conclusions in ten years' observation, and presented an annual summit in Davos, claims, that the real global economy hasn't begun yet. Even if some markets, especially capital ones are getting close to the full global integration, what appears by functioning of the same international law, other markets are rather markets are rather shut or in indirect stage. In the MGI opinion, goods markets for instance, are counted to the last category, being between local ones and the global market. Whereas, labour are the least developed, so still, first of all, local ones. MGI depends getting to the global economy on functioning a certain dynamic system of mutual relations in sectors and markets, in the global scale level. It points, that the process of getting to the global economy will take decades and disappears only, when the most production will go to the global market. MGI sees huge possibilities to accelerate the process of total globalization of the word economy in a progress of technology and innovations, as well as, in a change of direction and a way of setting and execution of law rules by national governments. So far, presently set rules mainly postpone this process.

The word capitalistic system was analised fully by Immanuel Wallerstein in his theory-center and peripheries. In his opinion, a progress of economic drainage will cause bigger and bigger accumulation of in developed countries (Wallerstein, 2004). As the author of the modern world system, a social system based on capitalistic economy, which began five centuries ago in Italian towns, Wallerstein represents a dependistic school. He divides the word into four kinds of regions: center, semi peripheries and outside area. According to this conception, the center is an engine of innovations (technical, organizational and cultural) and takes profits with them, getting all values worked out in peripheries, where it passes technologies and simpler, less profitable works. Semi peripheries try with different luck to imitate and get arrears towards regions creating the center. An example is Japan, for which this process finished with success, and from periphery position, this country is now a center of the modern world economy.

The center of the world economy is now created by the North America, West Europe and a part of the South-East Asia. In the led analysis, he exam-

ined relation between the center and peripheries, also a run of two cycles lasting about half century, such called Kondratieff's cycles, as well as logistic cycles taking about centuries, which got to a conclusion, that there is a period os such called stagnation of the world system at the turn of 20th and 21st century. This event will weaken present centres of the world economy, especially US on a cost of semi peripheries, especially Far East and Arabic Countries (Penc, 2003).

Globalization is not a new notion. Despite that, it is a subject of many research and books. Being the ambiguous and multi meaning noting, it is difficult to describe what globalization process can be analysed in many crosses. That is why, we can find different definitions of this process in the subject literature. It is difficult to set a concrete date, when the term globalization appeared for the first time. J.A. Scholte says in his book, that it appeared in English in 1959 and was used in Webster Dictionary in 1961. While, by J.Dynarski, the word globalization was used for the first time by R.Robertson in 1985, who described it as a group of processes, which co organize the common world. A special world „implosion" is accompanied by „explosion" of some cultures, institutions and styles of life. Globalization is the notion of discussion about social change and serves to describe phenomenons. In the modern world, both on social level (economy and politics) and cultural system (Dynarski, 2003).

By Nelson Mandela „globalization is an unavoidable process, which, in a longer time brings profits to the whole humankinds, it supports a free flow of goods and capital, abolishes trade borders between nations, assures to markets and flow of technologies and cheap products of the first need",

G.W.Kołodko, by globalization understands „a historical and spontaneous process of liberalization, which was so far separated and in a loose relation of functioning markets of goods and capital with some delay and smaller workforce, technology and information scale-in one interrelated market. There are three key words: liberalization, integration and two additional ones-historical and spontaneous (Kołodko, 2008, p. 18).

European Commission defines this term as „a process, in which markets and production in different countries become more and more related because of dynamics of goods and service trade, flow of capital and technology".

In the Polish literature of the subject, most often we can meet a definition of A. Zorska, who explains, that it is „a long process of integration of national economies, sectors, markets and companies, thanks to a spread and intensification of over borders economic institutions, cooperative and informatics

ties, what leads to creation stronger and stronger interrelations in the world economy" (Zorska, 2008).

The mentioned above definitions show, that each author understand the notion of globalization differently. But, the have common characteristic charts, they describe globalization as unavoidable process of „shrinking" the world that means borders vanishing and elimination of different barriers, which stop interrelations between countries.

A consequence of this process is unification of all aspect of economic and social-cultural life. So, we can say, that the world is the one big „global village", in which all differences disappear and consumption and production in the world scale, is nothing extraordinary, For the most society, globalization processes are only associated with American style of politics-economic and cultural life. Specialists searching globalization processes perceive them differently. Some of them think, that globalization is an advanced form of economic activity and ties between subjects existing in the economy. Other ones think, that it is a kind of influence of all life branches to each other, and it is a system of growing up corporations and international organizations.

Lisbon Group in the „competition borders" mention a few areas of globalization and processes working in them. They are:

- finance and capital, growing number of fusions, de regulation of finance markets, an increased capital turn,
- markets, or heading for integration of economic activity in the global scale,
- technologies, research, progress and strategies, so first of all, going to development and finding the best solutions in that area,
- life styles, consumption models and culture, their spread in the global scale and unification of consumption models,
- perceiving conscience, in which the most important are cultural and social processes,
- political unification of the world of the on politics area, that is creation a system, which will govern over each element of it,
- law regulations and governing, or a trial to limit a power of particular countries, creation unified institutions and regulations concerning the whole world (Penc, 2003).

At the turn of 12th and 21st centuries the economic factor became a key element of the globalization process, which is accompanied by a rich domestic and foreign literature. It is said, that globalization has made the biggest progress in this sphere, so far.

In the economic meaning, globalization is most often described as the process of creation of unified, global market of goods, service and produc-

tion factors, involving all countries and geographical regions, what leads to a growing spread and unification of market, that is an increase of economic interrelations between all countries in the world. By International Monetary Fund, it happens by a growth of over birders transactions in the trade of products and service, as well as growing flows of capital and faster and faster spread of technology. We can't miss a huge role of scientific-technological progress, changes in the international competition and, first of all liberalization and de regulation of economic politics of countries (Sporek, 2015, p. 186–191).

In my previous out works I defined the globalization as the highest form of the company's internationalization, which can be described as treating the world like a common market of supply and sale of products of the company, which can lead research, that need big outlays on technology and marketing. These are transnational corporations.

From the latest publications scarified the globalization, we should mention out works of J. Stglitz, P. Drucker, G. Soros and conceptions of A. Gidders (Soros, 2005, Stglitz, 2004).

Variance of definitions of the mentioned authors is depended on the enter point, which is an element of analysis and starts with a company, country, regional group, having finished with the world economy including elements of management.

In discussed definitions the most important is an element of growing integration of the world markets, by an increase of different relations between them, mainly in the trade, production, investments, what leads to the growth of international economic interrelationship. It can be a simple asymmetric countries dependence on other regions and countries dependence on other regions and countries sources, but in the globalization context, it is also a big increase of influence of phenomenons, happening in some countries, on other countries and regions or even the whole world economy. Often events far geographically, influence directly a particular country (for example financial crisis). This economic relation can mean, that a development of the particular country or company becomes also related to a successful foreign activity. What means, that economic subjects must consider local and the world aspect of a problem, when making economic decisions, as well as a point of the whole international market partners. It should be reminded, that in a result of more intensive international relations, the world economy is not a set of individual markets any more, but it transforms into a system of integrated markets. A question, how much integrated, or globalized, is already the modern economy-comes back.

2. Globalization's components

From the previous deliberations it could result, that we have already the global economy nowadays, at least in the financial and partly products markets level. But it is not true, because separate countries went through global; trends in different level. Besides, a main stream of the globalization process is till focused on the countries of Triad, which is created by West Europe, North America and South-East Asia, what means, first of all, integration inside their economies, not in the whole world economy. They focus about 20 countries, which make 80% of the world production, being only 16% of the world population. Additionally they generate 40% of the world gross domestic product, are a source of 95% of the world direct foreign investments, and bear 90% of the world expenses on research works. It is visible, that in the most countries outside Triad, the globalization works in a little range, and it didn't get into some at all. Germany and other countries of this out work, belong to the already modified Triad, and they are a subject of the globalization in a big range.

It should be stressed, that chosen areas of East Europe and South America remain in a very unprofitable economic and technological situation. It means, that globalization processes are going on and it is a long way to their final in geographical sense. There are many markets and sectors, which are many markets and sectors, which are still strong locally, but there are also companies even in global sectors, which are successful only in local or regional scale.

However, the process of integration of domestic economies is spreading undeniably, by an increase of international trade, including specialization of production by growing flows of capital and finance, by bigger and bigger harmonization of instructions and economic systems. As a result, we observe a gradual begin of the global economy. However, by W. Siwinski, even the capital market, although the most integrated, is still not fully global, because the international diversification of investments is still-as he claims-in the beginning phase. Moreover, there are still many differences between financial markets of particular countries. For sure a creation of the global economy can be seen inside Triad countries, which are economic and technological leaders. They are now related tightly in trade, investments and company cooperation. While, it should be said, the global economy in the whole world scale, is still being begun and the globalization process, although developing very dynamically, is still not in the whole world (Siwinski, 2001).

The globalization process can be analysed in two meanings: micro and macroeconomic meaning, processes should be examined from a point of the company's view which acts in the international markets, and is a subject of internationalization (Rymarczyk, 1996, p. 26). In the modern world, it is undoubtedly an important aspect, however the analysis of globalization can't be concentrated on it. Issues of the globalization should not be limited to the macroeconomic aspect. That is why, the macroeconomic aspect takes an important meaning, in which globalization processes should be examined from the national economy point of view, which loses its economic independence in the modern related and turbulent world, what forces to consider more and more complicated relations inside countries and international ones in analysis. It should be remembered, that many notions from macroeconomic aspect has its roots in the microeconomic one, which determines numerous analytical factors of globalization actions.

Complexity of mutual relations between internationalizing surrounding (macroeconomic aspect) and economic subjects, working in in the international markets (macroeconomic aspect) is one of proves, how complicated the phenomenon of proves, how complicated the phenomenon of globalization is. A characteristic chart of these relations is their two direction character, appearing both in in influencing the international surrounding on company's behaviour in the market and-what is a new phenomenon-in possibilities to influence this surrounding and even shaping it by big corporations, dominating in the global branches.

By Lisbon Group, creation new „global world" means, that everything we will have in the future, will be „made in the world". So, beginning of globalization is a start of the end of national system, though it was, dominating so far, and the national country was considered to be a basic form of society organization. National identity was a criterion, describing definitely existence and personality of personality of particular beings (including companies) and whole social groups, and the national economy was considered an only cohesive and integrated form of economy. Each process was defined in relation to the national level as narrower (subnational inside national) or wider (international, over national). National aspect still remains one of the relations, but it is not a strategic one, when it comes to basic matters of scientific progress and social-economic development. An increase of globalization process in the economy touches one of the basic pillars of the national country, which is the national market. The national space is now replaced (as the most important strategic economic space) by creating global space, and it needs to bring an imperative of global way of thinking (Rymarczyk, 1996, p. 27).

The basic levels of globalization can be defined by ranges of integration and adaptation of activities. From this point of view, we can isolate the national level (domestic), transnational (regional) and global (world).

On the national level, the range concerns inside of the country, but its effects have global character and meaning. Transnational level is characterized by international and multinational activity, concentrated in the special geographical area with significant over national aspect, which results get the global meaning. The global level is characterized by multinational or over national activity with the world range (at least over regional or over continental), having the global character and meaning.

Globalization of economy and society is the latest phenomenon, which takes national forms. Some of them will disappear in a few years or later, other ones may lose their meaning. National factors still influence a way, in which, forms and processes of globalization change national economies and particular societies.

Along with developing internationalization of economic process, in the international area, a new notion appeared, which has such a big meaning to the international society, that it is described as global problems. In the recent years, a belief of appearing global problems and necessity of their urgent solution, became common. Many processes, considered incidental in the seventies of 20th century and earlier, got a repeatable character (for example ecological disasters) or a steady one (developing poverty of developing countries). Inspirations of Rome Club appeared and became basics of human expansion limits. Revolution in thinking, inspired by Rome Club, was based on questioning a base, previously taken in the history of humankind, that nothing can limit expansion of human race, and progress of science and technology is able to break all barriers.

In the described attitude, unprofitable phenomenons are analysed in a context of the world as a whole universal system threatened by growing problems, which appear in spontaneous, permanently accelerating evolution. It is a characteristic attitude to such called globalistics, only appearing new, interdisciplinary research branch, dealing with economic-social global problems by Andrzej Werner, environmental protection became the most important social form, overtaking inflation and a fight poverty and unemployment (Werner, 2007).

Trials to set a list and a hierarchy of global problems are a subject of disputes. The conference of The United Nations Organization, in 2008 in Poznan titled Frame Convention of United Nations Problems of Climate Changes (UNFCC) was a preparation of discussion in Copenhagen, where a new agree-

ment on limitation of greenhouse gases is going to be signed. Agreement in Copenhagen is to replace a protocol from Kioto, which obliges countries to reduction of gases causing the greenhouse effect at about 5,2% till 2012. This protocol was not ratified by the US, China and India. Despite doing it, they do not have to observe its regulations as developing countries. Emission of a carbon dioxide – CO_2, disappearing forest areas, air pollution by nitrogen, „oxygen free sphere of rubbish" in the Baltic sea, there are effects of climate changes in storms, hurricanes, glaciers melting and cyclones in Asia and America and many illnesses all over the world. In conditions of big differences in level of problems importance and ways of their solution, becomes complicated. For example, the most developed countries think, that the most important is progress of technics and environmental protection. These opinions are divided, when it comes to a use of seas and oceans sources. But the most arguable are demographic questions. Omitting above restrictions, the list of global problems can be presented in a following order: global safety and disarmament, demographic problem, food problem, environmental protection and a problem of international law and economic regulation. Cultural and religious changes became a subject of the global problems only at the turn of 20th and 21st centuries, but their role gest a bigger meaning rapidly, as a result of relocation of a regions quality, which this process concerns, towards Asian climate direction.

Global, environmental and social challenges are characterized widely in publications of Committee of Prognosis „Poland in the 21st Century" edited by Polish Academy of Science. One of the main problems is, that less developed countries have a higher rate of demographic growth rate, what strengthens their poverty and threatens ecological balance of the world now. While rich countries can look after their environment effectively, poor countries can't afford it, and since they dominate in the population number, we are threatened by ineversible environmental change in the world globe. This problem also causes an obvious political threat in the global scale: division into small numerously „North" and far more numerous and poor „South" is not stable. This problem is not to be solved by rich countries philanthropy. It is necessary a more common understanding all threats tried with this problem and using various technologies, offered by developing informative civilization to protect from these threats. It is realistic and trials in this direction are in many countries. It is tied with a notion of a balanced development.

Macro attitude to the globalization can be characterized as its treatment from a side of mutual impacts and relations of national economies, regarded one of the basic subjects and key elements of the world economy system,

considering international, geostrategic and worldwide aspects of above relations taking place between them. It is a traditional attitude, developed in such economic disciplines and theories as macro economy, and open market economies, international economic relations and international finance. This attitude deals with globalization taken as relations, coordination of economic activity going on in national and international economic structures, in the world scale.

In the literature of the subject, there are many definitions, which consider attitude in the macro scale. Below definitions join a pressure on system, integrative and ordering aspect of globalization processes, not going out of traditional understanding the world economy as a set of national economies.

W. Szymanski says, that globalization as a matter of fact, is bigger and bigger range of free market mechanism, working not only in the national countries borders, but also in the world scale. Easiness to transfer production factors through borders questions more and more, a role of the previous conception of national economy.

In this process, not only corporations, but also capital, production technology and work force stop being only national. By A. Gwiazda, globalization means joining different and independent markets in various countries into over national world market. It causes tightening mutual commercial, investment and contractual relations between economies of different countries. Thanks to development of transport and telecommunication, and first of all to a growing liberalization of international trade, borders of particular countries become more and more „let in" for economic activity of foreign subjects, which brings closer and integrates countries in transnational productive–commercial systems. D. Levy and J. F. Coates think similarly. By the first one, globalization relates to the growing number of national economies by international trade and foreign direct investments. With a growth of capital mobility and development of new technologies making an easy communication, borders of particular countries become more and more „let in" to the economic activity, realized in the international scale. J. F. Coates treats globalization as a process of stronger and stronger joining of singular country economies, into the world economy (Coatest, 1996). W. Michalak stresses, that, in globalization, singular country economies are involved in the world system, which is related by international transactions and processes. It is growing a system of dependence of national economies, which are transformed by economic activity realized in the international scale. J.H. Dunning sees a gradual creation of the global economy, in which economically leading countries are related tightly in trade, investments and cooperation of companies. To create and

start functioning the global economy, there are needed liberal conditions to development of international trade, companies investments and productive–commercial activity of their foreign branches (Dunning, 1992). J. Dietl stresses, that globalization of markets is unavoidable and it comes from:

- economic development and as a result of increase of spending power,
- technical and organizational progress which accelerates spreading innovations and development and decrease of communication and transport cost,
- liberalization in free flow of work force and financial and intellectual capital,
- changing criterions of a choice of products, which cross national borders, and create the world market. Summing up the above definitions, we can say, the modern world economy reminds less and less its protoplast – the traditional world economy based on national subjects.

