

JoIN

ROZPRAWY UBEZPIECZENIOWE

Konsument na rynku usług finansowych

Journal of Insurance, Financial Markets & Consumer Protection

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Contents

Articles

Regulatory reforms to deal with information overload in financial services: insights from behavioural economics <i>Magdalena Dzedzic</i>	3
Financial management and the evolution of the financial situation in Polish households in the period 2010-2017 <i>Katarzyna Włodarczyk</i>	12
Sequence-of-returns risk in the management of retirement savings <i>Andrzej Soldek, Maciej Stachnio</i>	22
Increasing life expectancy – the impact on old-age pension benefits <i>Patrycja Kowalczyk-Rólczyńska</i>	39
Supplementary pensions: what can we learn from Czech, Spanish and Portuguese experiences? <i>Edyta Marcinkiewicz</i>	52
(Ir)responsibility for future generations – us and the life of those to come or to miss <i>Michał A. Michalski</i>	66
The evolution of critical illness insurance product design on the Polish insurance market in the context of international trends <i>Magdalena Osak</i>	79
Applicability of selected concepts of corporate social responsibility management in insurance companies in Poland <i>Marek Szczepański, Elżbieta Świtalska</i>	98
Identifying the priority methodology for reinsurer default risk assessment <i>Ryszard Pukala, Nataliya Vnukova, Svitlana Achkasova</i>	120

Regulatory reforms to deal with information overload in financial services: insights from behavioural economics

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Abstract. Consumer protection regulation is based on the assumption that the communication of sufficient information to consumers enables them to protect themselves against unfair business practices and the consequences of making uninformed decisions. As one may presume, imperfectly informed consumers are unable to contract in their own best interests. It is a common belief, however, that providing the consumers with too much information at one time, so that it goes beyond their processing capacities may lead to inefficient and inaccurate performance. Disclosure of information plays a key role in the regulation of financial markets, but to make the disclosing regime efficient, there is a need to take into consideration the cognitive capacities, personal biases, heuristics and their influence on the decision making process.

Keywords: behavioural economics, behavioural finance, financial services, information overload, consumers.

JEL Codes: K3, G1, G2, G4, D8, D81.

1. Introduction

A common justification for legal interventions in financial consumer markets to require financial institutions to disclose product-related information, in particular the risks, the price and all the fees involved therein, is that consumers are imperfectly informed with regard to the transaction they are intending to make. However, it is world-widely admitted that information is never perfect [Schwarz, Wilde 1979, p. 630] and overabundance of information that exceeds consumer's processing capacity results in poorer decision making and dysfunctional performance. Therefore, the main focus of this article is an attempt to set intermediate between perfect information and perfect ignorance, bearing in mind, however, the main heuristics (rules of thumb) and biases to the various psychological traps of financial decision making.

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The fundamental aspect on which consumer protection regulation is based assumes that imperfectly informed consumers cannot contract in their own best interests. Thus, communication of sufficient information to consumers is ensured to enable them to protect themselves against unfair business practices and the consequences of making uninformed decisions. It supports the argument that once the consumer is empowered with information, they will react to abuses and mismanagement in a proper way, and there is no need for the legislator to intervene into the market with more substantive regulations [Paredes 2003]. It is generally recognized, however, that providing the consumers with too much information at one time, so that it goes beyond their processing limits may lead to inefficient and inaccurate performance.

The objective of this paper is to present the implications of behavioural economics for regulatory disclosure of financial products. The specific focus of the paper is the financial information overload. The main hypothesis of this paper is that the overabundance of information going beyond human processing capacity leads to application by consumers different heuristics (mental shortcuts) to help solve the problem when making decisions, and owing to psychological biases, interpret information in biased ways. Hence, I argue that to a much more wider extent than today, regulators should apply behavioural insights for policymaking to increase consumer protection in the area of financial services.

2. Insights from behavioural economics

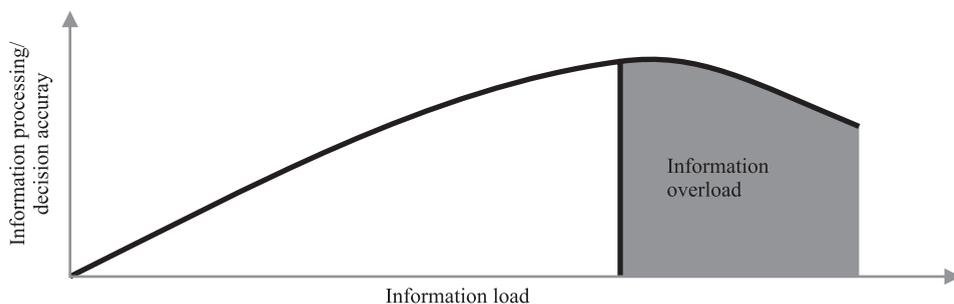
Behavioural economics bases on the insights from psychology, sociology, neurology, as well as economics, and provides us with deeper understanding of human decision making process, aiming to identify the ways how people use information.

On the ground of traditional consumer choice theory applied for modelling decision process humans use available information to make 'rational' choices which are supposed to maximise their own utility. They make a logical and objective analysis of all available information, put all the alternatives in priority, and as a consequence thereof, make a decision giving them the greatest satisfaction. In the eyes of Thaler and Sunstein *the economic man can think like Albert Einstein, store as much memory as IBM's Big Blue, and exercise the willpower of Mahatma Gandhi* [Thaler, Sunstein 2008]. According to the traditional approach, disclosure paradigms for most financial services were created on the ground that, if the clients had full information, they would optimise their decisions. Nevertheless, such a method did not take into consideration the limitations of human cognitive abilities, or the psychological, social as well as emotional interferences.

It is now well admitted that human memory has limited capacity and time for processing information. As a consequence, people use different heuristics (mental shortcuts) to help solve the problem when taking a decision, and owing to psychological biases, interpret information in biased ways. Hence, it is vital to define the number of alternatives and attributes consumer can absorb at one time without being overloaded with information. It has been attempted to measure the size

of memory span and so different research done with respect to that seems to confirm that the short memory of a human being has the processing capacity of approximately 4-7 chunks of information during any given period of time [Broadbent 1975, pp. 1-18; Simon 1974, pp. 482-488; Miller 1956, pp. 81-97]. The experiments revealed dysfunctional effects of information overload if a human being received ten or more alternatives in one choice or with information on 15 or more attributes [Malhotra 1982, p. 427]. With every piece of information first the decision making ability goes up, obtains an optimum with ten chunks, and after that goes down.

Diagram 1. Information overload



Source: [Ruff 2002].

The mostly acknowledged behavioural economics concept has been developed by Daniel Kahneman and Amos Tversky, who created the prospect theory, according to which humans make choices based on the forecasted value of losses and gains rather than final results (contrary to traditional consumer choice theory) [Kahneman, Tversky 1979, pp. 263-292; 1981, pp. 453-458; 1992, pp. 297-323]. They stressed the role of emotions and intuition in the evaluation of potential losses and gains by investors. In the Kahneman-Tversky approach, humans repeatedly make mistakes, are persistently biased when taking a decision, and, what's more, it is relatively easy to fool them by framing the questions and options inadequately.

Another very well-known representative of behavioural economics is Herbert Simon, a Nobel-laureate economist, who developed the concept of bounded rationality, according to which the process of decision making is limited by imperfect information, cognitive capacities and time [Simon 1955, pp. 99-118]. Hence, to deal with the complexity of the situation, humans apply shortcuts or 'satisfying' rules to make their choices simpler and help them come to a suitable decision. The decision makers look through available options until they meet or exceed certain criteria. Then, the decision individuals take is perceived to be satisfactory for them and in their best interests, taking into consideration limited choice they have and lack of awareness of alternatives. However, as the researchers have shown, such a decision may be wrong due to the complexity of information, framing it in a misleading way, or the quality of the information itself [Altman 2011].