First of all, it stops being a sum of national economies, and becomes the global economy, in which integration of national economic organism goes. Clear, easy to a quantitative record, commercial relations typical for the traditional economy, where national economies played the main role, give in to various, which are difficult to set statistically. They depend more and more national economies on the international environment. It is worth to ask a question, if all countries take part in the globalization process equally and, if it means equal chances and threats to all of them. Ph. Kotler, S. Jatistripitak and S. Maesinencee put attention, that in the new global context, national and regional economies are joined by vital ties, ties, with each other, but any of players can't impose his will on the remaining part of the world. An increase of possibilities and threats come-on one side-from cooperation and-on the other one-from cooperation and-on the other one-from competition and conflict. Moreover, they say, that the worst solution, which the particular country can accept, in conditions of the global interrelationship is an autarky. However we shoud remember, that in the modern economy we can speak of three kinds of market, defined by a level of their economic development: the developed market also called a consumer one, an surviving market. There are almost billion consumers in the developed markets, who have an enough spending power to meet the most of higher needs. In the recent 20 years, almost 2 billion people (thanks to a rough acceleration of the globalization process) became consumers in the emerging markets. In these markets meeting basic needs eats up a bigger part of consumers spending power. Almost a half of the humankind live in the surviving markets (3 billion people), where basic needs are not met in the enough level, while higher needs are often not defined socially.

K. Ohmae put attention on the fact the modern competition happens inside such called Triad, consisted of the most economically developed regions of the world: North America (US–Canada–Mexico), West Europe (European Union), and countries of South-East Asia, which are related tightly to each other (trade, finance and cooperation). Over 90% products (goods and service) are and used inside Triad. Chances to developed for countries and regions less developed, so father or nearer peripheries, (for example East Europe) lie in intensification of trade and cooperation with Triad and getting into it. On thesis is based heading Middle-East Europe countries of the region, for getting to European Union. Globalization, in the macroeconomic view, assimilation of market economies of developed and developing countries to one of three models of integrating systems in Triad countries. These are characterized by:

– dominance of the private group property of companies,
– market – competitive mechanism of sources allocation in the international scale – a high level of economic cooperation between their members (international trade, direct investment in international scale. A high level of de regulation of de regulation of financial capital and products markets).

From above, it comes, that, although economic conditions influence an increase of interrelationships between domestic or markets, not all countries and societies are beneficiaries of the global economy. Bringing significant profits to many markets or international regions, in other parts of the world globalization causes conflicts, unsolved problems and threats. Considering important differences between the level of development and internationalization, we can't speak about full globalization of markets. At the present stage of the world economy development, the full global integration seems to be little probable. A. Zorska stresses, that fragmentary and concentrated (geographically and branchy) of globalization leads, first of all to integration of higher developed and better equipped economies. In the general globalization process, about ⅓ world countries are integrated-stronger or weaker. They are countries of Triad and their groups. The next ⅓ of the world countries has little meaning and remaining ⅓ is excluded from these processes. Though, it is not sure, if the first group will increase in the future, while it is very probable, that the third group of countries will stay farther behind the rest. For this is a fact of growing differences in income and in level of economic development in the world. They come from a concentration of activity, which creates a big value in the developed countries, what is characteristic for the globalization process. The process of globalization is not equal in the section of branches, in other words different branches are characterized by

different level of globalization. The globalization in a mezzo attitude is tied mainly with appearing such called global branches. M.E. Porter differs basic kinds of sectors: domestic industries, multidomestic industries and global industries. In the first group we have industries, in which competition is led with a little relation to what happens in other foreign markets. A level of this relation will be higher to domestic ones, (because in miltidomestic industry charts of products can be adapted to expectancies of a group of countries, and in the domestic industry only to a specificity of singular domestic industries). It looks differently in case of the global industries, in which a strategic situation of competitors in the basic regional or domestic markets depends on their general situation in the world scale. (Liberska, 2016).This means, that the global industries demand from companies a coordinated competition in the world scale, because a competitive position of companies in one country is related to a competitive position in other countries vice versa. In the global industries it can be used an effect of profit scale using outlays in some parts of the world to realize profit in other ones. Companies watch their actions in the world and build their own strategies, considering strategies of their competitors. Among the global sectors we can separate industries, which development is shaped free by companies, and industries, in which system of public orders causes a stop of globalization by the state (such called limited global industries). M. Romanowska counts to the global industries, these ones, in which:

- occurs a strong effect of scale and regional diversity of cost,
- it exists a united demand allowing to produce the global product,
- there are not strong political or administrative barriers to get in,
- there are serious competitors from different countries and a wide range of import and export.

The globalization process has many characteristic charts. To them belong: a bulk trade of products and service in the world scale, lively capital turnover in the world scale, transport progress, creation and spread of new technologies (especially informatics and communication systems), a lively migratory movement.

The globalization processes cause big changes in the economy and in the way of society life. It gets to these changes more and more often than it was years ago. It is not easy to adapt to new realities, that is why globalization doesn't involve only the economic area, but also enters to a moral sphere of every man.

3. Positive and negative of globalization – estimation of chances and threats

In discussion on globalization, the biggest differences concern undoubtedly its consequences, chances and threats for the future. In its sets, globalization was to be profitable to everybody, while in fact, it brings different positive and negative effects to various countries and social groups. Variety of its effects means, that, what is a chance to some, it can become a threat to others, and vice versa. In a result, some see in it a serious threat to themselves and to the economic future of the world, especially to equal developing, while others think, that only globalization can assure a stable and balanced development of the whole world economy. This extremity of views comes from a fact, that globalization contains itself a basic contraction, which is going to realization of micro and macroeconomic aims at the same time (Falksota, Jung, 2008). These aims very often exclude each other (for example a permanent expansion, maximization company profit versus a need to protect rare nature sources). It is obvious, that is good to the economy, it is not always good to an average citizen. So, it is impossible to make a clear estimation, not looking at business of particular groups. And even then, opinions are divided. Besides, estimations change very fast, because, when time passes globalization shows its new faces. Of course its opponents stress mainly costa and threats, while enthusiasts see in it only profits and new possibilities, although a number of people with restrained position increases, looking at many negative prognosis and fears (Porter, 1992, p. 270)

For sure, a view, that globalization carries with itself new possibilities to get economic profits, which were not met so far, is right. But it should be remembered, that not all have an equal access to them. For some, both people and whole societies, it is completely shut, that is why, it is said about „winners" and „losers" of globalization. Beneficiaries are mainly transnational corporations, banks and rich countries from Triad, while the losers are farmers, small and medium companies and poor countries, so all these, who don't have a potential to cope with a stiff competition and sources allowing to adapt to challenges of the globalization. However, it doesn't mean, that less developed countries can't join profitably these processes, what prove such called „emerging industries".

To profits got on the company level we can count: maximization of profits with minimalization of costs thanks to a spread of markets in the global scale, development of international specialization and the increase of economic effectiveness, thanks to a competitive pressure and a growth of pos-

sibilities to cooperate and create strategic alliances in the whole world. However these profits concern only a small group of subjects related to international and global business, (Liberska, 2016) so mainly transnational corporations, which use actively new possibilities of free allocation to buy production factors and to find places of sales, thanks to adaptation to challenges of globalization.

However, it is possible to point macroeconomic profits, which the globalization brings both to the economy and the whole society. It is mainly a bigger access and a wider choice of goods and service and their lower price to consumers and a wider access to the capital, technology and informatics for producers. Also, a better work division, by more effective allocation of human, raw material and capital sources, what should lead to the economic growth. Thanks to abolition of trade barriers, globalization is also for favour in foreign investments development and trade in the international scale, what influences an increase of life standard of citizens in many countries, by creation new work places for unqualified work force in poor countries.

However, besides a positive influence on the economic effectiveness in the world scale, globalization brings with itself numerous effects like threats to the countries future and even whole societies, which started growing in the second half of 20th century. It should be stressed, that criticism of the globalization is much louder and common, because of the increase of problems like: poverty, unemployment and social marginalization in the globe scale, which have had only a national range so far. But we should differ the globalization as the process from the global problems, which are often equated with the globalization, and which can, but they don't have to be its effects. The global problems are these development matters and threats, which are characterized by world wide range and the requirement of the global cooperation, having a significant meaning to the international society and to the future of the man. We count here the problem of poverty, hunger in the big part of the world, ecological, demographic problems international debt or the threat of nuclear war. They are secondary effects of the economic development, which get the global range. At the same time, we can set, that their meaning and influence on the world development grows, as a result of the globalization. There are different relations between the globalization and the global problems. The globalization helps to solve some of them, increasing others, at the same time.

There are many currents in a polemic on the globalization, because there is not a consent, what is its superior problem, and therefore what is its biggest challenge. Nevertheless, as the most serious negative results of the glo-

balization, which are a source of the biggest threats for the future, the majority recognize the growing of mass unemployment and poverty, an increase of social-economic disproportions, marginalization of poor and little developed countries, growing instability of the financial markets, which causes financial crisis in the global scale and weakness and questioning national state role in steering the economy process. In the literature there are three currents on the point and effects of the globalization.

There are:

- globalists,
- global sceptics,
- supporters of the global transformation conception.

By globalists, the globalization is a new area and it shapes the modern international relations. The world economy is now more integrated it has ever been. Some of them see in globalization new possibilities, others threats.

For sure, on the list of positive results of the globalization is a free flow of capital, products, service, technology and people. Production and consumption in the world scale cause a decrease of consumption goods. Prices. The globalization is for a favour in a competitiveness promotion, creation new work places and an increase of number of educated people. On the list of threats caused by the globalization we can find, first of all, a growing gap between poorer and richer social group. Critics think, that one global market, production and consumption in the world scale and decrease of cultures, is a huge threat to the humankind and the world economic order. They think, that globalization processes lead to a loss of countries, and this is the main reason of financial crisis, which influence the whole world.

By global sceptics, the globalization is nothing new, and we should speak about father internationalization of the world economy, than about its globalization.

While supports of the global transformation conception think, that present globalization processes differ from the ones in the past. A basic theory of this conception is, that the globalization processes are the main factor causing economic-political changes, and the world.

An analysis of the globalization effects can be seen from an optimistic and pessimistic point of view. The optimistic version stresses, that the globalization allows an increase of effectiveness and productivity levels, so also a growth of life level. Producers have an access to a bigger number of consumers, who have a choice among a huge number of products. For sure, the globalization enables a simpler and faster exchange of information, is in favour of technology progress, it causes a promotion of new countries and

regions, by foreign investments inflow. The globalization process helps an increase of international specialization, enables products, service, capital and people flow. There is a big freedom in the electronic and physical communication between people in the whole world.

The opponents of the globalization think, that it brings a lot of bad things with itself. First of all, a role of the state is limited, traditional social and cultural values disappear, mutual relations of different currencies between each other causes a big threat of crash in the financial market. Less developed countries have a chance in the international competition, so it creates some kind of disproportion between countries in the modern world. Criticism also reaches the international companies, which are too powerful and threaten countries and their societies.

A good example in divagations on the globalization effects can be a thought of Kassangan, who thinks, that it is too late to say if we support the globalization process or not. The globalization became a fact, and this process can't be diverted. The most important is, so that in this process there were more good things than bad ones, and so that whole population of the world, both rich and poor can use its benefits.

However the globalization effects are felt undoubtedly in bigger or smaller way, better or worse. Everything depends on development level of a particular subject. A trial of subjects comparison, which benefit and which lose from globalization, shows table 2.

Table 2. Comparison of subjects benefiting and losing in the globalization process

Subject benefiting from globalization	Subjects losing from globalization
• Countries of Triad	• Weaker, developing countries
• South-East and South Asia	• Africa
• Management and Engineering Personnel	• Workers
• Mobile people	• Immobile people
• Creditors	• Debtors
• Global markets	• Local societies
• Strong countries	• Weak countries
• Qualified people	• Unqualified people
• Public sector workers	• Unqualified people
• Sellers of products technologically advanced	• Private sector workers
• Countries of Triad	• Sellers of agricultural, raw and standard industrial products.

Source: *Międzynarodowe stosunki gospodarcze*, (red.) E. Oziewicz, T. Michałowski, (2013), PWE, Warszawa, p. 304.

Bigger and bigger problem touching developed countries, is an increasing unemployment, caused by relocation production to cheaper work markets in poor countries by transnational corporations. However, much serious reason is technological progress, replacing more and more often a factor of unqualified work with a factor of knowledge and modern technics, because it spreads all over the world, thanks to the globalization. In a result, in all traditional sectors of economy, like agriculture industry and service, technology replaces human work forces, reducing a number of employed and bearing a mass poverty (Falksota, Jung, 2008). Indeed, new sectors of economy open new possibilities and generate new work places, but only to a small group of the best educated and, and in more and more limited range. So the weakest social group with the lowest qualifications – the majority of the society – lose from the globalization. It bears a mass frustration, aggression and social destabilization, which lead to the increase of crime. By J.Rifkin, technological unemployment is a reason of the crime increase in bigger and bigger number of developed and developing countries, what is proved by research showing an alarming correlation between the increase of unemployed number and the crime with violence use. (Rifkin, 2001). He thinks, that creation new chances and social obligations when traditional employment disappear, to millions of people, will be a hot social problem of the present century, It is observed, that a farther increase of technological unemployment, can seriously touch a previous cohesion of the market mechanism shaping income, demand and the whole mechanism of economic development, because, along unemployment there is a decrease of pays and increase of differences in income.

The economic polarization, or disproportions in the income division and marginalization of big social groups, is the following problem, which about the globalization is blamed. Saying shortly, polarization means, that the rich are getting even richer, and the poor much poorer. As a result of rough market activity and a power of transnational corporations, begins to be divided into 20% minority of beneficiaries and 80% majority of marginalized, both in the world scale and particular companies. An increase of disproportions happens both between people, social group, regions and countries, what causes their segregation towards usefulness to the global market. In the result, a part of population unable to cope with the global competition, is pushed off on a social margin, without any chances of promotion. For example, in Brazil 25% of the poorest earn only 2.5% of the national income, while 20% of the richest control almost ⅔ of the gross domestic product. In America today a decrease of pays, permanent decrease of unemployment and growing polarization of the rich and the poor, change some regions into a country of the

dregs. From the economy point of view, the income diversification and creation possibilities to become rich, is profitable because it mobilize people to bigger activity and work effectiveness, what is in favour of economic progress and development. But we can't forget, that too big income differences can lead to a steady diversification of a life start and cause destabilization, break down of the state structures, a growth of pathology, and a stop of economic development speed. We can say, that the globalization influence on social differences is discussable, but undoubtedly this problem is a big threat for the future, and the state must part actively in solving it, taking a new role in redistribution of the made wealth (Budnikowski, 2017, p. 455).

It was reminded many times, that the globalization process goes very unequally, strengthening permanently an economic power of a small number of the richest countries, while it gives very little to the left majority of countries, bringing poor countries to debt, impossible to repay. Permanent increase of development differences of rich and poor countries threatens the marginalization of the latter ones. It is estimated, that in case of continuation of the present processes, they don't have the smallest chances to stop a speed of the increase of the development difference towards the rich countries. A question arises, if this tendency can be turned if not, a fear to touch the world safety, which nowadays is based mainly on the economic safety of countries. A proof, that the globalization works mainly, although not only, for the society goodness of the developed countries, is their share in the global domestic product, which was 80% in 2000, a share of developing countries didn't manage to cross 20%. Such called Asian tigers (Taiwan, Hong Kong etc) are a small group of countries, which managed to use fully the globalization processes, and thanks to it, were promoted to a group of more developed countries, and even to get a success. However, the majority can't cope with the globalization challenges, because they don't have the right assets or not much to offer zykto the global economy. That means a situation, in which many countries and companies don't have common boards of competition. As the result, the word economy is dominated by the small group of transnational corporations and other international companies, which push off a rest of less competitive companies to worse markets or to a role of under producers of transnational corporations. Additionally, rich countries and corporations, because of technical, infrastructural or political disproportions of poor countries, are not interested in investing capitals, or transferring modern technology there, as a lock of right qualifications and experience to use such technology. An example of the country excluded from international trade is almost whole continent of Africa. Moreover, it is predicted, that along

to a lock of new capital inflow, outflow of the native capital to much more attractive place, is an additional threat.

However, by many experts, it is the globalization, what is responsible for a worse situation of the poor countries, but a wrong politics, keeping bad systems corruption and bad institutional adaptations. Especially the protectionism is thought to be responsible for the bad economic situation of these countries. Experts also point, that it is impossible to set, how much these problems are the result of the globalization, and how much they are the consequence of other factors. Whereas, it seems, that only a father globalization can led to gradual decrease, and in the father perspective to equality of development level and improvement of existence conditions of poor regions, but they should be given a free access to the global and to create to join profitably the world economic trade. It is also necessary an amortization of the poorest countries. It is depended a lot on their own economic politics and institutional adaptations. It should be reminded, that in the recent 50 years, the world poverty decreased faster than in the previous 500 years, what can be regarded as the direct effect of the global trade, which is joined by more and more countries, and thanks to it, it is a successful finding many purchasers for native products in other countries. This year's report of the World Bank shows, that the number of the poor decreased in all regions of the world, comparing with recent years only outside Africa, and over half billion people got out of the beggary although, still more than a half of 5.3 billion people in the world live for less than two dollars a day (Report, 2004). A visible economic growth took place in China and India, though, by some, the successes in China are an effect of internal decisions more than results of the globalization.