Behavioural economists have identified various biases and heuristics that provide a framework to understand the process of making a decision relating to the purchase of financial services. This is because financial services are commonly very complex, while at the same time they require substantial resources and often create a long-term commitment for consumers. To make things more complicated, financial products are called '*experience (credence) goods*', which means goods which quality can only be ascertained after purchase and it might take a long time to fully evaluate their suitability. What's more, financial products tend not to be subscribed too frequently, and the majority of them are one-off purchases by nature, which further limits the extent of learning-by-doing. These products can also be related to important life decisions (e.g. mortgage credit, pension savings), where consumers' choices can be easily driven by emotions, such as excitement, anxiety or fear rather than objective assessment of future effects. Some of the behavioural heuristics and biases have been set out beneath.

One of the most common heuristics tools is called '*framing effect*', which assumes that the context and presentation of influence (making the product more attractive for consumers) have impact on the interpretation of information by individuals. Framing allows financial institutions to stress the benefits and features of the product which are vital for clients, and at the same time give less importance to untempting aspects, e.g. penalties for late repayment of the credit instalments. As a result, framing the information as a gain or loss will heavily affect the consumer's decision whether to sign the contract. That is closely linked to another bias called '*loss aversion*' [Tversky, Kahneman 1991, pp. 1039-1061]. Individuals do not like suffering losses, which are perceived much more deeply than gains at the same value. Another behavioural bias is linked to the overconfidence and unrealistic optimism of the buyers of financial products. The research shows that when clients with a good financial literacy are faced with a complex and specialized financial product, they use their knowledge only to a very limited degree. Instead of a logical and realistic approach, they have a tendency to be over-confident and over-optimistic about the future income, their future costs, or for example when deciding on the level of risk they should take.

The research shows that individuals tend to be emotionally distorted, which is closely related to other biases (the so-called '*status quo*' and '*present bias*'), which make consumers focus more on the current monetary implications of their choice, rather than on its further consequences. For example, clients with only temporary job contracts take expensive mortgage loan to buy a flat in spite of their unstable employment situation. What's more, they are still not open to make a change even though a new piece of information has been provided to them. People have a tendency to stick to their present situation as they are unwilling to get around to changing it. In financial services, individuals tend to value their present utilities higher than the future ones as well as postpone decisions involving relatively small monetary implications although, in total, such a tactic may lead to a substantial financial loss.

It takes place, for instance, when they refrain from switching a bank account even though there are cheaper accounts available in the market; or they defer terminating the mobile phone insurance contract despite the fact that the value of the device has gone down a lot.

Another common way to lead consumers to make a specific choice is to provide a default option. It is supposed to save consumer's time and effort in hesitating between various options and, as a result, clients are very likely to go for it not giving it too much thought. The default setting is closely linked to the 'choice overload bias', also common in financial services. Clients being confused by too many alternatives to choose from may even completely refrain from the purchase. Hence, when businesses have to provide consumers with a few options to make the choice, they usually limit them to the necessary minimum. This makes client's decision much easier but very often omits some vital information. Last but not least, there is evidence that consumers are much keener to buy a product if the payment for it takes place later in the future. Delayed payment means that they do not bear the consequences of their decision now but they can already enjoy the purchase. This technique is commonly applied by financial services providers to a great majority of credit products.

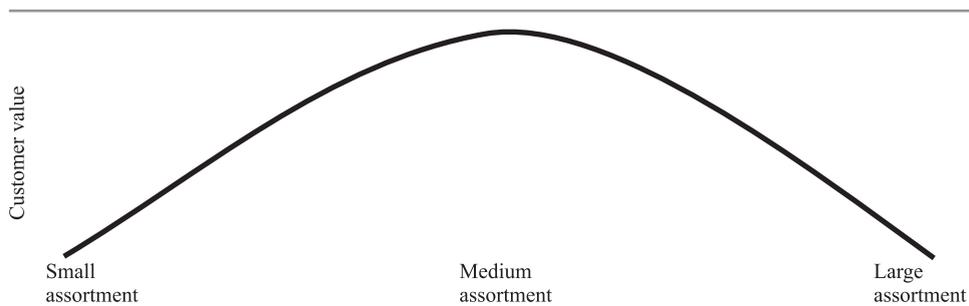
Another heuristic tool common for behavioural finance is 'anchoring', which assumes that investors tend to rely heavily on one piece of information, commonly received in the first place, omitting the others. The information provided as first is treated as a reference point for the decision, for instance, clients tend to hold on to falling shares since they are anchored to their initial purchase price.

3. Barriers to effective information disclosures

A common impediment to using information in an effective way is choice overload. On the ground of rational choice theory, the greater the choice (assortment size), the better for the consumer. However, greater choice may lead to 'choice overload', which results in consumer putting off or failing to take a decision at all. As the research suggests, individuals who want to make the absolute best decision, may suffer anxiety, stress, or even dissatisfaction from cumulating various choices [Schwartz 2004].

What is connected with choice overload, is information overload that occurs as consumers do not have the capacity to process unlimited catalogues of information. It is true that information empowers the individuals to take a well-informed choice, but one should consider how much information the target recipient is able to absorb. Reducing the length of obligatory information catalogues positively influences the likelihood of individuals reading the document. However, reading the document is not the only factor that boosts consumer's ability to take a good decision. Different studies reveal that between 15% to 64% of clients read the disclosure documents in full, and most of them (over 50%) say they read most of it (read what they think seems most important) (New Zealand Investor Survey entitled "Investor Experience of IPOs February 2014").

Diagram 2. U-shaped nature of the relationship between assortment size and consumer benefits



Source: [Chernev 2011].

Individual's ability to comprehend lengthy disclosure documents, which additionally are complex, contain a lot of technical language and legal jargon, is strictly connected to the quality of the decision in terms of one's finance. Consumer's inability to understand certain financial or legal terms may undermine their general confidence and result in appearing doubts regarding the total comprehension of the document. The research suggests that people, overwhelmed by the complexity of information and a lack of its understanding, may compensate it by simplifying the decision, focusing on one salient and easily understood aspect of information, as well as using heuristics or other biases.

4. Behavioural economics implications for the disclosure duties of financial products

The behavioural economics research has shown that owing to heuristics and personal biases applied in the decision making process, individuals make choices that are not rational. Designing requirements for financial product disclosure regulators and law makers influence the way consumers make decision, becoming sort of choice architects. Hence, they should be aware of these findings and develop the regulations in such a way that the financial product disclosure is meaningful and understandable.

The complexity of financial products is on the increase and the choice is getting more and more extensive. As a consequence, the information documents are longer and very specialised, requiring from consumers in fact expert's knowledge in financial investment. The results of the research, however, do not show that disclosure should be redundant. On the contrary, information from financial institutions is vital in assisting the clients to take a well-informed choice, and the disclosure regime needs to be efficient so that it works in the best interests of the buyer.