Among countries, which try to make up the development gap, a group of transforming ones, seem to be in a promising situation. There is Poland and developing quickly countries of the Third World, for which the globalization should create unrepeatable chance for a steady economic development (by the inflow of capital), of course on condition to fulfil necessary requirements by these countries. Although there are also threats, such as dependency on this capital. Besides they are more exposed to the globalization than richer countries.

In elimination economic differences, a big role have transnational corporations, which have the capital, knowledge and although they are detected by their own business, markets where they get in, have many profits of it. There new work places in local branches of these corporations and progress of local producers, forced by competition of transnational corporations. It

is optimistic, that because of international critics and pressure of out governmental organizations, dealing with environmental protection and human rights, corporations have recently changed their politics, they act by social responsibility and take different international regulations, going to elimination of corruption. However, it doesn't change a fact, that their activity needs more regulations and supervision, what can be reached thanks to multilateral cooperation of countries and participation of governmental and out governmental organizations (Symonides, 2004). An improvement of situation I these countries, is depended on acceptance stricter, than so far, law regulations by foreign investors, protecting business of less developed countries. At the same time, it is difficult to expect breaking changes in the situation in these countries in the global processes frames, in the nearest years. These changes would go much more effectively, if the less developed countries had a possibility to join integration groupings, getting this way a help from their richer partners.

The following negative aspect of the globalization and the threat noticed by different circles, is an increase of instability of financial markets. It is commonly accepted, that this is a direct result of the globalization processes, because it is a consequence of total liberalization of money flow. Unlimited freedom of speculative financial capital, which is brought from one country to another one, looking for the best conditions and the highest profits, create a serious crisis threat in the country, which from this capital is suddenly withdrawn. However, it should be reminded, that easiness, which with the capital can flow in the global scale, also brigs non questioned profits, like contribution to general economic development, by investments increasing technological level and productivity. But there are characteristic data, which say. That only 10% of every day financial transactions in the world are held to finance investments or development of industry and trade, while 90% are speculative transaction. Outflow of the sort rem capital goes as a result of decrease of the particular market or general deterioration of conditions, and if it gets serious forms, it becomes a start of the financial crisis in decreasing financial sources of the country. In most cases such crisis goes to the general economic crisis, because the outflow of capital takes soon dramatic character, what touches destructively the whole economy. Unfortunately, it is a growing phenomenon, what showed crisis in Mexico (1994), South–East Asia (1997), Russia (1998) and Brazil (1999). An additional problem is a fact, that, in conditions of integration of economies in the globalization frames, the financial crisis of one country immediately touches other markets of the world, causing often dangerous effects to them. Unfortunately, the poor countries, which

have less developed economy and emerging markets feel these results very painfully. At the same time, they are put at the risk of the financial crisis, as there is a big inflow and outflow of capital in their area. Whereas, there is not a support from international institutions or mechanisms to countries, which are not able to prevent themselves from crisis. So, the main problem is, that international regulations do not cope with the globalization of financial markets. What means a lack of control over the short term capital flows. This political delay concerns also the world economy globalization. That is why, facing as serious threats as financial crisis, which cause destabilization and increase of uncertainty in the world economy, threatening the global crisis (as an effect), it seems necessary to lead the right institutional protection, including creation new institutions, protecting from results of the financial panic. So far, a speed of the capital market globalization exceeded possibilities to create, by governments necessary mechanisms of stabilization in law regulations or cooperative agreements, which would prevent abuse and perturbations in the market. It touches a problem, which is discussed widely, that facing the modern dynamic of the world changes, instruments of the world management, are definitely too less developed. In the result of the globalization process, countries lose their previous power in control and influence the economy, as they had to submit to rules in the global markets, what their independence, in the fight to get investors and the outside capital. They are not pre pared enough to prevent effectively the social consequences of the globalization process.

Conclusion

Undoubtedly, the globalization can mean both potential profits and new chances, but on the other hand, it can cause serious threats and huge challenges. A direction of its development and prevention from its negative results, depend on possibilities to influence this process by particular countries and groupings, including societies. It is obvious, that the present shape of the globalization bears unjustice, increases inequalities and threats, so it must be corrected to a common favour. A question rises, if, facing the decrease of national countries influence on the global market mechanism and a lack of other power controlling the global market (what some recognize the real threat to democracy), steering the globalization is possible? An answer seems to be positive, however, strengthen of multilateral cooperation between countries and their common efforts to influence factors shaping this process, is necessary. First of all, a coordination of the global politics is

needed, by creation institutions, which would deal with regulations of particular matters and setting norms, as well as controlling their obedience in the whole world scale, what would lead to increase of the rules clearance. And the taken standard must come from regulations and international agreements. It is important, first of all, in the financial markets work. So, a new system of rules is needed, letting the international supervision over the global economy work, adapted to the new reality and considering the regional commercial blocs, because the present processes and mechanism, steering the international environment, are inadequate to the modern needs. For sure, it is not possible to nivelate some results of the globalization, but they can be weakened, thanks to common efforts.

The fact, if the particular country gest profits or have losses, is depended on its possibility to adapt to the requirements of the new economy, what is decided by a quality of economic politics, which by B. J. Barber, the best prepared structure to fight against the abuse and excesses of the free market (Barber, 2004).

In the globalization shaping, a big role also has a private sector, especially transnational corporations, which must accept their social responsibility, engaging actively themselves to prevent different kinds of crisis and social problems. Promotion of temporary business and maximization of short term profits, which are characteristic to the present globalization phase, should not cover the priority, which is to solve the most essential social and economic questions. It is optimistic, that, even the most heated supporters of the globalization, notice the need of the present tendencies changes and they start encouraging to actions in this direction. It is proved by speeches on the Economic Forum in Davos about a necessity to start the process of the globalization of certain and etical rules, and about the fact, that the economy must start to serve the society, not on the contrary.

So, by reasonable use of chances by individuals and whole countries adapting effectively their politics to challenges and requirements of the globalization and by the right shaping of the globalization mechanisms and creation regulations protecting them from its negative results (on the over national level, thanks to the common will of the richest countries), the globalization can become a source of numerous profits to the majority countries, including the poorest ones. However, everything is depended on those, who must consider in their activities not only their own business, but also good of others. In the opposite case, in the long term perspective, all can lose.

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Tadeusz Dyr[1], Karolina Ziółkowska[2]

THE INTELLECTUAL CAPITAL AS THE REGIONS' COMPETITIVENESS FACTOR

Theories of the regional development show that the intellectual capital is an important factor of the regions competitiveness. The main aim of the article is an evaluation of variation of factors determining the intellectual capital level of Polish regions. The paper has been shown that there is a statistically significant relation between the level of economic development of Polish regions, and factors determining the value of intellectual capital.

JEL Classification Codes: **O35, C15**.

Keywords: region, intellectual capital, econometric model.

Introduction

Knowledge, as the strategic resource, nowadays becomes a base of functioning not only individual enterprises, but also entire economies. In the economic terms it is treated both as the economic goods, as well as the main factor of the economic development (Figurska, Wiśniewski, 2009, p. 130). Its wide application leads to building the concept of the knowledge-based economy (GOW), i.e. economy, in which the knowledge is treated as the factor creating the production structure and the economic progress at an advanced stage of social-economic development (Skrzypek, 2008, p. 162). It is distinguished by specific characteristics like singling her out the changeability of closer and wider environment, the need of learning and knowledge, the

[1] Associate Professor, Ph.D., K. Pulaski University of Technology and Humanities in Radom, Faculty of Economic and Legal Sciences.

[2] Assistant Professor, Ph.D., University of Social Sciences in Lodz.

need of transformation of the industrial society into the information one, dependence of the ability to survive by organization regarding the access to the information, its efficient processing and adaptation to changes. It is also necessary to look globaly at economy , market, environmental protection and notice the growing roll of immaterial resources, like knowledge, intellectual capital and information (Skrzypek, 2009, p. 40).

The economy based on knowledge concept is of particular importance due to create the regions' competitiveness. Regions with the low level of development are characterized by deficit of people with knowledge and investment abilities. The underdeveloped human capital is strongly is closely associated and dependent on place of residence, while well educated people present greater mobility. Consequently, there is an outflow of well qualified employees from the low competitiveness regions to the high competitiveness regions (Figurska, Wiśniewski, 2009, p. 131). It is crucial factor of the regional divergence. Underdeveloped regions remain the place of the production location, exploiting basic resources. Well-developed regions with increasing speed collecting and creating new knowledge, implement innovations and improve their competitiveness.

With time the knowledge becomes widely available. Keeping the high regions' competitiveness it needed to be further renovating and replacing by new one. Moreover, it entails the need to permanent incur the expenditure, for which it is hard to determine the cost-effectiveness and expected return rate. Not-applied knowledge has no value, and the inappropriate knowledge (outdated or badly applied) can bring losses (Makulska, 2012, p. 179). Regions with the high level of development have a greater investment opportunity into the knowledge and are willing to accept the greater risk of loss-making investments.

Considering presented premises, as an explicit objective of the article an evaluation of variation of factors determining the intellectual capital level of Polish regions was accepted. To achieve that objective the following research hypotheses were adopted:

H1: Regions in Poland are characterized by high diversity of factors determining the value of intellectual capital.

H2: There is a statistically significant relation between the level of economic development of Polish regions, and factors determining the value of intellectual capital.

For the verification of formulated hypotheses an econometric model with use of the rates informational capacities method (Hellwig method) was constructed (Hellwig, 1968). This method enables constructing the synthetic

index according to a fragmentary variables diagnostic, reflecting various aspects of analysed facets (Dyr, Ziółkowska, 2014).

1. Methodological Evaluation of Intelectual Capital

Next stages of the analysis included:
- creating the preliminary list of diagnostic denominators,
- creating the final set of diagnostic denominators,
- standardization of diagnostic denominators,
- calculating taxonomical indexes.

The preliminary list of diagnostic denominators included all indicators, available in public statistics, referring to various aspects of the regions' intellectual capital in Poland. In creating the final set of diagnostic indicators based on this list, variables – characterized by a relatively high diversity – were selected. Variables were determined according to the classical variation coefficient. They assumed that weak diagnostic properties are those denominators, for which the classical variation coefficient based on the standard deviation, is smaller than the threshold value of 10%. As a result of the elimination of unimportant indicators – for which the variation coefficient was smaller than 10% – a final set of diagnostic indicators was received. It is a base for the further analysis, and a basis for the calculation for every variable of the synthetic index.

The diagnostic variable set of the region's intellectual capital evaluation is described in Table 1. The variables' values were assumed according to data collected under the public statistics and disclosed by the Central Statistical Office. Accepting such a source ensured the comparability of statistical data and their relatively high credibility. A quality system existing in GUS guarantees these statistical denominators.

The necessary condition to set the synthetic index of the regions' competitiveness and their economic infrastructure equipment correctly is their denominators standardization, in which the variables will be comparable and their character standardized – by transforming de-stimulants into stimulants (Grabiński, Wydymus, Zeliaś, 1989, p. 27).

Table 1. Intellectual Capital Evaluation Indexes

Taxonomical Index		Diagnostic Variables		
Symbol	Name	Symbol	Name	Type
x_1	Learning languages	$x_{1.1}$	Participation of primary school students learning additional foreign language [%]	stimulant
		$x_{1.2}$	Participation of gymnasium students learning additional foreign language [%]	stimulant
		$x_{1.3}$	Participation of high school students learning additional foreign language [%]	stimulant
x_2	Attractiveness of education system	$x_{2.1}$	Graduates of higher education institutions per 10,000 inhabitants	stimulant
		$x_{2.2}$	Participation of students on natural and technical faculties	stimulant
		$x_{2.3}$	Number of students per 10,000 inhabitants	stimulant
		$x_{2.4}$	Number of PhD students per 10,000 inhabitants	stimulant
		$x_{2.5}$	Participation of foreign students learning in Poland	stimulant
x_3	The R & D & I activities	$x_{3.1}$	Intramural expenditures for research and development per 1 inhabitant	stimulant
		$x_{3.2}$	Intramural expenditures for research and development in relation to GDP [%]	stimulant
		$x_{3.3}$	Participation of people employed in R+B activity in working population [%]	stimulant
		$x_{3.4}$	The expenditures of innovation activities in companies in relation to GDP [%]	stimulant
		$x_{3.5}$	The share of net revenues from sales of innovation products in total net sales revenue [%]	stimulant

Source: Own study.

In the regions' intellectual capital evaluation, the denominators standardization was done by conducting the standardization *j*-th variable in *i*-th region. The calculations were done using following formulas:

➢ for stimulants:

$$t_{ij} = \frac{x_{ij} - \bar{x}}{S_j}$$

➢ for de-stimulants:

$$t_{ij} = -\frac{x_{ij} - \bar{x}}{S_j}$$

where:

t_{ij} – standardized value of *j*-th index in *i*-th subdivision,

x_{ij} – value of *j*-th denominator in *i*-th subdivision,
$\bar{x}$ – the arithmetic mean of *j* – denominator value,
S_j – standard deviation in x_j denominator distribution.

Using the final set of diagnostic indicators after the standardization, values of Hellwig taxonomical indexes of development were calculated for each region, i.e. synthetic indexed were calculated for each of distinguished variables and fragmentary indexes – for aspects distinguished under individual areas.

In the Hellwig method, according to the matrix of standardized variables, a model object of following coordinates was set:

$$O = \left[x_{0j}\right]$$

where:
$x_{0j} = max_i \{t_{ij}\}$ – for stimulants,
t_{ij} – standardized value of *j*-th index in *i*-th subdivision.

Calculating the synthetic index of the regions competitiveness only the formula for stimulants was used, because amongst the denominators admitted to the evaluation there weren't any de-stimulants.

The next step was to set the Euclidean distance from the model object:

$$d_{i0} = \sqrt{\sum_{j=1}^{m}\left(t_{ij} - x_{0j}\right)^2}$$

where:
d_{i0} – Euclidean distance between *i*-th and the model object,
t_{ij} – standardized value of *j*-th index in *i*-th subdivision,
$i = 1, 2, ..., n$,
$j = 1, 2, ..., m$,

Considering presented assumptions it is possible to calculate the synthetic index from the following formula:

$$S_i = 1 - \frac{d_{i0}}{d_0}$$

where:
d_{i0} – Euclidean distance between *i*-th and the model object,
d_0 – the unit critical distance from the model:

$$d_0 = \bar{d}_{i0} + 2 \cdot S_0$$

$\bar{d}_{i0}$ – arithmetic mean of taxonomical distances between the object *i*-th and the model object:

$$\overline{d}_0 = \frac{1}{n} \cdot \sum_{i=1}^{n} d_{i0}$$

S_0 – standard deviation of taxonomical distances between *i*-th and the model object:

$$S_0 = \sqrt{\frac{1}{n} \cdot \sum_{i=1}^{n} \left(d_{i0} - \overline{d}_0\right)^2}$$

In the above model, the synthetic index of the regions competitiveness and their equipping with the economic infrastructure the Si assumes values from the period [0; 1]. Maximum value of the S_i index (1) reflects the so-called model, i.e. the region, in which all analysed variables accept the maximum values. In the adopted method, along with increasing the value of the synthetic index, both the region's competitiveness or a level of equipping it with the infrastructure also increase. Differences between indexes show a distance in the development of individual regions.

Using the three averages method a classification of regions according to value of competitiveness synthetic index was presented. This method enables the division of regions into 4 groups. In this procedure:

- regions were arranged according to decreasing value of the competitiveness measures,
- the arithmetic average m of value of the competitiveness measures was calculated,
- for regions, for which competitiveness measures were greater than the calculated average *m*, the m_1 average was calculated,
- for regions, for which competitiveness measures were lower than the calculated average *m*, the m_2 average was calculated.

Calculated values of *m*, m_1 and m_2 made it possible to divide the regions into 4 groups:

- **group I**– regions with the high level of competitiveness, for which the synthetic index is $S_i \geq m_1$,
- **group II** – regions with the middle level of competitiveness, for which the synthetic index is between: $m \leq S_i < m_1$,
- **group III** – regions with the low level of competitiveness, for which the synthetic index is between: $m_2 < S_i < m$,
- **group IV** – regions with the very low level of competitiveness, for which the synthetic index is between $S_i \leq m_2$.

2. Learning foreign languages

Linguistic abilities in times of economy globalisation gain become increasingly important, because they are contributing factor of the occupational mobility, the international movement of people and capital of the access to knowledge. An education of foreign languages at school where children and teenagers are acquiring basic language skills is particularly important. The current educational system assumes teaching one foreign language at primary schools and two foreign languages at secondary schools. Assessing spatial diversity of the amount of intellectual and social capital in the linguistic competence area, diagnostic variables presenting the participation of primary school, secondary school and post-secondary school pupils who learn foreign language as additional one (apart from the school duty) were accepted . These values were calculated as the average from years 2011–2015. Accepting the average value allows for eliminating short-term hesitations of teaching, not-reflecting real trends. Value of diagnostic variables and algorithm of calculating the synthetic taxonomical index reflecting the region's competitiveness in studied area was presented in table 2.

On each teaching level there is a wide diversity of participation of children and teenagers who undertake learning additional foreign language. On the primary school level greater participation of children learning additional foreign language is in Opole region. At subsequent education levels in this region participation of young people learning additional language is the lowest.