Key implications identified by the behavioural economists are set out below. Firstly, the documents should be kept short and straightforward, use everyday

language and avoid choice and information overload, since specialised and technical language together with low level of financial literacy make it hard for investors to take an efficient decision. Secondly, the information disclosed by financial institutions need to be standardized and presented in a neutral way. Standardization of the content of disclosure documents influences the order and type of information the buyer analyses, makes the comparison of various financial products easier, and may reduce the emotionality of the investor. How information is presented affects its perception and processing, for example, the use of graphs and other visual aids may help understand complex financial products. When designing the disclosure regime by using the mentioned tools, one has to be careful not to keep the information too simple and therefore, misleading. Thirdly, the catalogue of obligatory information is always very disputable as it seems hard to provide *one size fits all* list. Nevertheless, efficient disclosures should first and foremost indicate the risks and benefits linked to a particular product.

Another very efficient way to deal with information overload in financial services could be the development of personal financial planning and personal financial counselling [Waliszewski 2014, s. 7]. In Poland, however, owing to poor financial literacy, the lack of long-term savings habit, lack of professional regulation, financial supervision by a central body, and the obligatory standard of consumer and ethical code, personal financial advisory is not well developed yet. According to statistical data only 2% of Polish financial product's buyers use the services of professional advisors, mainly as a result of not being aware of the need to manage their personal finance in a professional way [Maison 2009]. In the future the role of personal finance counselling in the management of personal finance is expected to grow in Poland due to savings ratio growth, the increase in financial literacy of Polish citizens, retirement planning, and the insufficiency of state pension system [Waliszewski 2014, p. 26].

5. Conclusions

Behavioural economics investigates actual customers' behaviour, which is not entirely rational and is not the result of a thorough consideration and comparison of information concerning the characteristics of a particular financial product. In financial services, however, either due to asymmetry of information between professionals and non-professionals or poor financial literacy, consumers only try to make rational and calculated choices, but instead they take decisions more intuitively, e.g. applying mental shortcuts or copying passively other people's choices.

The behavioural determinants of customers' purchases and financial choices are widely applied by financial institutions, which often use behavioural insights to boost sales and to devise more efficient marketing techniques, which in fact encourage the purchase of a definite product, not always the most suitable one.

More recently, regulators have started using such behavioural insights for policymaking to increase consumer protection in the area of financial markets. It is a common belief that adequate regulation can be more efficient than education

in shaping and changing consumers' behaviours. In the financial sector, there are already a few examples of EU legislative measures where psychological aspects of the decision making process of customers have been taken into consideration to a greater or lesser degree. The evidence shows that simple information (limited to the most important characteristics of products) can significantly improve consumers' financial decisions. For example, the following recent EU legislations have been inspired by such insights: the Consumer and Mortgage Credit Directives (CCD and MCD), the Payment Accounts Directive (PAD) and the Regulation on a new Key Information Document (KID) for packaged retail and insurance-based investment products (PRIIPs). In fact, the PRIIPs Regulation took into consideration the findings of the research of consumers' understanding of investment products, which showed that: *simplification and standardisation of product information enables consumers to make better quality investment decisions and providing pre-calculated and directly comparable relevant information about investments enables better choices between dissimilar options, e.g. across product classes* [Consumer Decision Making... 2010].

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Abbreviations

CCD – Consumer Credit Directive; KID – Key Information Document; MCD – Mortgage Credit Directive; PAD – Payment Accounts Directive; PRIIP – Packaged Retail and Insurance-based Investment Products.

Financial management and the evolution of the financial situation in Polish households in the period 2010-2017

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Abstract. Incomes are the most important factor shaping the functioning of the household on the market. Thanks to incomes households can hold savings. There are also various forms of consumer credit on the market that are available to households. The aim of the presented article is to show the evolution and changes in the financial situation in the light of activities in the field of financial management in Polish households in 2010-2017. In the article dissertations were passed based on the literature and empirical research. In the empirical part the used results derive from the survey as of 2011 “Market behaviours of Polish consumers in the age of globalization of consumption” and 2013 “Consumers’ competence as a stimulant of innovative behaviours and sustainable consumption” as well as the research results published in the reports of the Public Opinion Research Center (CBOS) from 2010-2017: “Economic Conditions of Households”, “Material Living Conditions” and “Life Satisfaction”.

Keywords: households, financial decision, management.

JEL Codes: D14, E21.

1. Introduction

The behaviours of household on the market result on one hand from the preferences of its members and concern the choices of goods and services, on the other hand they are synonymous to economic opportunities of a given household, also described as wealth. Depending on the adopted definition, behaviour of the members of a given household, i.e. the behaviour of consumers, may consist of several elements. Source literature specifies mainly these activities which are connected with the choice of a specific good or service, and here the following can be enumerated: feeling the needs, giving them the position in hierarchy, acquiring information on the available

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subjects of consumption, making market choice between the available consumption means as well as final use of eventually selected subjects of consumption [Rudnicki 2000]. However it should not be forgotten that household members, in order to satisfy their needs, not only have to undertake purchase activities, but also the activities ensuring that they obtain necessary funds and manage them rationally (e.g. earning income).

The purpose of the present article is to show the directions of changes in financial situation in the light of the activities concerning financial management in Polish households in the years 2010-2017. Deliberations presented in the article were based on source literature as well as empirical research. In the empirical part, the results of research conducted in 2011 entitled "Market behaviours of Polish consumers in the age of globalization of consumption" [Włodarczyk 2013], the results of research conducted in 2013 entitled "Consumers' competence as a stimulant of innovative behaviours and sustainable consumption" [Dąbrowska, Byłok, Janoś-Kresło, Kiełczewski, Ozimek 2015] as well as the results of research published in the reports of the Public Opinion Research Center (CBOS) from 2010-2017 [CBOS 2017a-c] were analysed.

2. Financial management in households – theoretical aspects

In order to present the question of financial management in households it is necessary to emphasize that activities in this field match general definitions of market behaviours of household representatives (i.e. consumers). In source literature, there exist various definitions of consumers' behaviours which take into consideration not only the opinions of researchers specialising in economy and management, but also psychology or sociology. One of the definitions shows that the consumers, while satisfying their needs, make various decisions, which in turn influence their market behaviours. These behaviours can be divided into three main categories, with first two of them treated as activities on the market and the third category as activities within the household. The three categories of activities are [Smyczek 2001; Smyczek, Sowa 2005]:

- gainful behaviours;
- purchase behaviours as well as
- behaviours consisting in consuming or utilizing the subjects of consumption.

Importantly, from the point of view of deliberations in the presented article, it is worth adding that in the definitions of consumers' market behaviours, attention is paid to acquiring money (mainly gainful activities), however other aspects connected with managing the wealth possessed in post-purchase phases are not mentioned. This constitutes a certain gap.

Financial management in the household not only within the purchase processes, but also in the functioning of the household as a whole, is very important as all decisions, not only those purchase-related, are risky from the point of view of the market. In order to limit the risk connected with the decisions made, the so called

adaptation criteria [Zaleśkiewicz 2015; Maciejewski 2011; Jackoby, Chestnut, Fisher 1978] develop in the household.

Various factors influence the decisions made by household members as well as their final behaviour on the market. Incomes are very important factor shaping the functioning of the household on the market, together with savings accompanying them and the ways of taking consumer credit in its various forms. The amount of income as well as its source result from adaptation behaviours of households to conditions on the market. Incomes on one hand prove the activity of household members on the labour market, but on the other, make it possible to satisfy consumers' needs and preferences through purchasing goods and services. According to Statistics Poland (GUS), consumer incomes are spent not only on consumption goods and services, but also on savings growth [GUS 2018].

Household wealth constitutes a complex category and a uniform definition of this notion is absent in source literature. While defining the wealth of the household, it is worth mentioning the notion of net wealth used by the research network of European Central Bank – Household Finance and Consumption Network (HFCN). Net wealth reflects the differences between the value of assets and liabilities in the household [National Bank of Poland 2017].