Gymnasium pupils most willingly learn additional foreign language. However, since September 1st, 2009 after the introduction of the mandatory second foreign language at gymnasiums (DzU 2009, nr 4, poz. 17) this participation was reduced considerably, although it is still much higher than at primary and secondary schools. In 2015 almost 15% gymnasium pupils were learning additional foreign language. At primary schools this percentage amounted 7.8% and at secondary schools 5%.

Table 2. Calculating the Taxonomical Index of *Learning Foreign Language (x_1)*, as the factor determining the value of intellectual capital

Region	Variable Value			Standardized Variable Value			Euclidean Distance	Synthetic Index
	$x_{1.1}$	$x_{1.2}$	$x_{1.3}$	$t_{1.1}$	$t_{1.2}$	$t_{1.3}$	$d_{1.0}$	S_1
Dolnośląski	13.94	18.55	4.94	1.25	0.56	-0.16	1.93	**0.62**
Kujawsko-Pomorski	9.22	18.12	2.37	-0.47	0.41	-1.65	3.80	**0.24**
Lubelski	12.44	15.59	6.36	0.70	-0.48	0.67	2.22	**0.56**
Lubuski	12.22	17.03	4.64	0.62	0.02	-0.34	2.47	**0.51**
Łódzki	10.47	21.14	6.80	-0.02	1.47	0.92	1.46	**0.71**
Małopolski	6.80	16.63	5.64	-1.36	-0.12	0.24	3.36	**0.33**
Mazowiecki	11.23	20.61	7.44	0.26	1.28	1.29	1.09	**0.78**
Opolski	14.09	10.19	2.60	1.31	-2.38	-1.51	4.92	**0.02**
Podkarpacki	9.49	16.64	7.88	-0.37	-0.11	1.54	2.31	**0.54**
Podlaski	11.48	16.35	6.73	0.35	-0.22	0.88	2.05	**0.59**
Pomorski	10.19	12.72	4.00	-0.12	-1.49	-0.70	3.98	**0.21**
Śląski	5.59	14.66	5.87	-1.80	-0.81	0.38	4.03	**0.20**
Świętokrzyski	9.56	18.59	6.43	-0.35	0.57	0.70	2.06	**0.59**
Warmińsko-Mazurski	5.49	15.97	4.65	-1.83	-0.35	-0.33	4.09	**0.19**
Wielkopolski	12.49	19.68	4.50	0.72	0.96	-0.42	2.11	**0.58**
Zachodniopomorski	13.48	18.92	2.59	1.08	0.69	-1.52	3.17	**0.37**
Arithmetic Mean	10.51	16.96	5.21	0.00	0.00	0.00	2.82	**0.44**
Standard Deviation	2.74	2.84	1.73	1.00	1.00	1.00	1.10	**0.22**
Variation Coefficient	26%	17%	33%	–	–	–	39%	**50%**
Max	14.09	21.14	7.88	1.31	1.47	1.54	4.92	**0.78**
Min	5.49	10.19	2.37	-1.83	-2.38	-1.65	1.09	**0.02**

Source: Own study, based on GUS data.

To the group of regions with the highest synthetic index of competitiveness according to the criterion of learning foreign languages are Mazovian, Łódź and Lower Silesia provinces (fig. 1). In Mazovian and Łódź regions participation of children and teenagers learning additional foreign language is on each level higher than the average in Poland. In the Lower Silesia region the high value of the synthetic index was obtained thanks to the greater participation of children and teenagers learning additional language at primary schools and gymnasiums. At secondary schools this participation is a little bit lower than the average in Poland.

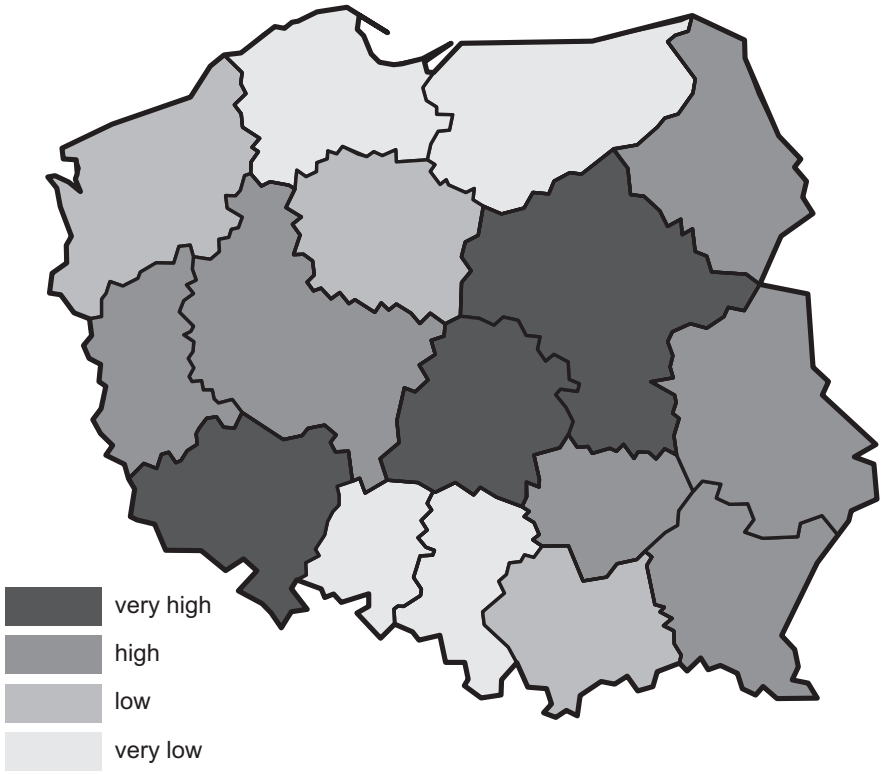

Figure 1. Spatial diversity of Taxonomical Index of *Learning Foreign Language* (x_1), as the factor determining the value of intellectual capital

Source: Own study.

The lowest synthetic index value was in Opole region. In the region, as mentioned above, there is the highest participation of children learning additional foreign language at primary schools. In gymnasiums this participation is twice lower than the average in Poland, and in secondary schools even triple lower. As a consequence the synthetic index amounts only 0,02 and locates the Opole region close to the anti-model of competitiveness.

3. Attractiveness of education system

In creating the intellectual capital, being a factor of regions' competitiveness, a level of education and participation in educational processes is very important. Skills upgrading is has a primary importance for economy growth and improvement of EU competitiveness, as well as creating new, attractive

workplaces, ability to adapt to changes and reduce developmental disproportions. (COM(2008) 868). Value of diagnostic variables and algorithm of calculating the synthetic taxonomical index reflecting the region's attractiveness of education system in studied area was presented in table 3.

Table 3. Calculating the Taxonomical Index of *Attractiveness of education system (x_2)*, as the factor determining the value of intellectual capital

Region	Variable Value					Standardized Variable Value					Euclidean Distance	Synthetic Index
	$x_{2.1}$	$x_{2.2}$	$x_{2.3}$	$x_{2.4}$	$x_{2.5}$	$t_{2.1}$	$t_{2.2}$	$t_{2.3}$	$t_{2.4}$	$t_{2.5}$	$d_{2.0}$	S_2
Dolnośląski	145.60	69.17	1.02	7.14	122.1	0.21	1.05	1.05	0.68	-3.75	5.35	**0.31**
Kujawsko-Pomorski	116.09	59.64	1.79	8.02	15.1	-0.17	0.10	-0.37	0.00	0.24	4.88	**0.37**
Lubelski	85.17	46.18	2.01	8.64	14.7	-0.58	-1.25	-0.78	-0.48	0.26	6.12	**0.21**
Lubuski	72.78	64.96	1.62	8.51	15.1	-0.74	0.63	-0.06	-0.38	0.24	5.18	**0.33**
Łódzki	136.87	63.08	1.11	6.11	14.0	0.10	0.44	0.88	1.47	0.28	3.58	**0.54**
Małopolski	222.13	48.48	1.60	7.54	15.7	1.22	-1.02	-0.04	0.37	0.22	4.34	**0.44**
Mazowiecki	150.43	64.28	0.57	5.24	15.7	0.28	0.56	1.87	2.13	0.22	3.17	**0.59**
Opolski	105.82	51.92	1.54	9.12	13.1	-0.31	-0.67	0.09	-0.84	0.31	5.52	**0.29**
Podkarpacki	119.22	41.25	2.46	10.03	15.2	-0.13	-1.74	-1.62	-1.54	0.24	7.04	**0.09**
Podlaski	58.89	60.56	2.25	9.57	14.3	-0.92	0.19	-1.23	-1.19	0.27	6.34	**0.18**
Pomorski	126.03	64.42	1.24	7.24	16.3	-0.04	0.58	0.63	0.60	0.20	3.98	**0.49**
Śląski	370.62	77.13	0.83	7.23	14.1	3.17	1.85	1.40	0.61	0.28	1.59	**0.79**
Świętokrzyski	107.35	44.64	2.04	8.59	13.8	-0.29	-1.40	-0.84	-0.44	0.29	6.04	**0.22**
Warmińsko-Mazurski	59.56	59.07	2.19	9.67	15.4	-0.91	0.04	-1.12	-1.27	0.23	6.36	**0.18**
Wielkopolski	116.52	54.87	1.31	7.36	16.1	-0.17	-0.38	0.50	0.51	0.21	4.54	**0.41**
Zachodniopomorski	74.72	68.56	1.78	8.30	14.4	-0.72	0.99	-0.36	-0.22	0.27	5.13	**0.34**
Arithmetic Mean	129.24	58.64	1.58	8.02	21.57	0.00	0.00	0.00	0.00	0.00	4.95	**0.36**
Standard Deviation	76.18	9.99	0.54	1.30	26.82	1.00	1.00	1.00	1.00	1.00	1.40	**0.18**
Variation Coefficient	59%	17%	34%	16%	124%	–	–	–	–	–	28%	**50%**
Max	370.6	77.1	2.5	10.0	122.1	3.17	1.85	1.87	2.13	0.31	7.04	**0.79**
Min	145.6	69.2	1.0	7.1	122.1	0.21	1.05	1.05	0.68	-3.75	5.35	**0.31**

Source: Own study, based on GUS data.

The crucial factors of attraction of educational system evaluation are measures reflecting the schooling rate and results from gymnasium examination and possibility of maturity examinations. Their spatial diversity level is very low. In this situation one concentrated on the indicators concerning the participation in educational processes at higher education level. Identified diagnostic variables were accepted, as average values from years 2010–2015.

In 2015 in Poland there were 103 graduates per 10 000 inhabitants. In recent years this number has been systematically diminishing. In relation to the maximum value it reduced by 20%. This fall is undeniable related to negative demographic trends. The declining number of young people causes, that less and less people undertake higher education. It is reflected in the number of students. The ratio of students per 10 000 inhabitants has dropped from 472 in 2010 to 365 in 2015, i.e. by 28%. The biggest decrease is observed in the Świętokrzyski region (40%), and the smallest in Pomeranian (12.1%).

Poles more and more willingly undertake PhD studies. The number of participants of these studies has been systematically increasing. The rate of the number of doctoral students per 10 000 inhabitants has increased from 9.5 in 2010 to 11.2 in 2015, i.e. by 17.7%. The most doctoral students per 10 000 inhabitants were in 2015 in the Mazovian region (20.3), the least in Podkarpacki region (2.7). The positive trend in the higher education is also a rise of students on technical and natural faculties. It has increased from 23.1% in 2010 to 29.8% in 2015, i.e. about 6.7 %.

Polish colleges more and more willingly are chosen by foreigners. Their participation in the total number of students has increased from 1.2% in 2010 to 4% in 2015, i.e. about 2.8 %. Relatively many foreigners study in colleges in regions of Eastern Poland. These colleges actively acquire students from Eastern Europe, for whom undertaking studies in Poland is a chance to receive a diploma in one of the European Union member states.

Based on identified diagnostic variables of attractiveness of education system, the competitiveness' synthetic indexes were calculated. Their spatial diversity was described graphically in figure 2.

Regions competitiveness' synthetic index calculated based on variables characterized the attractiveness of educational system, achieved values from 0.04 to 0.70, in which for most regions didn't cross 0.6.

The highest value of regions competitiveness' synthetic index calculated based on variables characterized the attractiveness of educational system, achieved Małopolska region (0,70). Lower values of the index had Low Silesian (0,64) and Mazowieckie (0,62) regions. In these regions definitely higher are indicators of the number of graduates, students and doctoral students per 10 000 inhabitants. Moreover in Małopolska and Lower Silesia regions the participation of students on technical and natural faculties is about 4% higher than in the next region (Pomeranian -28.87%).

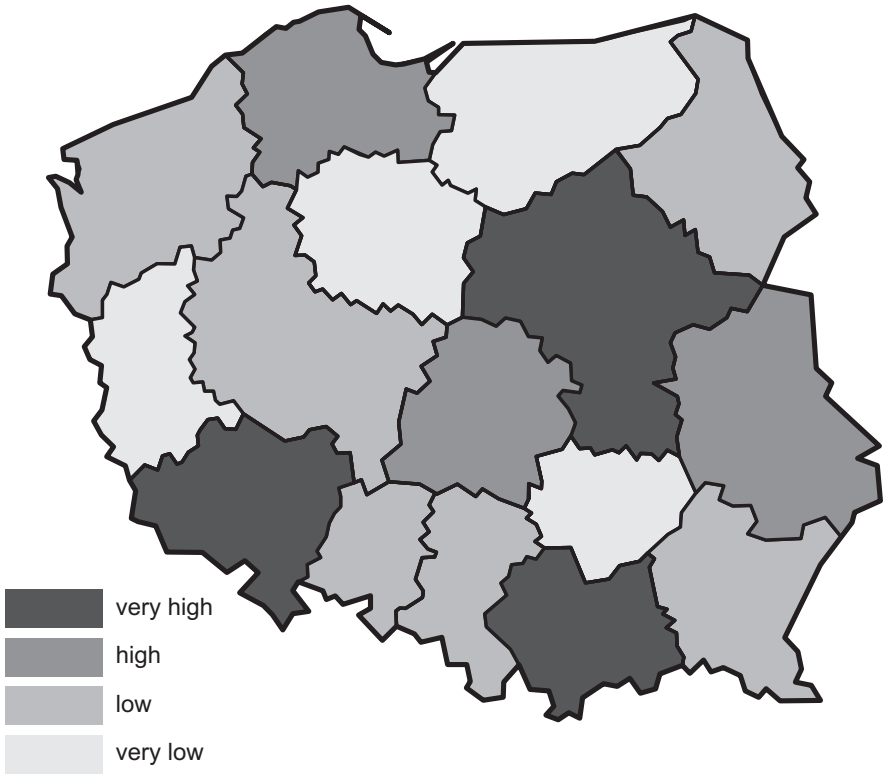

Figure 2. Spatial diversity of Taxonomical Index of *Attractiveness of education system* (x_2), as the factor determining the value of intellectual capital

Source: Own study.

The high level of competitiveness according to the criterion of attractiveness of educational system got the Lublin region. This region is a determined leader in the education of foreigners. In terms of the number of graduates, students and doctoral students indicator is second only to three regions about the highest level of the taxonomical measure according to this criterion.

4. The R & D & I activities

B+R activity includes systematically conducted creative works, taken in order to increase the stock of knowledge and its application. Seen from this angle this activity is an important factor of region's innovation, influencing its competitiveness.

Region's innovatio, identified usually with the economy innovation (Skonieczny, Świda, 2008, p. 602–609), a derivative of business entities' innovations, research sector, human and social capital, innovative policy (Feltynowski, Nowakowska, 2009, p. 11–12). It reflects the ability of the region to implement changes, reforms, novel solutions in different fields of the social-economic life and the possibility to improve mechanisms of its development (Chądzyński, Nowakowska, Przygodzki, 2007, p. 144). From such a perspective this concept refers to the innovation of J. Schumpetera (Schumpeter, 1960), in which the innovation is identified with the practical application of new solutions, generating economic positive effects (Niedzielski, Rychlik, 2006, s. 19; Niedzielski, 2013, p. 18–26). Value of diagnostic variables and algorithm of calculating the synthetic taxonomical index reflecting the region's R+D+I activity in studied area was presented in table 4.

Table 4. Calculating the Taxonomical Index of *R+D+I activity* (x_3), as the factor determining the value of intellectual capital

Region	Variable Value					Standardized Variable Value					Euclidean Distance	Synthetic Index
	$x_{3.1}$	$x_{3.2}$	$x_{3.3}$	$x_{3.4}$	$x_{3.5}$	$t_{3.1}$	$t_{3.2}$	$t_{3.3}$	$t_{3.4}$	$t_{3.5}$	$d_{3.0}$	S_3
Dolnośląski	441.2	0.74	0.99	2.49	14.97	0.29	0.04	0.65	0.78	1.48	3.99	**0.52**
Kujawsko-Pomorski	174.6	0.34	0.54	1.66	10.57	-0.61	-0.82	-0.57	-0.06	0.50	5.99	**0.28**
Lubelski	342.4	1.03	0.67	0.96	5.57	-0.04	0.67	-0.22	-0.78	-0.62	5.65	**0.32**
Lubuski	87.7	0.18	0.26	0.74	4.65	-0.91	-1.17	-1.33	-1.00	-0.83	7.44	**0.11**
Łódzki	294.0	0.67	0.65	3.27	7.71	-0.21	-0.11	-0.27	1.57	-0.14	5.22	**0.38**
Małopolski	628.5	1.38	1.45	1.58	9.45	0.92	1.43	1.91	-0.14	0.25	3.63	**0.57**
Mazowiecki	1 300.6	1.70	1.47	3.28	5.01	3.19	2.12	1.96	1.59	-0.75	2.99	**0.64**
Opolski	121.3	0.34	0.42	0.74	5.28	-0.79	-0.82	-0.90	-1.00	-0.69	6.99	**0.16**
Podkarpacki	427.2	1.38	0.88	3.44	8.32	0.24	1.43	0.36	1.75	-0.01	4.10	**0.51**
Podlaski	252.6	0.60	0.58	0.70	4.27	-0.35	-0.26	-0.46	-1.04	-0.91	6.46	**0.23**
Pomorski	501.6	1.05	0.88	1.96	18.34	0.49	0.72	0.36	0.24	2.24	3.76	**0.55**
Śląski	295.4	0.57	0.75	1.97	10.93	-0.20	-0.32	0.00	0.25	0.58	5.13	**0.38**
Świętokrzyski	207.1	0.34	0.25	0.60	4.32	-0.50	-0.82	-1.36	-1.14	-0.90	7.18	**0.14**
Warmińsko-Mazurski	107.0	0.27	0.43	0.67	3.60	-0.84	-0.97	-0.87	-1.07	-1.06	7.26	**0.13**
Wielkopolski	378.6	0.64	1.11	1.89	14.62	0.08	-0.17	0.98	0.17	1.40	4.37	**0.48**
Zachodniopomorski	129.8	0.28	0.66	1.61	5.98	-0.76	-0.95	-0.24	-0.11	-0.53	6.41	**0.23**
Arithmetic Mean	355.6	0.72	0.75	1.72	8.35	0.00	0.00	0.00	0.00	0.00	5.41	**0.35**
Standard Deviation	296.0	0.46	0.37	0.98	4.47	1.00	1.00	1.00	1.00	1.00	1.47	**0.18**
Variation Coefficient	83%	64%	49%	57%	53%	–	–	–	–	–	27%	**50%**
Max	1 300.6	1.70	1.47	3.44	18.34	3.19	2.12	1.96	1.75	2.24	7.44	**0.64**
Min	87.7	0.18	0.25	0.60	3.60	-0.91	-1.17	-1.36	-1.14	-1.06	2.99	**0.11**

Source: Own study, based on GUS data.

The internal expenditure on B+R includes the expenditure incurred in reporting year for B+R works performed in the reporting unit, irrespectively of the source of resources. They constitute the amount of running expenses and investments on fixed assets associated with B+R activity. Values of this expenditure were referred to 1 resident of the region and the region's GDP in current prices. This last indicator is presented with the annual delay (accessible latest data are from 2014).

In 2015 the average capital costs of B+R per 1 resident amounted 469.7 PLN. In the Mazovian region the amount of the B+R expenditure per 1 resident was almost three times higher than the average in Poland and twice higher than in second Małopolska region.

The the average capital costs of B+R per 1 resident increased from 270.4 PLN in 2010 to 469.7 PLN in 2015, i.e. by 74%. A Warmian-Mazurian region was the only region, in which the value capital costs decreased. In this region the expenditure per 1 resident dropped from 119.5 PLN in 2010 to 107.0 PLN in 2015, i.e. by 10% (the largest expenditures in this region were carried in 2012 – 146.1 PLN/ 1 resident).

Together with the increase of expenditure level for B+R goes increase of their participation GDP. However this share is still low. In 2014 it amounted on average to 0.94%. The maximum value of this indicator was presented in Mazovian (1.70%), Lesser Poland (1.38%) and Podkarpacki (1.38%) regions.

In 2015 average share of employed in B+R activity among the professionally active population amounted 0.90%. In 2010–2015 it increased of about 0.14 %. An increase in employment was recorded in 15 regions. Only in Łódź region, in spite of an increase in expenditure and employment, participation of employed in B+R sector slightly decreased (increase in the number of people professionally active was higher than employments in the B+R sector).

The participation of expenses for innovative activity in the relation to GDP is characterized by the highest level of the diversity. Trends of changes of these expenses in the time have various directions. In some years there is an increase, in other slight decline. The average share is on 2.2% level, but differences in next years don't exceed 0.2%. Podkarpacki region, in which into the participation of the expenditure on the innovative activity in the relation to GDP increased from 1.82% in 2010 up to 3.44% in 2015 i.e. 1.62 % is an exception. In 2015 this region reached the highest level of participation of the expenditure on the innovative activity in relation to GDP.

Changes in the expenditure on the innovative activity are reflected in the sale of innovative products. In 2015 average participation of net income from sales of innovative products in total net sales in 2010–2015 amounted

9.4%. The highest share was noted in the Pomeranian region (29.2%). It was over three times higher than Polish average and over twice higher than in second in terms of this measure Greater Poland region.

Based on identified diagnostic variables of R+D+I activity, the competitiveness' synthetic indexes were calculated. Their spatial diversity was described graphically in picture 3.

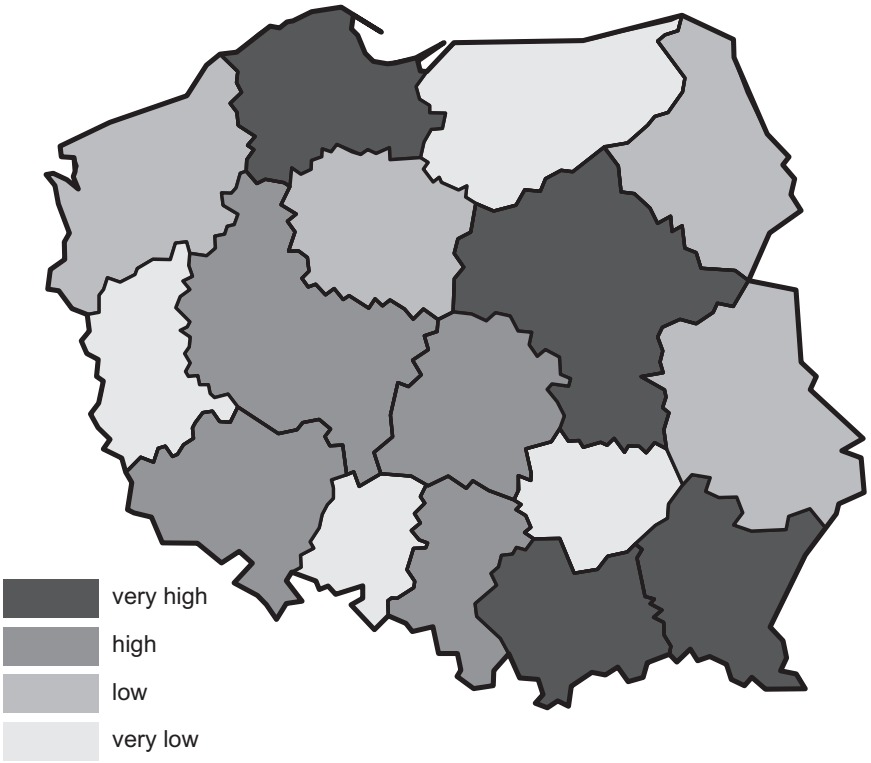

Figure 3. Spatial Spatial diversity of Taxonomical Index of *R+D+I activity* (x_3), as the factor determining the value of intellectual capital

Source: Own study.

Synthetic taxonomical indexes of competitiveness, calculated based on variables which characterise research-developmental and innovative activity, indicate average diversity of competitiveness level. A Pomeranian region achieved the maximum value of this index (0.57), whereas Lubuskie region the lowest (0.10). Relatively high is the distance from the model, as well as the anti-model of the competitiveness. Such a forming of synthetic indexes

results from considerable diversity of diagnostic variables and achieving maximum values of individual variables by various regions.

Conclusions

According to analysed set of diagnostic indicators for every region a synthetic index of competitiveness according to the criterion of the intellectual capital was calculated. Spatial diversity of the regions' competitiveness according to the criterion of the intellectual capital was described in table 5. In the graphical form they were presented in picture 4.

Calculations' results presented in table 5 show that there is a high level of spatial diversity of factors determining the intellectual capital. So that they prove the first research hypothesis.

In order to prove the second research hypothesis a coefficient of correlation between the value of the intellectual capital and the level of the economic development of regions measured with the GDP value per capita in 2005–2015 was calculated. The value of this rate amounts 0.68. It confirms that there is a statistically significant relation between these variations. The highest impact on this relation have factors associated with regions' B&R activity by determining creation of the based on knowledge economy.

Table 5. The synthetic index regions' competitiveness according to the criterion of the *Intellectual capital* in 2015

Region	Competitiveness index	Place in the ranking	Level of Competitiveness
Mazowiecki	0.57	1	Very high
Małopolski	0.50	2	
Dolnośląski	0.50	3	
Pomorski	0.37	4	High
Łódzki	0.34	5	
Lubelski	0.34	6	
Wielkopolski	0.32	7	
Śląski	0.31	8	
Podkarpacki	0.29	9	Low
Podlaski	0.26	10	
Zachodniopomorski	0.23	11	
Opolski	0.20	12	
Kujawsko-Pomorski	0.15	13	Very low
Świętokrzyski	0.15	14	
Lubuski	0.11	15	
Warmińsko-Mazurski	0.04	16	

Source: Own study.

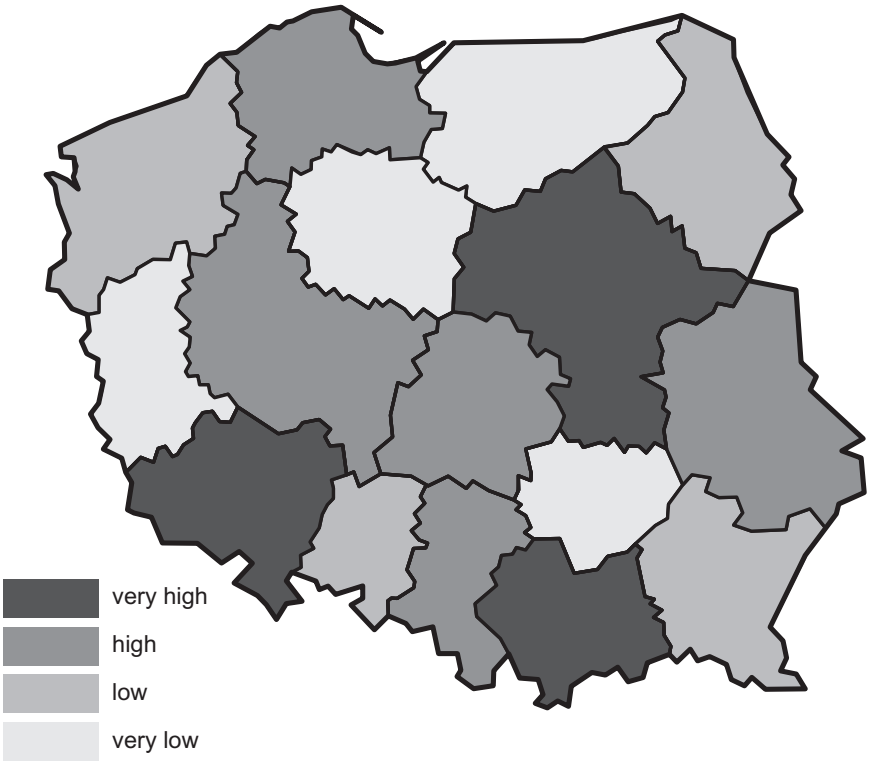

Figure 4. Spatial diversity of the regions' competitiveness according to the criterion of the intellectual capital

Source: Own study.

The relation between the learning of foreign languages and the level of economic development is relatively on the low level. Command of foreign languages, being more and more common, is essential, though insufficient for creating the regions' a competitive advantage.

The main problems include relatively low share of the expenditure on the research and development and innovative activity, low employment in research-developmental and innovative activity companies. Also a participation in sales of innovative products is small. In the economy based on the knowledge the minimum value of the intellectual capital can be an essential barrier of the economic development and negatively influence the competitiveness of Polish regions.

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Ivan Dimitrov[1], Adile Dimitrova[2], Petko Yangyozov[3]

APPROACH OF ASSESSMENT THE PRIORITY OF SUPPLY LOGISTICS SUB-PROCESSES IMPROVEMENT

The aim of this research paper is to present an approach of assessment the priorities for improvements of each supply logistics sub-process in the organization. The ways of comparison of targets sub-processes and their corresponding real sub-processes are explained. Algorithm for calculating of priority of supply logistics sub-process improvement is reviewed. It includes calculating of vector that describes the necessity of sub-process improvement in each measurement as well as determining of aggregate coefficient that represents the need for each supply logistics sub-process optimization in all its measurements.

JEL Classification Codes: L23.

Keywords: ssupply logistics, sub-process, optimization, methodology, priority of improvement, algorithm.

Introduction

The function of each enterprise is to carry out transformation of inputs (raw materials and supplies), through the production factors (buildings, machines, labor), into a product/service designated to satisfy the customer's need (Angelov, 2008). Transformation is related to the running of various business processes (Harmon, 2007), processes (Deckler, 2003; Haist, 2001;

[1] Prof PhD. in „Prof. Dr. Assen Zlatarov" University – Burgas.
[2] Assistant PhD. in „Prof. Dr. Assen Zlatarov" University – Burgas.
[3] Assistant PhD. in „Prof. Dr. Assen Zlatarov" University – Burgas.

Harrington, 1991; Ould, 2006; Lowenthal, 2003) and activities (McDonald, 2010; Portougal, 2006), united in production cycles. Logistics processes are an important part of business processes in the organization divided into three phases – logistics of supply, logistics of production and logistics of distribution (Dimitrov, 2004). In this connection, they can be viewed as specific business processes across the organization. Each phase of the logistics can be further decomposed into several levels in case of expanding of the analysis. Logistics processes crossing through individual units and they are oriented along to the information and materials flow passing through the supply chain (Rosemann, 2006). For improvement of logistics activities in the organization mathematical apparatus that allows the identification and reorganization of the critical elements in logistics processes can be used. The feedback which established customer's satisfaction by logistics service and the amount of logistics costs, provides the necessary signal that starts process of logistics system improving. This signal moves in the opposite direction of the running logistics processes. In order to respond the customer's needs, organizations starts optimization in one or all logistics phases. The optimization should be carried out with the help of methodology in conformity with the company structure, as well as with the strategy chosen.

In order to implement optimization of the supply logistics in the organization, it is necessary to determine whether actual need of improvement exists. The signal is broadcast from the production system of the organization which is supply logistics customer within the overall logistics process.

One way to establish guidelines for improvement is by applying the approach of defining of general necessity of supply logistics improvement. To that end, it is necessary the actual and the desired state of the processes of supply logistics to be presented by vectors – real and target ones. The real vector represents an aggregate of elements, describes all processes and activities building the supply logistics (Brüggemann, 1998). Each element is represented as a partial vector with the relevant coordinates. The coordinates describe the real values of the parameters characterizing various aspects of process effectiveness (Papula, 2001). By summing up the vectors the common (resultant) vector is obtained. The target vector has been built by marking the coordinates of the goal on the coordinate system, the measurements of which are defined by the parameters derived from feedback received from customers. From the initial point of the coordinate system to the point marking the desired improvement a vector is built, called target vector. If comparison between the vector which represent the real process and the vector which represent the target process shows deviation in favor

of the target vector, then it is necessary to perform a thoroughgoing analysis and improvement of the supply logistics process. Otherwise, it is assumed that the parameters of the existing company process of supply logistics are better than the goal set forth; therefore, improvement is not needed. The comparison between coordinates of both vectors enables the determination of the overall necessity of improvement as well the necessity of sub-process improvement for supply logistics' process. Furthermore, it can be assessment the necessity of improvement of each sub-process, which builds up the entire supply logistics process through calculating their efficiency beside the target goal. In order to achieve overall and sustainable improvements, it is necessary optimization to pass sequential the following steps:

- assessment of the overall necessity of supply logistics improvement;
- assessment of the necessity of sub-process improvement;
- assessment of the priority of sub-process improvement.

The aim of the paper is to present an approach of assessment the priority of supply logistics' sub-process improvement in the organization.

Identification of the priority of supply logistics sub-process improvement

The identification of priority of the existing supply logistics sub-processes improvement is done by comparison between the partial real and target vectors. Various parameters characterizing the efficiency of the supply logistics may be selected as measurements, such as „accuracy of deliveries from suppliers", „time of supply", „high maintenance", „low process's costs", „low cost reserves", etc. The choice of parameters to be used as measurements of the coordinate system is in compliance with the underlying logistics strategy of the organization, the improvement goal set forth, as well as with the necessity to follow up the deviations in their values.

In order to perform a correct comparison, it is necessary the target vector to be divided into partial target vectors, similar to the supply logistics process in the organization. It is assumed that the target vector visualizes an „ideal" supply logistics process running at competitions. Similar to the existing supply logistics process in the company it is also built up of certain number of sub-processes (partial target vectors). Their number and continuance are unknown. This information may be providing by the feedback or by other specialized sources (specialized literature, newspapers, magazines, scientific conferences, Internet sources, etc) (Sexton, 2011). On this basis three approaches to determining the partial target vectors can be distinguished.