In order for the household to be able to realise its goals, including in particular satisfying the needs of its members, it is necessary to undertake steps which will guarantee optimal utilisation of the wealth and financial opportunities of the household. Bywalec [2017] claims that this phenomenon is defined as *financial management*. Quoting the author, financial management in the household should be understood as (...) *all the activities of the members of this household consisting in obtaining funds and spending them according to the adopted household objectives*. Table 1 presents basic activities which form financial management process in a contemporary household.

Activities specified in Table 1 may constitute the example of financial management in the household. It should be emphasised here that in each household, only some of the abovementioned activities may be undertaken, as well as completely different activities may appear and their configuration and order depends only on the needs and preferences of household members.

In this way, financial management in the household should be treated as a set of specific activities undertaken by members of the household which guarantee the acquisition of funds (e.g. through work or setting up their own business), making it possible to keep a given standard of living matching the preferences of household members (e.g. purchasing goods and services considered attractive by the members of the household) and refer to such activities which are the most beneficial and satisfactory for household members. Financial management should consist in activities undertaken consciously in the household, aiming at rational utilisation of the accumulated wealth and avoiding unnecessary debt (or potential deepening of debt) [Bywalec 2017; Zaleśkiewicz 2015].

Table 1. Sub-processes of the financial management process in the household

Sub-processes of the financial management process in the household	Characteristics of the sub-process	Phases of the sub-process
Risk management	Types of risk in the household: resulting from fortuitous events, the risk of unemployment, the risk of decrease in consumption and the standard of living, the risk of responsibility, the risk of possessing financial assets. Attitudes adopted in the household with relation to the risk: protective attitude (carefulness), neutral attitude, inclination to taking risk. Risk management includes: awareness of the occurrence of risk and insurance awareness.	<ol style="list-style-type: none"> 1. Recognising the risk – recognizing and realising potential sources of threat; 2. Risk measurement and assessment – introducing factors measuring the effects of risk; 3. Choosing risk management method: avoiding, preventing loss, accepting the risk, risk transfer; 4. Implementing risk management method; 5. Assessing and modifying or improving risk management methods applied.
Wealth management	Wealth management concerns the management of material wealth. Important characteristics of the process are: wealth consumption, wealth renewability, moral wear, modernisation, costs of purchase, utilisation and liquidation of the wealth, way of using the wealth, factors decisive for the wear and consumption of the wealth (e.g. technical and utility qualities, changes in the size and structure of the household, development phase of the household, funds held).	<ol style="list-style-type: none"> 1. Purchasing the element/elements of material wealth; 2. Wealth exploitation; 3. Liquidation or modernisation of the wealth.
Capital management	Investments and liabilities, short-term and long-term, possessed and stored in order to achieve benefits in the future. They include among others: stocks and shares, securities, deposits, property and investment movables. Intangible assets – based on the knowledge and skills of household members (e.g. education, competencies, intellectual capital).	<ol style="list-style-type: none"> 1. Evaluation of investments and liabilities / intangible assets; 2. Determining the amount and structure of own resources; 3. Determining the liquidity of an asset; 4. Period of exchanging an asset into funds.
Budget management	Determining incomes and spending of the household within a specific period of time. Two basic budget management models can be distinguished: 1) centralised – funds are accumulated in one account and spending decisions are made jointly; 2) decentralised – household members have big independence in making financial decisions; only some funds are treated as common funds; the model is based on partnership and trust.	<ol style="list-style-type: none"> 1. Assessing incoming funds; 2. Planning the spending; 3. Developing financial surplus in a given period of time.
Savings management	Household savings are the difference between income and current consumption. Savings are often called past incomes. They are treated as funds which were in the past subtracted from the amount intended for free decision and were not spent. Saving consists in household members refraining from current consumption. It can be of voluntary character (independent decision) or compulsory character (legal obligations). What is more, deposits and investment are other forms of saving.	<ol style="list-style-type: none"> 1. Assessing current and future financial condition of the household; 2. Recognising market conditions connected with saving (among others interest rate, inflation, return rate, forms of saving, economic perspectives etc.) 3. Choosing the form/forms of saving.
Debt management	The opposite of household savings are different forms of loans and credits, which influence the level of debt. Debt can be defined as accumulated funds coming from financial institutions, mainly banks or other natural and legal persons, which enable earlier consumption of goods that households could not purchase due to low level of incomes. Household debts result usually from two aspects: seeking the improvement of living conditions or from a fortuitous event.	<ol style="list-style-type: none"> 1. Assessing current and future financial condition of the household; 2. Recognising market conditions connected with debts (among others interest rate, inflation, economic perspectives etc.) 3. Choosing the form/forms of spending.

Source: Author's own elaboration based on [Bywalec 2017; Bodie, Merton 2003].

3. Financial management in Polish households – research results

In order to assess the process of financial management in Polish households, research results will be presented in subsequent parts of the present article. The first of the presented studies was conducted in 2011 on a national representative sample of 1000 Poles (more about the research – cf. [Włodarczyk 2013]). The research showed that as many as 80% of those surveyed claimed that their household is in debt. The most frequently mentioned forms of debt were: cash loans (40%), payment for audio and video equipment or household appliances divided into instalments (33%), using a credit card (23%) or overdraft (21%). 86% of members of the group who claimed to be in debt declared to be repaying their liabilities on time. Unfortunately, only 36% of households declared to hold savings. Most frequently mentioned forms of saving included: money saved on current accounts and term bank deposits. In rare cases (2-4%), participants of the survey declared to invest in property, land or investment funds. It can thus be concluded that financial management at the beginning of the analysed period in Polish households was merely applied [Włodarczyk 2013].

Another research which constituted the source of information on the functioning of Polish households in terms of financial management was the survey conducted in 2013 on the group of 1000 Poles (representative national sample). The research was entitled “Consumers’ competence as a stimulant of innovative behaviours and sustainable consumption” (more about the research – cf. [Dąbrowska et al. 2015]). The results showed that the Poles are responsible consumers and try to use their financial resources in a rational manner. Nearly two thirds (64%) declared to buy only necessary things and do shopping with a list, 58% claimed that before making a purchase they compare the prices and try to choose the cheapest products and more than a half (55%) registered their spending as for them, it facilitated the management of the money they had. It is worth adding that the Poles taking part in the survey turned out to be sensible buyers as only 13% of them declared that they take a loan or credit when they want to buy something more expensive and the rest (87%) saved the necessary amount earlier. What is more, as many as 84% of respondents claimed that before they buy a more expensive item, they check whether they can afford it and only 16% would make a spontaneous purchase, irrespective of their financial situation at a given moment. In addition, 82% claimed that they manage what they possess in an economical way and buy only the necessary items and only 18% would buy best quality things, irrespective of their price. Thus taking into consideration the entire financial management process together with its sub-processes it can be stated that the elements of proper budget management are present in Polish households [Dąbrowska et al. 2015].

Subsequent research results, concerning financial management in Polish households, will refer to the years 2010-2017 and will show the most complete image of changing trends. The results of surveys conducted by CBOS in the years 2010-2017 show many positive aspects in financial management in Polish

household. The respondents were among others asked questions concerning their savings. Tables 2 and 3 present their declaration on the subject of savings in the years 2010-2017.

Table 2. Savings held in the surveyed households in the years 2010-2017

	2010	2014	2017
Yes	37	40	49
No	63	60	51

Source: [CBOS 2017b].

Note: Henceforth, if not stated otherwise, % of declarations.

Table 3. How long would it be possible for you to ensure the same standard of living for you and your household by spending only the savings you hold, without decreasing your standard of living?; 2010-2017

	2010	2014	2017
A few days	2	2	1
A week	2	2	1
2-3 weeks	3	3	2
About a month	16	15	11
2-3 months	24	20	25
4-6 months	22	26	25
More than 6 months	19	19	27
Difficult to say	12	12	8

Source: [CBOS 2017b].

On the basis of the data in Table 2 it can be noticed that the number of households holding savings is increasing. As in the year 2010 only a little over a third of households declared to hold savings, in the year 2017 it was already nearly a half. In turn, data in Table 3 show that in emergency situations, an increasing number of respondents could provide for their living using the savings they held. In 2010, 65% of respondents declared that their savings would be enough for more than 2 months. In 2017, the same value reached 77%.

Another issue analysed in the study by CBOS was the debt of households. The results and declarations of respondents are presented in Tables 4 and 5. On the basis on data in Table 4 it can be noticed that the tendency to take loans by Polish

households is decreasing. The percentage of those declaring their households to be in debt decreased from 46% in 2010 to 40% in 2017. However, when the Poles decide to take a loan, they usually use the offer of banks (Table 5).

Table 4. Debt of households; 2010-2017

	2010	2014	2017
Yes, and they are repaid regularly	39	40	37
Yes, but problems with repaying them occur	7	5	3
No	54	55	60

Source: [CBOS 2017b].

Table 5. Where have the loans, credits repaid in your household been taken?; 2010-2017

	2010	2014	2017
In banks	90	87	91
In the workplace or workers loans fund	13	12	10
In other non-bank credit institutions	10	10	8
From private individuals (family, friends, colleagues, neighbours)	8	12	7

Source: [CBOS 2017b].

Additionally, in order to assess financial condition of households, the respondents were also asked about other arrears and outstanding liabilities, such as for example unpaid rent, energy bills etc. The results showed that the decisive majority of households did not have such forms of debt, while the percentage of respondents declaring so amounted to 90% in 2010 and seven years later, it was higher by 7 pp (see: Table 6).

Table 6. Is your household currently in arrears with current payments, e.g. rent, energy bills, phone bills, taxes etc.?; 2010-2017

	2010	2014	2017
Yes, and they are gradually repaid	6	7	2
Yes, but problems with repayment occur	4	3	1
No	90	90	97

Source: [CBOS 2017b].

While assessing the financial situation of Polish households over the period 2010-2017 it can be stated that it improves according to the opinion of the respondents themselves (Table 7). Based on the data included in Table 7, the percentage of households with average or good living conditions is increasing. In 2010, this was claimed by two thirds of respondents, while in 2017 it was already nearly four fifths. The percentage of those declaring that their living conditions are modest or very poor is also decreasing year by year.

Table 7. Self-assessment of money management in households; 2010-2017

	2010	2011	2012	2013	2014	2015	2016	2017
Our living conditions are very poor	5	3	3	5	3	3	3	2
Our living conditions are modest	27	33	24	25	20	20	18	17
Our living conditions are average	51	51	57	55	58	54	55	55
Our living conditions are good	15	12	15	14	17	21	21	24
Our living conditions are very good	2	1	0	1	2	2	3	2

Source: [CBOS 2017a].

Interestingly enough, in spite of positive assessment of the way of managing the money, a significant part of society is afraid of the deterioration of their financial condition. This is unalterably about two fifths of the respondents in the years 2010-2017 (Table 8).

Table 8. Self-assessment of current financial situation in the household; 2010-2017

	2010	2011	2012	2013	2014	2015	2016	2017
I don't worry about my financial situation	21	18	19	17	24	23	27	30
I'm not afraid of poverty, but I worry that our financial situation may deteriorate	38	39	39	36	41	43	43	42
I'm afraid of poverty, even if I think that we'll manage	31	32	33	36	28	28	22	21
I'm afraid of poverty and I don't know how we're going to manage	9	10	8	9	6	5	7	6
Difficult to say	1	1	2	1	1	1	1	1

Source: [CBOS 2017a].

At the same time, data from table 8 also shows that an increasing number of respondents are optimistic as the percentage of those having a calm attitude towards their financial situation is growing, even if it is happening gradually. Generally, also from the year 2010 the satisfaction of Poles with their living conditions, incomes and financial situation is at a relatively stable level (see: Table 9).

Table 9. Satisfaction of Poles with their living conditions, incomes and financial situation; 2010-2016

	2010	2011	2012	2013	2014	2015	2016
Material living conditions	52	51	51	51	56	60	50
Their incomes and financial situation	26	25	23	25	29	28	31

Source: [CBOS 2017c].

4. Summary

On the basis of the results of the research it can be stated that in Polish households in the years 2010-2017, positive phenomena connected with financial management are visible. They include in particular rational management of the wealth possessed, thought-out market decisions, increasing tendency to save, decreasing tendency to take loans, persistent trend of timely payment of liabilities, sensible assessment of future material situation as well as generally positive perception of their financial situation by households.

It is worth considering the continuation and development of research on the issues concerning financial management in households. Apart from their relevance, a limited number of comprehensive and up-to-date empirical research on this topic has been conducted. What seems important is the preparation of studies demonstrating a continuous character, which would demonstrate both characteristic single behaviours and the attitudes of Polish households as well as guarantee comprehensive presentation of the topic. This would require an interdisciplinary attitude, expressed in multiple aspects of the studies. Economic determinants also play an important role in financial management, but at the same time, the importance of demographic, social and psychological factors is increasing. Explaining the mechanism of activities undertaken by the representatives of households in connection with finances is important not only from the academic point of view. This information may also constitute the source of inspiration for companies active on the financial market in order to develop the offer matching the needs of potential clients.

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Abbreviations:

CBOS – Public Opinion Research Center (*Centrum Badania Opinii Publicznej*);
GUS – Statistics Poland (*Główny Urząd Statystyczny*); HFCN – Household Finance and Consumption Network.

Sequence-of-returns risk in the management of retirement savings

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Abstract. The purpose of the paper is to show the importance of the sequence-of-returns risk in the management of retirement savings. In the process of regular accumulation and withdrawal of savings, the sequence-of-returns risk may lead to significantly different results when it comes to the accumulated assets and benefits paid to people with the same saving history and realised average investment rates of return. The sensitivity to sequence risk increases along with the growth of the accumulated pension portfolio. The peak sensitivity period has been termed the retirement risk zone and, according to the results of a series of analyses, covers a dozen or so years before and a few years after retirement. The impact of the sequence of returns is very important in a defined contribution pension systems where investment risks are borne by individual investors. At the same time, the risk of sequence of returns is the most poorly recognised and analysed risk in the process of retirement saving. The planned introduction of employee capital plans in Poland inspired the analysis of the impact the sequence of returns on the Polish market has on the accumulation and withdrawal of retirement savings. This paper presents the results of research into the impact made by the sequence of returns on retirement assets accumulated on the US, Japanese and Australian markets. These show considerable diversity among the accumulated assets and the replacement rate of retirement savers resulting from the overall effect of historical market volatility and the sequence of returns. The purpose hereof is to demonstrate how, in Polish conditions, the behaviour of contribution parameters that have a decisive impact on the saving results and rates of return may affect the accumulated assets and withdrawn benefits. Simulation of a potential participant in employee capital plans confirms a very high sensitivity to the sequence of returns over the period of the retirement risk zone. It is a critical trait that must be taken into consideration while determining the glide path in the phases of saving and distribution of benefits. The sequence-of-returns risk should also be taken into consideration while assessing the efficiency of investment strategies in the management of retirement savings.