The first approach when there is information about the value of at least one coordinate of at least one partial vector is used. In the calculation of other vector coordinates it is assumed to be constant. From the coordinates of the target vector, constant value of the known partial vector coordinates is subtracted, so one of the partial target vectors is formed. The residue between the other partial target processes is divided equally, assuming that their number is equal to the number of actual partial vectors (sub-processes) of supply logistics.

If there is information about the coordinates of a target partial process applies the second approach. The number of target partial supply logistics processes and number of real sub-processes is assumed to equals again. The other partial target vectors are obtained by dividing equally the residue between the coordinates of the target vector and the known partial target vector.

In absence of specific data for the target sub-processes running unto competitors the third approach is applied. The number of target partial vectors and number of partial real vectors (n) are assumed to equals again. Thus, each target sub-process ($SP_{n,T}$) can be calculated by division the coordinates of the target process (P_T) and 1/n. „Averaged" partial target vectors, which are identical among themselves are created (Figure 1.). The coordinates of each averaged target supply logistics sub-process under the formula (formula 1) are derived.

$$\Delta_{abs} = \frac{1}{n} P_T - SP_{i,j,R} = \left(c_{1,1,T}; c_{2,1,T}; \ldots; c_{m,n,T} - c_{1,1,R}; c_{2,1,R}; \ldots; c_{m,n,R}\right) = \left(d_{1,1}; d_{2,1}; \ldots; d_{m,n}\right) \quad (1)$$

where

n – number of partial real and target vectors.

When the vector describing the absolute target of improvement of each sub-process has been calculated, it is required to determine the priority for improvement of those sub-processes. For this purpose it is necessary to introduce a coefficient that describes the necessity of supply logistics sub-process optimization in all measurements – δ_j, which is calculated by formula 2.

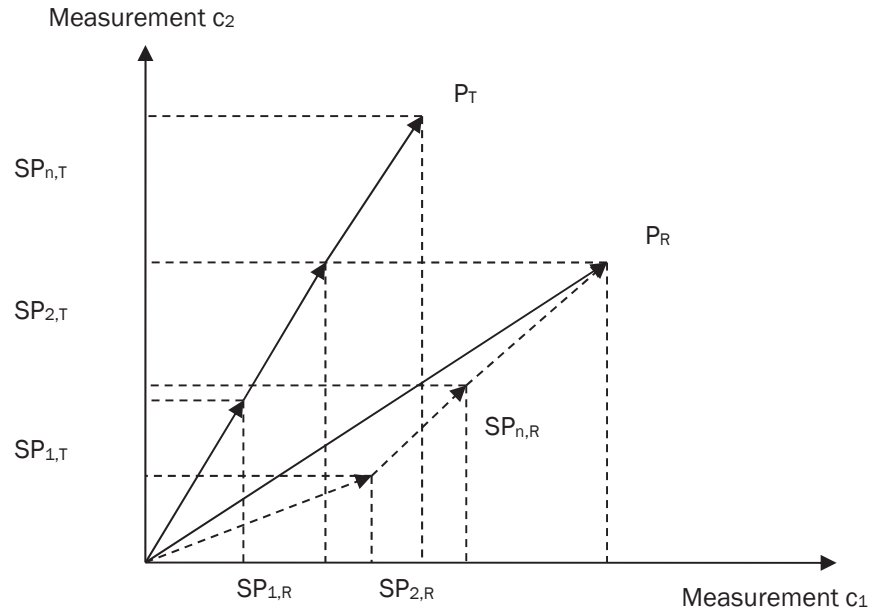
$$\delta_j = \sum_{i=1}^{m} d_{i,j} \quad (2)$$

where:

$d_{i,j}$ – measurementi to vectorj

$j = 1 \ldots n$ – number of considered sub-process,

$i = 1 \ldots m$ – number of considered measurement.



P_T – target process; P_R – real process; $SP_{1,R}$, $SP_{2,R}$,…$SP_{n,R}$ – real sub-process; $SP_{1,T}$, $SP_{2,T}$,…$SP_{n,T}$ – target sub-process; $SP_{i,j}$ – coordinates i to vector j; c_i – measurements of the processes; $j = 1 \ldots n$ – number of considered sub-processes; $i = 1 \ldots m$ – number of considered measurements

Figure 1. Real and Target supply logistics process visualization

The methodology for calculation of the coefficients Δ_{abs} and δ_j can be presented as an algorithm consisting of three blocks (Figure 2.). In block „A" a vector of the deviations of each supply logistics sub-process is calculated. In block „B" each coordinate of newly created vector (Δ_{abs}) is compared to zero. This is the way to assessment the necessity of improvement of the real sub-processes. Further, it can be calculated with how many units the coordinates of the partial real vectors should be increased or reduced. In block „C" whether the measurements are trade-off is checked and depending on that δ_j representing the „absolute" target of sub-process improvement in all its measurements is calculated. In addition, the values of δ_j are ranked in descending order by size.

Step 1 – Determining the coordinates of all real and target partial vectors, which build the real process (vector) of the supply logistics in the organization and the target one at all studied (examined) measurements.

Step 2 – Calculation the difference between coordinates of the partial target and real vectors – Δ_{abs}.

Step 3 – Check of the nature of all measurements. If all characteristics of the supply logistics processes are maximizing[4], algorithm continue to step 4. Otherwise, all values of the new vector's coordinates (Δ_{abs}) are multiplied by (-1).

After those actions and calculation of the values of $d_{i,j}$, step 3 and block *A* of the algorithm ends.

Step 4 – Comparison with zero the newly calculates vectors' coordinates, describing the „absolute" goal of improvement (Table 1). If the coordinate of the newly created vector is bigger than zero, then the target sub-process$_j$ in measurement$_i$ is more efficient than the real one$_j$. In this case, optimization of the respective measurement of the real supply logistics sub-process is needed and algorithm continue whit step 5 in block *C*. In case that $d_{i,j}$ is less than zero, it means that the existing sub-process$_j$ in measurement$_i$ is more efficient than the target one$_j$ and improvement is not needed. In the third case $d_{i,j} = 0$, which means that the real supply logistics *sub-process*$_j$ is as efficient, as the target *one*$_j$ in measurement$_i$. Again optimization is not needed.

Table 1. Interpretation of „$d_{i,j}$"

correlations	interpretation	
$d_{i,j} > 0$	$SP_{Target} > SP_{Real}$	The target sub-process$_j$ in measurement$_i$ is more efficient than the real one$_j$. There is necessity of improvement.
$d_{i,j} = 0$	$SP_{Target} = SP_{Real}$	The real sub-process$_j$ in measurement$_i$ is as efficient as the target one$_j$. There isn't necessity of improvement.
$d_{i,j} < 0$	$SP_{Target} < SP_{Real}$	The real sub-process$_j$ in measurement$_i$ is more efficient than the target one$_j$. There isn't necessity of improvement.

Step 5 – Checking for trade-off about all of measurements. In this situation it is assumed that the deviations in the various measurements are balanced among them, since the characteristics of the supply logistics process (vector) contribute to different extent for the achievement of the supply logistics' goal. If all examines measurements are trade-off, the coefficient δ_j is calculated in step 6. Otherwise, proceed to step 7, and step 6 is not performed.

[4] Maximizing measurements are these, the values of which should be increased as a consequence of the improvement, and minimizing – those, the values of which should be reduced. Differentiating the vectors' parameters into „maximizing" (e.g. „accuracy of deliveries from suppliers", „time of supply", etc.) and „minimizing" (for instance „low process's costs", „low cost reserves", etc.) is done on an earlier stage of the improvement. The differentiation in accordance with the strategic goals of the organization is done.

Step 6 – Calculation the coefficient δ_j by formula 2.
Step 7 – Checking for lack of offset between all of the characteristics of the supply logistics' process. If this is so, algorithm passes to step 10. It is assumed that if one of measurement needs to be improved, then the entire real process needs improvement. There is a third case in which, part of the measurements are trade-off, and part of them – aren't. Then, it is need to make subsequent verification of measurements which aren't trade-off in step 8.
Step 8 – Checking for existence of measurements which aren't trade-off and at the same time there are no need of improvement. If there are such measurements algorithm proceed with calculation of coefficient δj only for the measurements that are trade-off in step 9. Otherwise, it pass to step 11.
Step 9 – Calculation of coefficient δ_j only for measurements that are trade-off and need optimization. The coefficient is marked with δ'_j and calculated by formula 3. For this purpose, the measurements of supply logistics' processes are divided into two sets – superset C_i describing all measurements and subset A_q describing only measurements that are trade-off. A_q is subset of C_i (all examined measurements) and its elements assume values for $q = 1, \ldots, m$. The coefficient is δ'_j is calculated like δ_j, but only for those measurements that are trade-off. After calculating the coefficient algorithm passes to step 11.

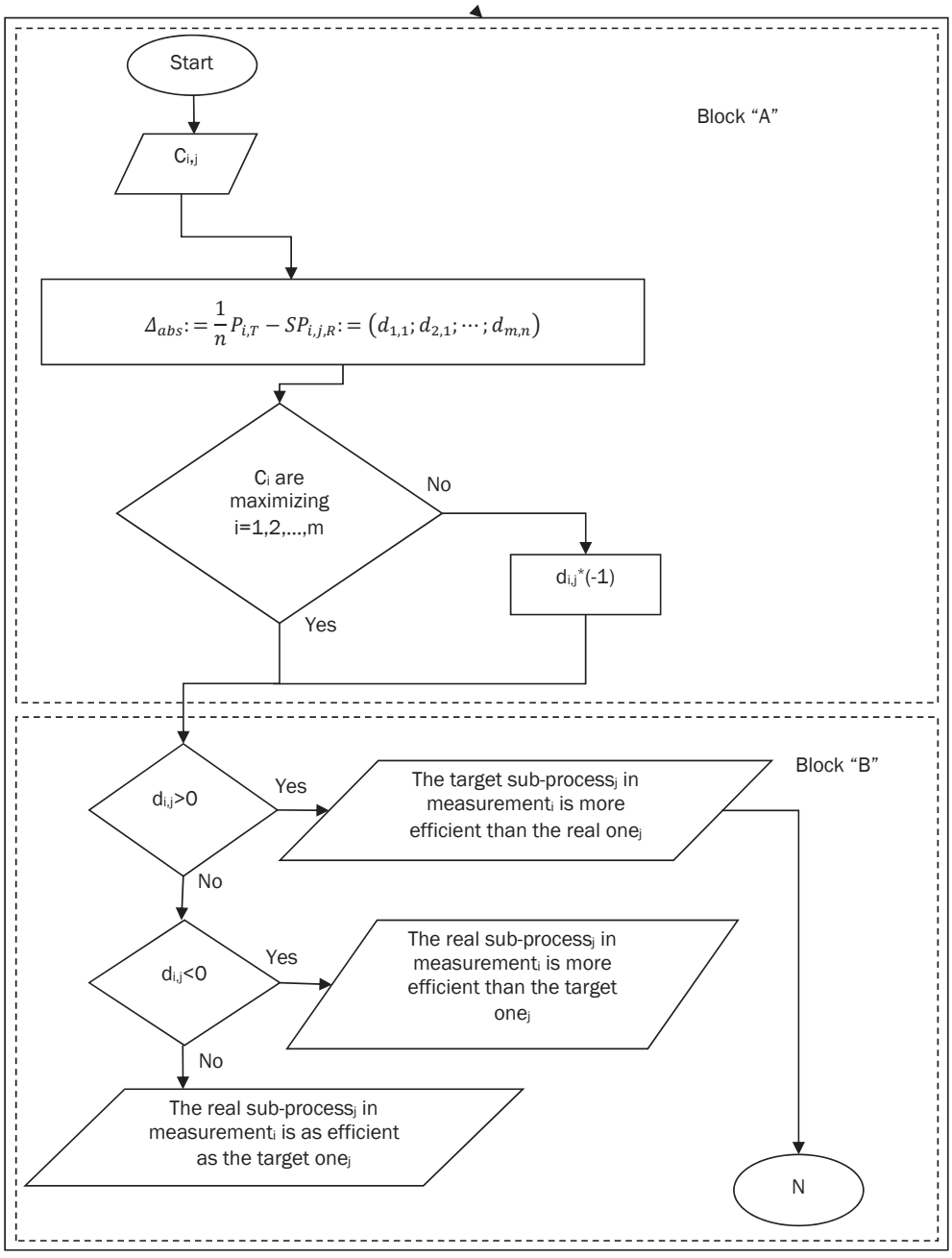
$$\delta'_j = \sum_{q=1}^{m} d_{q,j} \tag{3}$$

where
$d_{q,j}$ – measurementi to vector$_j$,
$j = 1 \ldots n$ – number of considered sub-process,
$q = 1 \ldots m$ – number of considered measurement,

Step 10 – The coefficient δ_j accepts the values of coordinates of vector Δ_{abs} which has need of improvement.
Step 11 – By the last operation in this block all values of δ_j are ranked by size in descending order. A sub-process of supply logistics which coefficient is highest gets rank „one". It must be optimized first, since in practice is „outermost" from the set forth target process.

Then the algorithm stops.

$$\Delta_{abs} := \frac{1}{n} P_{i,T} - SP_{i,j,R} := \left(d_{1,1}; d_{2,1}; \ldots; d_{m,n}\right) \tag{4}$$


Start
Block "A"
$C_{i,j}$
$\Delta_{abs} := \frac{1}{n} P_{i,T} - SP_{i,j,R} := (d_{1,1}; d_{2,1}; \cdots; d_{m,n})$
C_i are maximizing i=1,2,...,m
No
$d_{i,j}$*(-1)
Yes
Block "B"
$d_{i,j}$>0
Yes
The target sub-process$_j$ in measurement$_i$ is more efficient than the real one$_j$
No
$d_{i,j}$<0
Yes
The real sub-process$_j$ in measurement$_i$ is more efficient than the target one$_j$
No
The real sub-process$_j$ in measurement$_i$ is as efficient as the target one$_j$
N

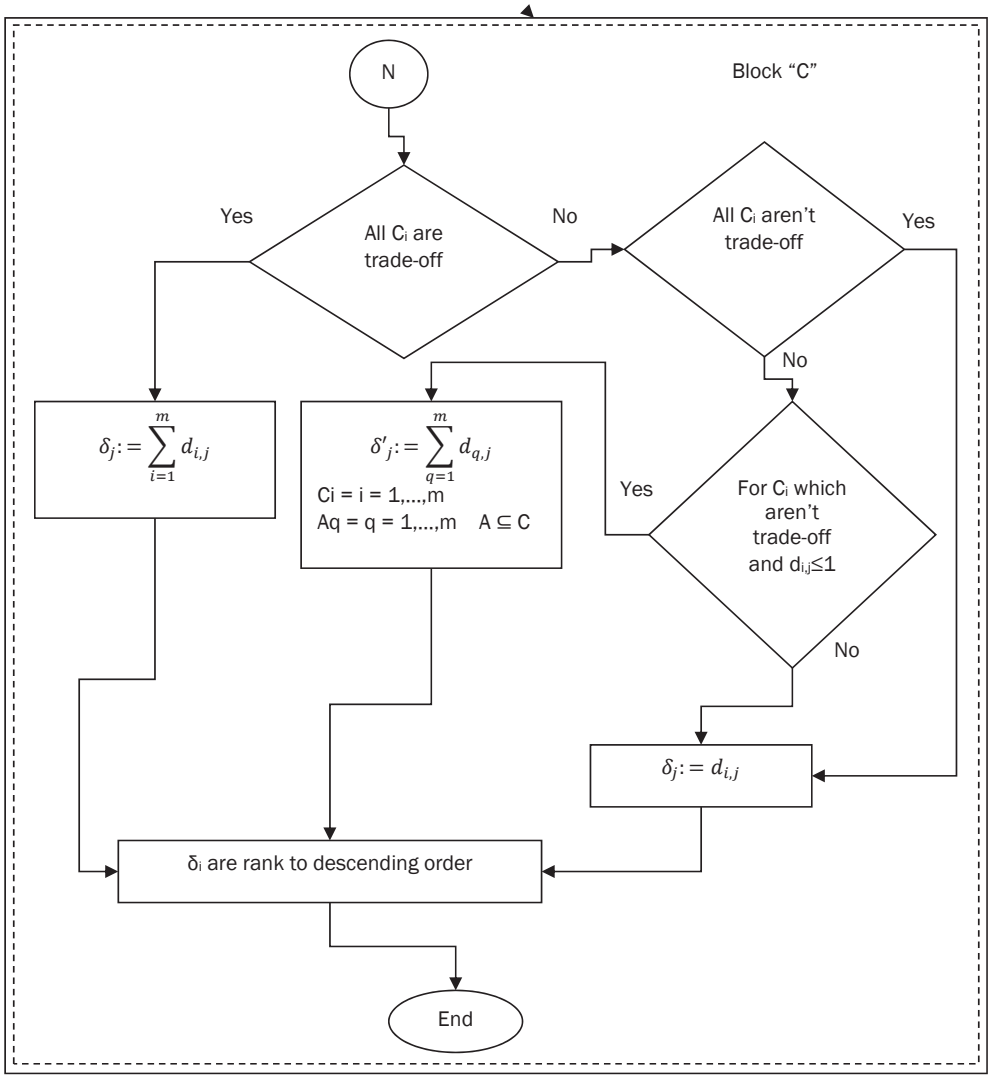


Figure 2. Algorithm for assessment of priority of supply logistics sub-process improvement

Conclusion

In the present paper an approach that can determine the priority of supply logistics sub-processes improvement in the organization was presented. It is based on establishing the efficiency of the real sub-processes compared to the set forth target efficiency. First it must be calculate a vector describ-

ing the necessity of sub-process improvement in each measurement (Δ_{abs}). Depending on the obtained coordinate's values of this vector, a conclusion whether optimization of the real sub-processes is necessary is drawn. Subsequently, it can be determine the actual numeric value, by which to correct the coordinates of the real partial vectors under the relevant measurements. Second, coefficient representing the need for each supply logistics sub-process optimization in all its measurements (δ_j) is calculated. The resulting numerical values are arranged by size in descending order, and then must be put ranks to them. The sub-process with rank „one" must be optimized first.

The main advantage upon the application of this approach is that the measurements, under which the optimization is done, can be m-number as per the actual necessity. In order to determine Δ_{abs} and δ_j only the subtraction and add operation is used, which simplifies the calculations. The algorithmic presentation of the entire methodology makes it possible to review and evaluate all possible combinations of the coordinate values of the vector describing the „absolute" necessity of supply logistics improvement. This way, integrity of the observation and representativeness of the defined conclusions is achieved. Main shortcoming of the described approach is that in case of lack of sufficient information, the target vectors are „averaged". In some cases those „averaged target vectors" deviate substantially from the real partial target vectors. This could lead to „distortion" of the derived results at the end of the algorithm and to wrongful conclusions about the condition of the real supply logistics sub-processes.

The identification of the priority of sub-processes improvement represents the third stage of the supply logistics optimization process. The realization of all three stages of the supply logistics optimization process (assessment of overall necessity of improvement, assessment of the necessity and priority of the sub-process improvement) could lead to achievement of efficient and stable improvements of the supply logistics processes in the organization.

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Dariusz Filip[1]

MARKET CONDITIONS OF MUTUAL FUNDS FUNCTIONING IN POLAND

The purpose of the paper is to discuss the structure of financial intermediaries market with particular reference made to mutual funds, and to present the role they have played in the financial sector. Moreover, the study focusses on the presentation of the environment of the mutual funds functioning in Poland, which is possible by comparing the level of assets values in main groups of financial institutions over the long-term perspective. Furthermore, it is essential in the cognitive context to determine the influence of market trends on the popularity of given segments of funds. The analysis has shown that the development of collective investment institutions industry in Poland is incontestable. Even though the mutual funds have gained a relatively strong position on the financial intermediaries market, they clearly give priority to the banking sector institutions. The volume of market shares of main types of funds has changed over time, which could be dependent on capital market factors.

JEL Classification Codes: **G20, G23**.

Keywords: mutual fund industry, development of financial institutions, assets under management, market competition.

Introduction

In terms of subject matter, the scope of this study concerns mutual funds as one of the types of collective investment institutions. Mutual funds are the entities that pool money from many individual investors to invest the thus collected funds in a diversified portfolio of securities, especially combination of stocks, bonds, money-market instruments or other assets. Each unit of the

[1] Ph.D., Cardinal Stefan Wyszynski University in Warsaw (UKSW), Faculty of History and Social Sciences, Institute of Sociology (economics), e-mail: d.filip@uksw.edu.pl

fund share represents an investor's proportionate ownership of the fund's holdings and the income those holdings may generate (SEC, 2008).

Mutual funds provide many important benefits to investors. Some of them have remained unchanged since the first fund was established. Being the most important of all, such classic advantages include professional management and diversification. The first one involves a team of experienced professionals who conduct research and select investments in line with the given fund's objective, and also provide monitoring of the investments performance. JP.Morgan (2016) described the second benefit as the spreading of an investment across a wide range of companies and industries to ensure better protection of assets during market fluctuations. Other advantages include among others also affordability, liquidity and a low cost of trading (ICI, 2016). Affordability is achieved due to the possibility of making a decision to purchase shares for a relatively low amount of money involved in the initial of investment. Liquidity, in turn, is the ability to readily redemption shares for any reason at their current net value. Last but not least, many investors perceive the low operational cost as the greatest advantage of all. Mutual funds are relatively less expensive in comparison to the investments made directly on capital markets.

Besides the classic advantages, mutual fund participants have also benefited from many cutting-edge technological achievements as the funds have tried to offer improved services to meet the changing investors' needs, e.g. with regard to variability of products. However, funds have also the features that some investors might view as disadvantages, especially the fees and charges, but the most important drawback consists in the fact that mutual funds have never been protected by any government guarantees or insured by any institutions or agencies. Moreover, the good performance of the funds in the past is not a reliable indicator of their performance in the future.

The purpose of this study is to discuss the structure of financial intermediaries market, with particular reference made to mutual funds, it also aims at answering the question whether the mutual funds in Poland have played an increasing role in the local financial system, which is possible by comparing the value of assets held by the main groups of financial institutions. Such an approach enables the ratios of development of financial intermediaries in the financial market to be determined and analyzed in this study. The analysis also comprises the assets of different mutual fund types with the view to finding out about the trends within the investors groups for different segments of investments.

The article is organized as follows: Section 1 includes a brief review of financial literature concerning the determinants of mutual funds operations.

Section 2 focuses on the significance of financial intermediaries in the analyzed financial market followed by Section 3 showing the ratios of development across the mutual funds industry. Finally, section 4 presents main concluding remarks.

1. Conceptual issues and a brief literature review

Accompanied by many periods of growth on the global securities markets, dynamic development of mutual funds industry has led to an increased interest in these financial organizations as a subject matter of research. Main stream of discussions concerning the performance of mutual funds dates back to the 1960s decade (e.g. Friend et al., 1962; Horowitz, 1965; Treynor, 1965; Sharpe, 1966). Nowadays foreign literature on the issue consists of thousands of papers evaluating collective investment institutions from many different perspectives.

The functional conditions in which the discussed entities operate are the subject matter analyzed by Khorana and Servaes (2008) in the study concerning the future of the industry around the world. The above mentioned authors have noticed that there are still some financial intermediary industries in the analyzed countries where the mutual funds market is poorly developed, e.g. those regarded as emerging markets. In other countries with mature markets, the list of funds on offer is very long, but in general they are managed by just a handful of asset investment companies. The markets, in e.g. North America and Western Europe are characterized by a relatively high level of concentration. In respect of their functioning conditions, they have experienced a better efficiency of legal framework there. However, there is still a lot of room for improvement, especially outside the U.S., in the areas such as services and the transparent presentation of offers with clear specification of fees and expenses, among others.

The study of Khorana et al. (2005) obtained results from 56 countries concerning the influence of implementation of financial innovations on the size of the industry. Their major finding is that mutual fund markets are larger in the countries with stronger rules, laws and regulations on financial institutions and better protection of fund investors' rights. The analyzed factors that affect the size of the industry include, among others, also the level of citizens' wealth and education, the age of the given industry and the level of trading costs.

Ferreira et al. (2013) analyzed the performance determinants of open–end, actively managed mutual funds operating in 27 countries, including Poland. The study was conducted on the basis of the data gathered with

regard to 16 316 equity funds in the 1997–2007 period. A large number of fund characteristics were subject to examinations, including the fund size, the family size, the fund age, relevant fees and expenses as well as the management structure. As regards the characteristics of the countries that have been taken into consideration, they include economic development, financial development, investor protection and the quality of legal institutions along with the structure of the mutual fund industry. Given the context of the functioning conditions of mutual funds, the findings on the positive correlation between the performance of a given fund and the general financial development seems to be especially interesting. The above mentioned authors conclude that the funds achieved better performance in the countries with a high level of trading activity and low trading costs. They have also noticed that mutual funds located in countries with common law tradition obtain higher returns. Moreover, good investor protection and law enforcement also have a significantly positive impact on the effects of asset management.

The first studies concerning mutual funds appeared in Polish literature at the turn of the century (e.g. Miziołek, 1997; Cekaj et al., 2001; Czempas and Lokwenc, 2001). Some of the early studies focused on the issue of performance effectiveness. There were also other studies concerning market conditions and the possibilities of funds functioning (e.g. Filip, 2007). However, it needs to be noticed that the primary analyses covered only short time periods, or only a small study sample was applied. The authors of more recent papers enjoyed a privileged position because the fund market entities were growing in size at that time. The studies of Jackowicz and Filip (2009), Olbryś (2010), Sikora (2010), Perez (2012) covered definitely longer periods or they applied more advanced empirical tools as well as enriched the local financial literature by adding new approaches or adopting some unconditional measures of returns. In general, the above mentioned studies confirmed and concluded that mutual funds had achieved better or worse performance levels in relation to market possibilities under changing investment conditions.

2. Collective investment institutions and their competitors on the financial market

As mentioned before, the aim of the article is to present the role played by mutual funds in the financial system, which is possible, for example, by describing the impact of external factors on the operating of mutual funds, and by determining the relevance of various financial intermediaries for the economy. According to Blake's approach (2000), apart from final market par-

ticipants and market-makers, financial intermediaries belong to the category of major actors in the financial system. Regardless of the financial market model in a given financial system, the most important intermediaries are banks, insurance companies and collective investment institutions, including mutual funds.

Table 1 presents the values of assets held by major types of financial intermediaries. Given the aim of determining the economic significance of individual types of entities, their assets are tabulated with the GDP values in current prices.

As presented in Table 1, the banking sector has held the largest amounts of capital resources among all of the analyzed types of intermediaries in the whole period under study. The supremacy of banks on financial markets is a characteristic feature of continental financial system models (see Matysek-Jędrych, 2007). In the period 1997-2007, the value of assets under the bank management increased from PLN 247.7bn to PLN 797.3bn. Despite the presence of notable symptoms of financial crisis, the assets of banks rose to reached PLN 1,600bn. in 2015. The average rate of assets growth was 13% per year. The ratio collating the bank assets with the GDP value demonstrates the strength of this group of intermediaries. In the above mentioned period before the crisis, the share of bank assets in the GDP constantly increased and amounted to max. 0.67. However, in the first year after the lower rate of the GDP growth was observed in Poland, i.e. in 2008, the share of banks' assets in the GDP increased about 20% to the 0.80 level, which means that the growth rate of the banks' assets value was higher than that of the GDP. At the end of period under study, the analyzed ratio increased to the 0.89 value again. In the second half of the discussed period, the significance of the banking sector in the economy was enhanced thanks to the expansive policy that commercial banks pursued at the time.

Mutual funds are the second group described in terms of the possessed assets value. The analysis of level and dynamics of assets' changes will be presented in the next section, but the ratio of total assets to the value of GDP is worth mentioning here. It should be pointed out that the share of mutual fund assets in the market value of all goods and services generated by factors of production was growing practically from 2000 (see Table 1). At the end of 2007, the ratio of mutual funds total value to the GDP was 0.11. That was resulted from the upward market trends for mutual funds and their relatively large popularity. The wave of units' withdrawals from alternative forms of investments was notable when the downward market trends prevailed on the stock market in 2008. Despite the shrank size of the economy,

Table 1. The value of assets held by major types of financial intermediaries

		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
banking sector	assets [PLN bn]	247,7	318,7	363,4	428,4	469,7	466,5	489,3	540,8	588,6	684,7	797,3	1034,7	1056,7	1158,5	1293,9	1349,5	1404,7	1529,3	1599,9
	assets/GDP	0,47	0,53	0,54	0,57	0,60	0,58	0,58	0,58	0,59	0,64	0,67	0,80	0,77	0,80	0,83	0,83	0,85	0,89	0,89
	change assets/GDP	n.a.	11%	3%	6%	5%	-4%	1%	0%	3%	8%	5%	20%	-4%	4%	3%	0%	2%	5%	0%
credit unions (SKOK)	assets [PLN bn]	0,4	0,6	0,9	1,2	1,8	2,5	3,3	4,2	5,3	6,0	7,3	9,5	11,6	14,0	15,6	16,8	18,7	13,6	12,23
	assets/GDP	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
	change assets/GDP	n.a.	37%	34%	23%	40%	35%	30%	15%	19%	4%	10%	19%	15%	14%	3%	4%	9%	-30%	-14%
pension funds	assets [PLN bn]	n.a.	n.a.	n.a.	n.a.	19,5	31,8	45,4	64,4	86,1	116,6	140,0	138,3	178,6	221,3	224,7	269,6	299,3	149,1	140,9
	assets/GDP	n.a.	n.a.	n.a.	n.a.	0,03	0,04	0,05	0,07	0,09	0,11	0,12	0,11	0,13	0,15	0,14	0,17	0,18	0,09	0,08
	change assets/GDP	n.a.	n.a.	n.a.	n.a.	n.a.	57%	37%	29%	26%	25%	8%	-9%	21%	18%	-6%	15%	9%	-52%	-9%
insurance companies	assets [PLN bn]	13,2	20,7	29,0	37,9	48,2	57,6	67,7	77,9	89,6	108,6	126,4	137,9	138,8	145,2	146,2	162,7	167,2	178,5	180,0
	assets/GDP	0,03	0,03	0,04	0,05	0,06	0,07	0,08	0,08	0,09	0,10	0,11	0,11	0,10	0,10	0,09	0,10	0,10	0,10	0,10
	change assets/GDP	n.a.	35%	26%	18%	22%	15%	13%	4%	8%	12%	5%	1%	-6%	-1%	-7%	7%	1%	3%	-3%
mutual funds	assets [PLN bn]	1,90	1,80	3,19	7,02	12,13	23,03	32,97	37,55	61,57	99,16	134,50	76,00	95,70	120,10	115,00	146,20	189,40	209,10	252,40
	assets/GDP	0,00	0,00	0,00	0,01	0,02	0,03	0,04	0,04	0,06	0,09	0,11	0,06	0,07	0,08	0,07	0,09	0,11	0,12	0,14
	change assets/GDP	n.a.	-18%	60%	98%	66%	83%	37%	3%	54%	49%	22%	-48%	18%	19%	-12%	22%	27%	6%	16%

Source: author's elaboration on the basis of annual reports of the National Bank of Poland (NBP), the Polish Financial Supervision Authority (KNF) and the Central Statistical Office of Poland (GUS).

the ratio described above declined about 48% to the 0.06 level. The recovery in importance of that group of financial intermediaries for the economy and the persistent rebuilding of trust on part of individual investors have led to the present situation, where the mutual funds market, although to a much smaller extent than the banking sector, still continues to provide additional opportunities for investment other than in assets directly allocated in the capital market or savings deposits on bank accounts. The share of funds' assets in GDP in 2015 amounted to 0.14, which evidences the growing importance of this group of financial intermediaries.

The relatively early initiated process of transformations has enabled the unrestricted functioning of financial intermediaries other than banks since the onset of the 1990s decade. After a period of profound political and economic transformations, the market-driven financial system was developed, followed by a period when a number of insurance companies was growing in Poland. The development of such institutions was accompanied by a declining disproportion between the number of life insurance and non-life insurance companies owing to a relatively high competition on the market and the maintaining of some products bellow the profitability level. Table 1 presents, among others, the growth rate of insurance market in Poland. The value of assets held by insurance companies went up from PLN 13.2bn in 1997 to PLN 180bn in 2015, which means an annual average growth of 19%. The share of insurance companies' assets in the GDP oscillated around 0.10 for a long time, which can be regarded as confirmation that the rate of insurance service market's growth was in proportion to the development of the entire Polish economy. As already mentioned above, the high rate of internal competition as well as the interception of some insurance products by the banking sector, which was made possible due to the technological progress and clients' needs for financial service – they all seem to be the market changes strongly affecting the perspective of insurance companies development.

In turn, the pension system reform, reconstructed at the second half of 1990s, resulted in the appearance of a relatively large number of asset management companies so that part of wherewithal could be provided for pensions upon workers' retirement. During the first year of their functioning, the assets of pension funds totaled PLN 19.5bn, which represented 0.03 share in the GDP (see Table 1). Next years witnessed an increase of the market value, e.g. the assets of the sector were valued at PLN 299.3bn in 2013 with the 0.18 ratio of assets to the GDP. Once some changes in the open pension funds (OFE) were enacted in 2014, an obligatory reallocation of a part of savings from the pension funds' clients to the Social Insurance Institution

(ZUS) followed, which resulted in the reduction of assets under management accompanied by the falling importance of pension funds in the economy. In 2015, the value of pension fund assets totaled PLN 140.9bn with a 0.08 share in the GDP. Some other changes announced in the functioning of OFE can drastically transform the picture of the entire market.

The functioning of credit unions (SKOK) supplements the banking sector operations in a certain way. Since 2011, the entities began to be included in the obligatory system of deposits guarantee under the Bank Guarantee Fund, which meant increased security of assets deposited by clients. However, the current situation caused by some financial problems and faced by some institutions in this group negatively influenced not only the perception of the sector as a whole but its further development as well. The share of SKOSs' assets in the GDP during the whole period under study did not exceed 0.01.

The view on different types of financial intermediaries as competitors of mutual funds allows to the presentation of conditions of the mutual funds functioning while competing for clients' savings. Figure 1 shows the market shares of the main types of financial intermediaries.