Key words: sequence-of-returns risk, portfolio size effect, retirement savings.

JEL Codes: G11, G17, J32.

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1. Introduction

The launch of employee capital plans is an element of the governmental Responsible Development Strategy. The main purpose of the new retirement solution is to promote assets-backed retirement savings². Concurrently, the development of the funded pension pillar in Poland may indirectly result in the increase in pensions owing to higher economic growth. The so-called auto-enrolment, which is a commitment by employers to offer employees participation in a retirement plan, is supposed to be a key tool to assure high participation of employees in capital plans. It should be expected that, similarly as in other markets³, in terms of investment strategies, most participants will not make independent investment decisions and they will be assigned default options. The draft law specifies that for those people who do not select an investment strategy, the so-called target date funds will be offered⁴. Just as auto-enrolment solves the problem of inertia in the process of making the decision to start saving for retirement, a well-designed default option is a chance to offer investment and a cost-efficient method of retirement saving.

The purpose of this paper is to show the impact of the sequence-of-returns risk on the management of retirement savings. Depending on the realised path of rates of return on the capital market, the savers who, during accumulation, paid in the same amount of contributions and gained the same average rate of return and volatility over the entire saving period, may accumulate significantly different assets and receive different amounts of retirement benefits. The impact of sequence goes up along as the accumulated assets grow. The peak sensitivity period, termed the retirement risk zone, covers a dozen or so years before and a few years after retirement [Milevsky et al. 2015, p. 52]. The presented analyses of the US, Japanese and Australian markets, made based on historical rates of return, show a significant dependence of the accumulated assets and withdrawn retirement benefits on the sequence of returns and effect of portfolio size. Similar conclusions result from a simulation taking into account the income parameters and historical distribution of rates of return for the Polish market. High sensitivity of the result to the sequence of the rates of return in the retirement risk zone, demonstrated by the final amount of accumulated assets and withdrawal amounts, is a critical feature which should be taken into consideration when determining the glide path in the saving and benefits distribution stages⁵.

² The role of capital pension schemes is described e.g. by Nyce. et al. [2011, pp. 272-274]

³ On the US and UK markets most participants do not make independent decisions and their contributions are managed in line with the strategy selected by the pension plan's sponsor. The review of results of research regarding the process of making investment decisions by participants in pension plans is presented in Schroders [2014, p. 13].

⁴ It offers the same strategies for people of similar time before retirement, and the glide path in the saver's life cycle assumes that the share of risk assets decreases as the retirement age approaches. In the decumulation phase, this share remains at the minimum level.

⁵ Since the 2008 crisis, a broad debate has been ongoing regarding the proper allocation of assets in life-cycle funds. A particularly hot dispute occurred in the United States and pertained to the level of exposure of target date funds in the years preceding the retirement.

2. Sequence-of-returns risk, portfolio size effect, and retirement risk zone

The main parameters affecting the volume of accumulated assets and retirement benefits include the amount of contribution, periods of retirement savings and withdrawal, and the rate of return on invested capital. Numerous simulations demonstrate this relation in various markets⁶. The 60:30:10 principle proves that for the retirement result, the rate of return is of primary importance. It shows that per one zloty withdrawn as a retirement benefit, 10 groszy came from contributions, 30 from profits realised during the accumulation period and as many as 60 groszy from profits in the withdrawal phase [Ezra 2009, pp. 44-45]. This principle is a good illustration of the well-known compound interest mechanism in long-term saving. It stresses the importance of rates of return as a key determinant of the accumulated assets and retirement benefits withdrawn. In particular, it draws attention to the importance of market rates of return in the decumulation realised in form of programmed withdrawal. With this type of retirement benefit, the accumulated assets are still invested in capital markets. It should be noted, that the authors assumed a constant, deterministic rate of return from a retirement portfolio over the entire period of accumulation and withdrawal of benefits. The simplification adopted by the authors results in the analysis fully overlooking the impact of the market risk and sequence of returns, which are of key importance for generating retirement savings and benefits. The volatility of market rates of return and its impact of retirement savings is an issue which has been analysed in depth both by academics and market experts. The sequence-of-returns risk is definitely less known and researched.

The sequence-of-returns risk is defined as a dependence of the savings result on the unfavourable order of rates of return [Basu et al. 2012, pp. 6-7]. It occurs in the savings process, wherein portfolio payments or withdrawals are made. In the case of a lump sum contribution, the result depends only on the rates of return; their order is irrelevant. Persons with the same history or payments to and withdrawals from the fund and with the same average rates of return and standard deviations, in conditions of a different order of rates of return, may gain significantly different values of accumulated assets and withdrawn benefits. In the definitions of sequence-of-returns that may be found in literature, some authors limit the risks only to the withdrawal phase. They indicate higher sensitivity of the amount of withdrawn benefits to the order of rates of return than in the accumulation phase. Others stress the weight of the risk for investment solutions during the accumulation phase [Basu et al. 2012, pp. 6-7].

⁶ For the US market, according to Schroders' analysis [2014, p. 15], a person starting work at 25 years of age with initial remuneration of USD 40k a year, with a 1% increase in remuneration in real terms, and retiring at 65 years of age at 15% contribution, will obtain replacement rate of 56%, at a rate of return totalling 3.9% in real terms, and 45% replacement rate at 2.9%. At a contribution of 5%, the required rates of return to obtain 56% and 45% replacement rate amount to, respectively, 8.3% and 7.5%. At 10% contribution, the required rates of return are 5.6% and 4.7%, whereas at contribution at 20% - 2.6% and 1.5%. For contribution at 25%, the required rates of return are 1.5% and 0.4%.

The impact of negative rates of return depends on their placement over the entire saving period. If the negative market conditions occur at the beginning of the saving process, there is still time for making up. Unfavourable consequences of negative rates of return at the initial stage of the saving process are mitigated by the impact of new contributions and the effects of investing them. If, however, negative rates of return occur at the end of the accumulation phase, and the withdrawals are realised as annuity, then such decreases translate directly to the entire retirement capital and, in consequence, reduction of the benefit paid out over the entire retirement period⁷. Sensitivity to the rates of return grow along with the increase in assets accumulated in the portfolio. Subsequent rates of return influence the contribution and investment result accumulated to date. Along with the increase of assets in time, the share of investment results in the change of portfolio value grows, and the significance of contributions drops. A symbolic point, at which rates of return gain higher importance for the result, is when accumulated assets exceed the present value of future contributions. From then on, the result of investing accumulated assets will be more important than the effects of investing future contributions. This key determinant was indicated by Basu and Drew [2009], who introduced the notion of the portfolio size effect into the literature. The importance of the relation between the retirement saving result and the cumulative effect of returns sequence and portfolio size was also stressed by Shiller [2005]. Similarly, in Neuman's opinion [Basu et al., 2012, pp. 6-7], for a saver in the second half of the capital accumulation period, the order of returns is as important as their amount. The author stressed that it is potentially the highest retirement risk, of which the clients are unaware.

The sequence of returns is also very important in the first years of withdrawal of benefits in the form of programmed withdrawal or withdrawal by instalments. The rates of return realised in that period influence the assets which, reach their peak over the life-cycle. The need to realise a part of portfolio if negative rates of return occur causes a significant reduction of the period the remaining funds will suffice for. Milevsky and Macqueen [2015, p. 51] presented an analysis of the sequence of returns over the decumulation phase based on an example of a person who at 65 years of age realises regular withdrawals of USD 750 a month from a portfolio of USD 100k. The authors showed three variants of the order of returns with the same average of 7%. In the worst-case variant in the first year of benefits withdrawal, the portfolio's rate of return was negative and totalled -13%. In the variant in which the benefit was paid out for the longest period, the rate of return in the first year of withdrawals was +27%. The difference between the funded retirement withdrawals between extreme variants was 14 years.