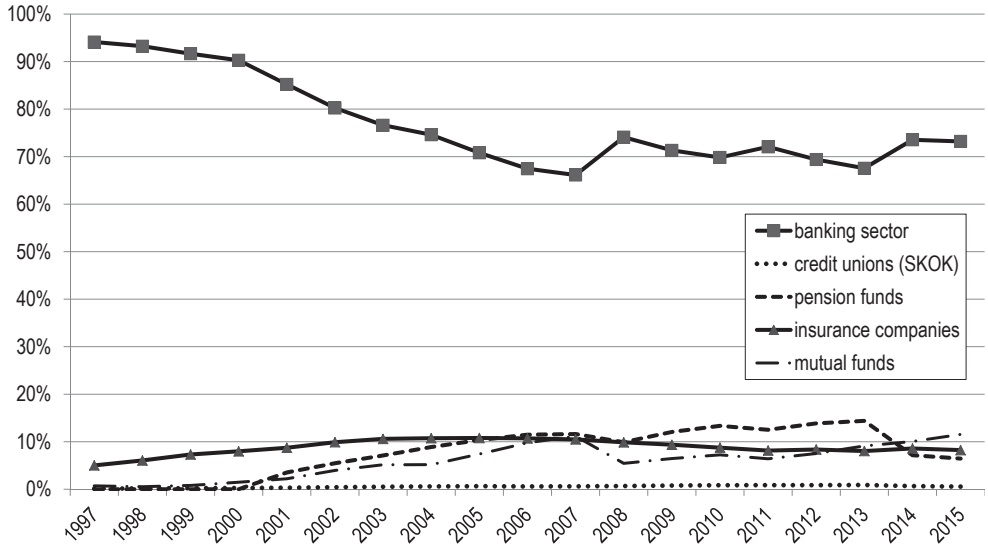

Figure 1. The market shares of main types of financial intermediaries

Source: author's elaboration on the basis of annual reports of the National Bank of Poland (NBP) and the Polish Financial Supervision Authority (KNF).

The year 1997 marks the starting point of the analyzed period as this is when the development of mutual funds gained momentum. The increasing demand for financial intermediaries resulted not only in the increased value of assets held by individual entities, but also in some changes in the existing structure of financial market as well. The changes in offers of individual institutions were caused to a large degree by securities market situation, which was favorable for investments. In spite of the above-mentioned, increasingly important and impregnable position of the banking sector in Polish economy, there was space for the possible development of nonbanking intermediaries almost right from the onset of the whole period under study. As shown in Figure 1, the share of banking assets in the total assets of financial intermediaries was practically around 90% until 2000. In the following years the market share of the banking sector was gradually decreasing until 2007. As the aftermath of the financial crisis symptoms present also in the Polish market, that tendency was brought to a halt. At the end of 2015, the share of banking assets in the total assets on the intermediaries' market was 73%. During almost the whole period under study, the non-threatening but noticeable competitors for the above groups were found amongst insurance companies having the market share of 8-11%.

The detailed analysis of financial intermediaries' market in Poland leads also to some conclusions about other groups of entities. Pension funds and mutual funds were successful in their operations starting from 2000. In 2007, the ratio of the banking sector assets to the total asset on the market fell down to 66%, but that of the collective investment institutions increased to 12% and 11%, respectively. In the crucial year 2008, position of banks on the market improved compared to that of other financial intermediaries in Poland, mainly due to the downturn on the market. Moreover, the total market share of the other intermediaries never went above the level reached that year. In general, the development of collective investment institutions in Poland is an unquestionable fact confirmed by all statistics concerning, e.g. the value of assets held by mutual funds. The primary role of banks in the economy continues to be a factor restricting their growth and, as was observed in the case of pension funds, also due to some reforms concerning their functional environment.

3. Some selected aspects regarding the development of mutual fund industry in Poland

3.1. Measurement of the market size and the industry development from the product viewpoint

The process of reconstructing financial markets in Central-Eastern European countries, including Poland, began in 1989. Their development in subsequent years allowed the launching of activities related to collective investments of market institutions. The entry into force of the Act of 22 March 1991 on the Public Trading in Securities and Trust Funds enabled the inauguration of investment fund companies. The first trust fund, "Pioneer Pierwszy Polski Fundusz Powierniczy", started operating in July 1992. At the very beginning, investment funds were playing only a marginal role from the viewpoint of both, investors on the capital market and the whole economy (Al-Kaber, 2000). However, along with the heightened awareness on capital markets amongst the public and their increased propensity to saving, the mutual fund market in Poland was becoming a place where the clients' expectations were satisfied with regard to alternative forms of investment.

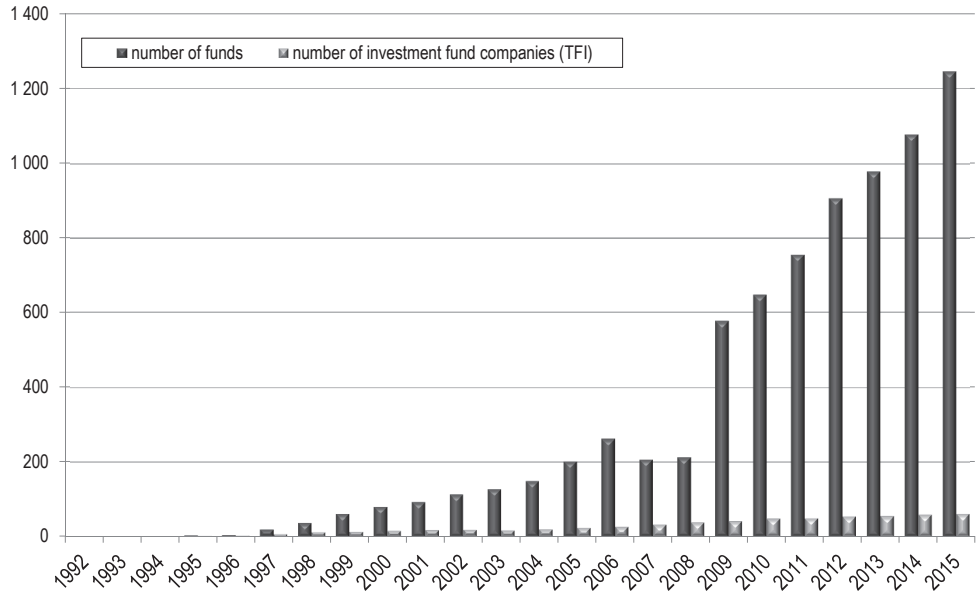

Figure 2. The number of mutual funds operating in Poland in the 1992–2015 period

Source: author's elaboration on the basis of Pochmara and Zapała (2004) and annual reports of the Chamber of Fund and Asset Management (IZFiA).

One of the indicators of the market development is a number of entities operating on a given market. Figure 2 presents a number of mutual funds as well as a number of investment fund companies (TFIs) operating in Poland in the 1992-2015 period, including all types of funds.

The pace of development can be illustrated by the fact that, while there were only 3 investment fund companies managing 5 funds at the end of 1996, their number went up to 7 investment fund companies managing as many as 20 funds at the end of 1997. The decisive moment for that sector was observed back in 1998, when the Act of 28 August 1997 on Mutual Funds came into force. Instead of the existing trust funds, the notion of open-ended mutual funds was introduced and, modelled after the American system, each fund was given a legal personality. As presented in Figure 2, from that moment the permanent dynamic growth of mutual funds' number in Poland could be observed. At the end of 2004, the number of funds totaled 150, while in the years 2005 or 2006 their number increased to 203 and 263, respectively. A clause in the amended Act on Mutual Funds of 2007 provided about the possibility of establishing some new types of funds, for example fund of funds, which resulted in a number of funds increased even further. However, the next two years brought about the decrease of their number, which followed from substantial changes on the financial markets due to the global economic crisis. The investment fund companies started to offer a wider range of products, which happened simultaneously with the long-awaited upturn on the securities markets. In 2009, the register of mutual funds listed as many as 578 funds managed by 42 TFIs. The next period followed, which was the time of sustainable development of the whole industry. Further market growth was also largely attributable to the amended Act on Mutual Funds and the Act on Financial Market Supervision as they allowed the implementation of the European Union regulations concerning financial market into Polish legal system (especially the Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities, the so-called UCITS-IV). At the end of 2015, as many as 1246 mutual funds managed by 46 TFIs were operational in the Polish market (IZFA, 2016).

The volume of the fund units purchases may be a way to measure the offer available on the market. Figure 3 presents increased interest in mutual funds in Poland as reflected by the volume of assets entrusted to the funds. On the left scale, the net values of assets are collated, while the one on the right presents the dynamics of changes in percentage terms.

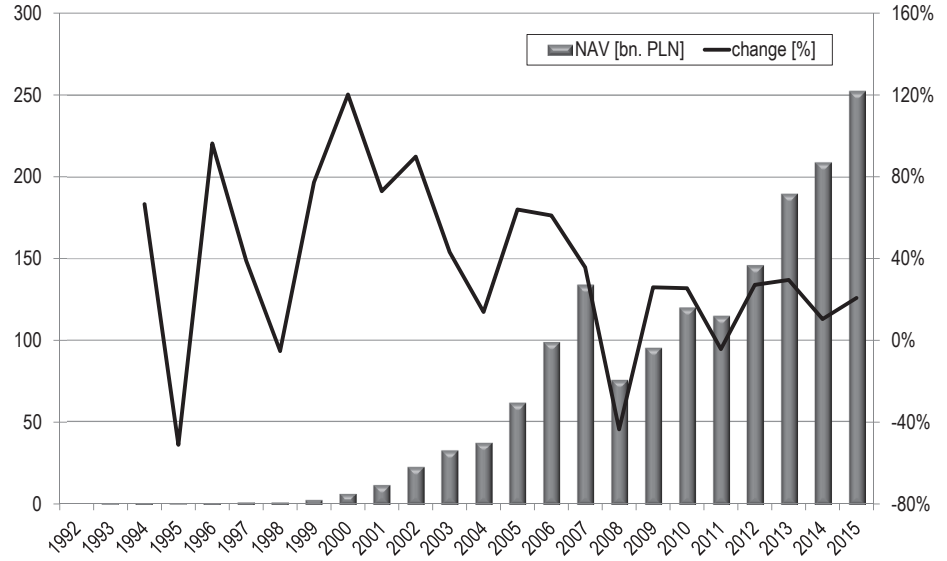

Figure 3. The net asset value of mutual funds and their change dynamics

Source: author's elaboration on the basis of Pochmara and Zapała (2004) and annual reports of the Chamber of Fund and Asset Management (IZFiA).

Besides the number of entities operating on the market, a net asset value may also be perceived as a measure to determine the rate of industry development. The annual value of the mutual fund market in Poland in the first 7 years of their functioning did not exceed PLN 2bn. A discernible growth in the value of assets managed by the analyzed entities resulted, to a certain extent, from the growing popularity of these types of financial intermediaries among individual investors, as observed already in 1999 and 2000, when the value of the fund's allocated units totaled around PLN 3.2bn, and over PLN 7bn, respectively. At the same time, it was a period of the biggest annual growth in the assets value, when the 120% increase was noted (see: Fig. 3). However, the real boom on the market took place in subsequent periods. In 2001, the total value of located assets exceeded PLN 12.1bn, while in 2007 it increased over tenfold to reach PLN 134.5bn. The boom on the securities market observed at that time was accompanied by the funds enjoying an increased inflow of assets. Nevertheless, the economic downturn in 2008 caused by the global financial crisis was observed in Poland and impacted the level of assets under fund management. The wave of withdrawals and falls of stock prices on the capital markets brought about the decrease of asset value by almost a half (the fall of 43% over to the previous year), and it went down to

PLN 76bn. For the next two years, the mutual funds tried to rebuild the trust of their clients in an arduous way after the period of suffering their largest losses. The annual dynamics of assets' changes at that time amounted to approx. 25%. Once again in 2011, the mutual funds market faced some negative developments, partly due to the euro-zone crisis. In the case of Polish mutual fund industry, this adverse trend prevailed for a short time only. Since 2012, an increase in the value of assets was achieved and the upturn market conditions could be observed once again. At the end of 2015, the value of the market totaled PLN 252.4bn, which means an increase of about 88% over to the year preceding the 2007 crisis. To conclude, it needs to be said that, in accordance with the analysis presented here, the development of the mutual fund industry cannot be challenged. However, it can also be noticed that there is some dependence between the clients' interest in financial intermediaries and the economic situation prevailing on the securities markets at a given moment. The comparative analysis of the two mentioned variables needs further consideration by taking a separate approach.

3.2. The structure of mutual fund industry

One of the main aims of the study was to present the trends in savings entrusted to financial intermediaries by final market participants, including in particular the institutions of collective investment. The analysis of structure of the market has enabled the identification of trends concerning the popularity of individual fund segments. Market shares of major segments are collated in Figure 4.

Volumes of main segments of funds' shares in the total assets of the sector are presented in Figure 4. The classification of funds adopted in this paper needs to be explained at this point. According to an economic criterion applied by Chamber of Fund and Asset Management (IZFiA, 2016), all mutual funds can be grouped, in a simplified way, into the fix-income, mixed and aggressive investment categories. The first one comprises bond funds as well as money market funds, whereas the second group of mixed funds includes balanced funds, growth and income funds and other mixed funds (e.g. active allocation or absolute return funds). The category of aggressive funds includes mainly stock (equity) funds, but, since 2008, most fund companies have introduced a subcategory of aggressive funds, which was non-public assets funds. The other funds are those that cannot be classified in any of the categories mentioned above. They are the property (real estate) funds, those focused on natural resources (raw material) or the exchange traded funds (ETFs).

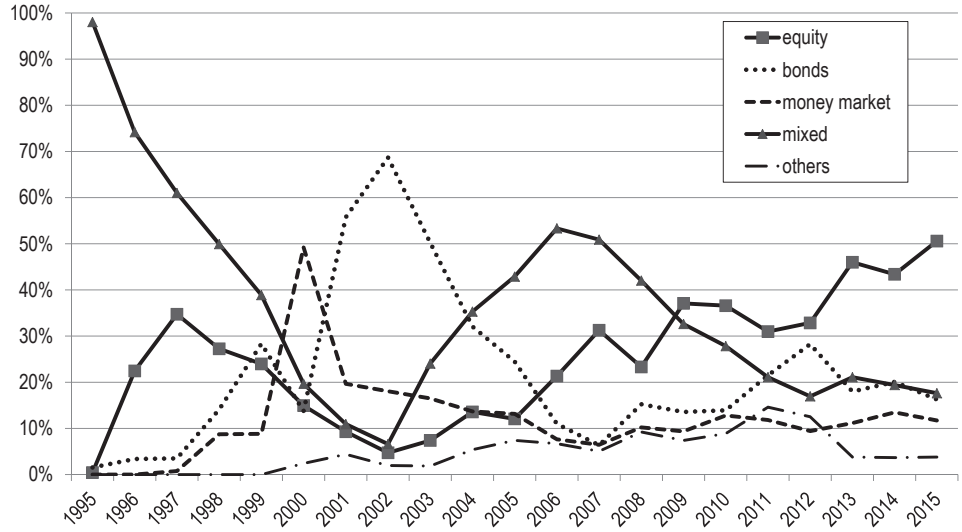

Figure 4. The market share of main segments of funds

Source: author's elaboration on the basis of annual reports of the Chamber of Fund and Asset Management (IZFiA).

As presented above, the analysis shows that domination of any segment of funds has not been decided yet. The volume of market shares of the main types of funds has changed over time in some periods, which could depend on market factors. An increase of the level of assets located in aggressive funds has corresponded to a specific decrease in the shares of investments in debt securities funds. It is particularly noticeable in the prosperity periods. Along with downs in the stock markets, in turn, and as a result of investors' leaving aggressive holdings, the growth of fix-income funds' share could be observed. Recorded in 2015, the increase of market share of equity funds to 51% was caused by classifying non-public assets funds since 2008 in the group of aggressive funds, which were very popular in the last few years. Nevertheless, the conclusions drawn basing on the above collation should be expanded further in some additional studies, where subgroups of funds in the main segments need to be analyzed.

4. Concluding remarks

This study has partly discussed some of the conditions and possibilities in the functional environment of mutual funds operating in Poland, which are presented against the background of some selected participants of the

financial system. The aim of the study was to present the structure of the financial intermediaries market, with particular reference to mutual funds, and to define the role they play in the financial sector. Furthermore, from cognitive perspective, determining the influence of market trends on the popularity of given segments of the fund market has also been an important consideration.

The analysis has showed that the development of collective investment institutions in Poland is incontestable. It has been confirmed by all statistics, including those on the level of assets under management. Some threats for mutual funds may be posed by the fact that banks in Poland as well as in other markets in the CEE countries have a very strong position on the market, which, among other things, is confirmed by the banks' domination in the structure of savings deposited with financial intermediaries by the final market participants. Therefore, mutual funds play a secondary role on the financial intermediaries market. On the other hand, the noticeable and positive situation on the stock market, observed mostly throughout the period under study, has been conducive to the dynamic development of collective investment institutions. It is the periods of upward market trends and the subsequent changes in relevant legislation that have resulted in good conditions fostering development of the market. The growth of main indices on the stock exchange, creating opportunities to achieve good investment results, triggered the growing popularity of mutual funds. Fluctuations of the level of interest in the intermediaries were generally limited only to the choice of the funds segments.

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