Many authors indicate the period of the highest sensitivity to rates of return when the assets gain their maximum value as decisive for the retirement result. Rates of return

⁷ This is well illustrated by Schrodgers [2012]. Assets accumulated after 40 years of savings will be by 15% higher if the negative rate of return occurs in the 10th year of savings, when compared to a drop thereof in the 30th year. If the rates are positive at +20% at 50 years of age, the final assets will go up by 10%, and if the same rate of return occurs at 20 years of age, this growth will be 5%.

are of key importance for the amount of assets accumulated at the end of the saving period and the amount of benefits withdrawn, whereas the inflow of contribution is of secondary significance. To stress the sensitivity to rates of return over the period in which the accumulated assets are the highest, Milevsky and Macqueen [2015, p. 52] deemed this period the retirement risk zone. It is most often determined as the 10 years before and 5 years after retirement. The dependence of investment results on asset allocation makes that the decision about portfolio structure in the retirement risk zone is of key importance. The allocation in this period is a significant success factor in retirement saving. This is well illustrated by the academic debate between the advocates of the life-cycle strategy and those who recommend opposite strategies. The first indicate the need to preserve the value of the accumulated capital through the reduction of exposure to risk assets in the risk zone and to maintain such low allocation over the withdrawal period [Pfau 2009; Poterba et al. 2006]. The advocates of the strategy based on increasing the share of risk assets and maintaining allocation in equities at high level in the entire risk zone stress the significance of this period for capital appreciation [Basu, Drew 2009].

The impact of the sequence of returns, combined with portfolio size, is well illustrated by simulations in which the value of accumulated assets obtained with historical rates of return is compared to outcomes of variants with ascending and descending order of returns. Such an analysis makes it possible to show that given the same composition of the rates of return sample, the order of rates in individual variants of permutations brings various results of savings. Although the occurrence of extremely positive or extremely negative sequence of rates of return is highly unlikely, such simulations show well that the assessment of investment strategy's efficiency, from the savers' point of view, must not be limited to the distribution of the rates of return and their sequences must not be overlooked.

The described relations are very important for those who put their savings in defined contribution retirement funds, in which the investment risk is borne individually. These funds do not offer redistribution of profits between various age groups of contributors, and the value of accumulated assets depends on the contributions paid and individual path of realised rates of return in saving period. In their investment decisions, retirement savers must take into account, among others, market risk, inflation risk and longevity risk. The sequence-of-returns risk and its significant impact on the saving result is one of the least realised and researched retirement risks. One of the reasons for low knowledge among experts and savers, may be the method of measurement and assessment of investment results. The global standard of presenting investment results [GIPS 2012] recommends applying a time-weighted rate of return to assess investment efficiency. It is a measure wherein the impact of flows in and out of the portfolio is eliminated. Rates of return calculated in this manner allow the comparison of results between competing products or assessment of results against benchmarks, i.e. relevant stock market indexes. The flows are not taken into consideration due to an assumption that the managers have no influence on the dates payments and withdrawals made by clients. For investment funds, in which

lump sums are usually paid, the rate of return calculated based on time and money-weighted formula is the same. The investment effect for the client and rate of return at which the manager is evaluated, are coincident. If flows in and out of portfolio occur, which is typical of long-term saving schemes and retirement funds, the internal rate of return (i.e. money-weighted rate of return) is the proper measure of investment efficiency for the saver.

The method of measuring, reporting and assessing the results is based, in line with market standards, mainly on time-weighted rates of return. Similarly, incentive schemes and a manager's performance ranking are based on rates of return calculated in this manner. During the design and assessment of investment solutions, attention is focused on the risk adjusted rate of return, and the sequence risk is overlooked. It should be stressed that the time-weighted rates of return over the saving period are not identical with investment effects for clients. This problem was noticed by the Canadian regulator, who introduced the obligation to report the money-weighted rate of return in annual statement presented to the client [RBC Wealth Management 2016]. In Poland, before fundamental changes in the investment policy of Open Pension Funds (OFE) were introduced in 2014, the Polish Financial Supervision Authority and *Analizy Online* [Analizy Online 2014] published investment results based both on money-weighted and time-weighted rates of return. Also in later analyses, experts of the company *Analizy Online* [2017], when justifying the selection of measures to assess the investment results of OFE, indicated that due to the nature of savings accumulation based on regular payments, the internal rate of return (IRR) would be adopted to analyse OFE's rates of return. In academic research and market reports assessing the efficiency of retirement funds, however, time-weighted rates of return were dominant. Rankings of funds and presentations of results in popular press articles were composed in the same manner. The importance of portfolio size and sequence of returns has not been sufficiently analysed in the statutory reviews of the retirement system, conducted twice⁸. The conclusions from the analysis of investment efficiency of OFE and indexation of accounts with Social Insurance Institution (ZUS) were supposed to be used as basis for decision as regards the future of the capital pension pillar. The discussion of the methods employed to evaluate the results obtained by OFE and ZUS showed insufficient awareness of the difference resulting from the application of money or time-weighted rates of return to assess the efficiency of the portfolio management from the point of view of their participants' interests. The importance of the money-weighted rates of return and order of rates of return for the assessment of the efficiency of investment strategies for the client was stressed in the dispute between government experts and professors Otto and Wiśniewski [2013, p. 4]⁹. Also the experts of the Pension Fund Societies'

⁸ Cf. the Ministry of Labour and Social Policy and the Ministry of Finance [2013], Review of the operation of the pension system. Security owing to sustainability and Information of the Council of Ministers for the Sejm of the Republic of Poland regarding the consequences of the acts of 25.03.2011 and 06.12.2013, along with proposed changes, draft dated 31.10.2016.

⁹ The authors presented the sensitivity of the internal rate of return to the order of increase or decrease, thus putting the 13 historical rates of return in ascending and descending orders.

Chamber of Commerce [IGTE 2016, p. 7], in public consultations of the draft review, stressed that during the assessment of the effects of long-term saving, one should focus on the sensitivity of the accumulated capital to the sequence of returns and portfolio effect. They stressed that the negative market trend over the last two years of the analysed period on the Polish market had a significant impact on the comparison presented in the draft review. In both reviews of the pension system, when comparing the balance of account with OFE with those handled by ZUS, an explanation was missing that the results were largely affected by negative rates of return occurring at the end of the assessed period. The comparison in the second review also failed to take into consideration the fact that the sequence-of-returns risk was mitigated by the pre-retirement transfer mechanism and the comparison should be made for the combined effect of OFE account and the portion transferred to the ZUS sub-account.

3. Sequence-of-returns risk and portfolio effect risk on the largest retirement markets

Using the long history of mature capital markets, one can analyse the impact of the volatility of rates of return and sequence risk on the results of retirement saving. An interesting simulation of the hypothetical replacement rates for cohort saving for retirement between 1940 and 2010 for the US and Japanese markets was presented by Antolin et al. [2009]. The analysis shows the combined impact of market and sequence-of returns risk on people saving in these markets, with assumptions of typical income and work experience¹⁰. The simulation shows considerable diversity of replacement rates for individual cohorts in both markets. The replacement rates for the US market, at 60% allocation in equities and 40% in bonds, were between 20-50. For Japan this diversity was higher and ranged from a few to 80%. High volatility of benefits results both from different average rates of return over the analysed 40-year periods and from the sequence of returns. It is worth noting that the lowest values of replacement rates occurred for those cohorts for which the last years of capital accumulation coincided with market crises (1974-75, 2008).

The difference between the average rates of return and the actual investment effect for the customer is well-illustrated by the analysis of Morningstar experts [2017] who specialise in the assessment of effectiveness of mutual and pension funds. In their research, the target date funds were compared with balanced fund as a typical investment selected by a retail client¹¹. Over the analysed period of 2006-2016, the balanced fund recorded higher rates of return and lower risk measured by standard

¹⁰ This example assumes that the saver starts working at 25 years of age, continues working for 40 years and retires at 65. The annual contribution paid is 5% of remuneration, an increase in remuneration of 2% a year in real terms is adopted. It was assumed that the withdrawals are realised in the form of 20-year term annuity, the price of which results from long-term interest rates upon conversion to annuity. In this case the rates of return during the withdrawal period affect the volatility of benefit and the analysis of the impact made by sequence-of-returns is limited only to the accumulation phase.

¹¹ Allocation of the balanced fund in equities was at 60%.

deviation than all target date funds analysed to date. In the analyses, the closing balance of a one-off investment of almost USD 50k in a balanced fund was compared with the same amount paid in regular contributions by a participant in target date funds. They (apart from funds with the shortest investment horizon), despite having attained lower average rates of return than the balanced fund, demonstrated higher value of accumulated assets at the end of the analysed period thanks to the advantageous order of rates of return. The authors stressed that the principal reason for the better effect for clients of target date funds were the relatively better rates of returns of these funds over the final years of analysis, when the size of the portfolio was higher.

Considerable diversification of replacement rates, similarly as in the American and Japanese markets, is demonstrated by the simulation of the result of retirement saving in Australian funds [Basu et al. 2012, pp. 13-14]. Analysis of the Australian market is interesting for two reasons. Firstly, it is a market with the largest share of defined contribution funds¹². Another factor is the clear growth in equities volatility recorded in the second half of the analysed period. Equities are the main category in which the contributions of participants in Australian retirement funds are invested. Based on the historical data of rates of return in the period of 1900-2011 from the Australian and US 73 40-year paths of realising rates of return were calculated¹³. The results of simulation showed that the highest retirement capital obtained by the savers who retired in 2000 would have been by 380% higher than that recorded by savers with lowest capital who retired in 1974. The authors of the report stress that the diversity of the amount of accumulated capital results from the difference in average rates of return and their sequence. To conduct a detailed analysis of these two effects, the paths of rates of return which yielded the worst and best result and two paths with the same amount of accumulated assets were compared. In the worst-case scenario, over the last ten years, seven rates of return were below the average rate of return from the entire period, and the rate of return in the penultimate year was lower than average by two standard deviations. For the best result, the rates of return over the last ten years were better than the long-term average. What is also interesting is the comparison of two paths completed in 1940 and 1978 which yielded the same result of accumulated assets, amounting to 1.9 million. Despite the fact that the arithmetical mean rate of return for the path completed in 1978 was by 71 base points higher and the geometric mean was by 33 base points higher than the path ending in 1942, the unfavourable order of returns in path ended in 1978 over the last ten years levelled the potential benefit resulting from the higher average rates of return. These examples are a good illustration of the impact of sequence of returns on the value of accumulated retirement savings.

¹² According to the Towers Watson [2011] report, in 2010 approx. 80% of retirement assets in Australia were accumulated in fixed-contribution fund, whereas this share in the US was 57%, 40% in the UK and only 2% in Japan.

¹³ In the analysis [Basu et al. 2012, pp. 6-7] a simplified allocation of assets in default option was assumed. The retirement portfolio was made up in 36% of Australian equities, 30% US equities, 16% national bonds, 10% US treasury bonds and 8% of money market bills. The nominal mean rate of return for such a portfolio over the period of 1900-2011 amounted to 10% at standard deviation of 11%.

4. The sequence-of-returns risk and portfolio effect risk on the Polish market

To demonstrate the significance of sequence of returns, the authors of this article conducted an analysis taking into consideration the characteristics of a potential member of the projected employee retirement plans. It was assumed that the participant joins the plan at 25 years of age. Initial earnings are equal to the national average at PLN 4,000. In the following years the earnings will grow in line with the adopted career curve, with the most dynamic growth occurring between 26 and 35 years of age (annual growth of 7% was assumed) and between 36 and 45 years of age (5% annually). Contribution of 4% of gross remuneration is transferred to the retirement plan (2% of the employee's contribution, 1.5% of employer's contribution and payment from the budget). In total, during 40 years of retirement saving PLN 204.7k will be paid. The period of participation in the plan was divided into accumulation phase (accrual of savings for future retirement) and decumulation phase (withdrawal of retirement payments). The second one being assumed as the time when retirement savings are still invested on the capital market. To adequately illustrate the effects of sequence of returns and separate them from the impact of changes in allocation in time (which occurs in the life-cycle strategies), in the analysis of the accumulation phase constant allocation at 60% on risk assets ("equities") was assumed and 40% in safe assets ("bonds"). In the analysis of the decumulation phase, 100% allocation in bonds was assumed. Data regarding historical rates of return date back to 2002-2017. As rate of return from equity the changes in the Warsaw Stock Exchange index were assumed (taking into account dividends), for bonds annual rates of return from the Citigroup Poland Government Bond Index All Maturities Local Terms¹⁴ were used. Annual rates of return from the period of 16 years were repeated 2.5 times. In total, all this gives 40 years of rates of return, which corresponds to the assumed horizon of accumulating retirement savings for a 25-year-old joining the programme.

4.1 Impact of sequence in the accumulation phase

The simulation included a forecast of the value of accumulated assets for three paths of rates of return. The first 40-year path covers the 2.5 times repeated annual historical rates of return for balanced portfolio (60% equities and 40% bonds). Two other paths include rates of return in an ascending and descending order, respectively. These artificial rate of return paths are a good illustration of the importance of the sequence of returns, as all the moments of distributions are the same in all variants. The results of simulation are presented in Figure 1 and Table 1.

¹⁴ The average annual geometric nominal rate of return from the WSE index for the years 2002-2017 totalled 10.0% (arithmetic mean 13.4%) at standard deviation of 25.8%. The maximum annual rate of return from the WSE index in this period totalled 46.9% (in 2009) and the highest negative annual rate of return amounted to -51.1% (in 2008). For the SBPLL bond index, the geometrical annual rate of return was 6.5% (arithmetic mean of 6.6%). Volatility measured with standard deviation was 5.2%. The highest value of the annual rate of return from bonds over the 16 analysed years was 20.0% (recorded in 2002) and the lowest value was 0.2% (for 2016).

The internal rates of return on ascend path are almost twice as high as in the historical path and in the descending path - lower nearly by half. Very high diversity was recorded in the values of assets at the end of the accumulation period. With the same set of rates of return, the result of the ascending path is over 8 times higher and the result of the descending part is 3.5 times lower when compared to the historical path result. These huge differences result solely from sequence of returns.

Table 1. Results of saving in a retirement plan – accumulation phase

Retirement plan	Returns path in the accumulation phase		
	Historical	Descending	Ascending
Total contributions paid (nominal value)	204,707	204,707	204,707
Assets at the end of the accumulation phase (nominal value)	1,686,096	486,584	14,300,274
Internal rate of return (IRR) during accumulation phase	9.9%	4.5%	18.0%

Source: Authors' own calculation.

Figure 1. Assets in the accumulation phase (year end) - logarithmic scale (log10)

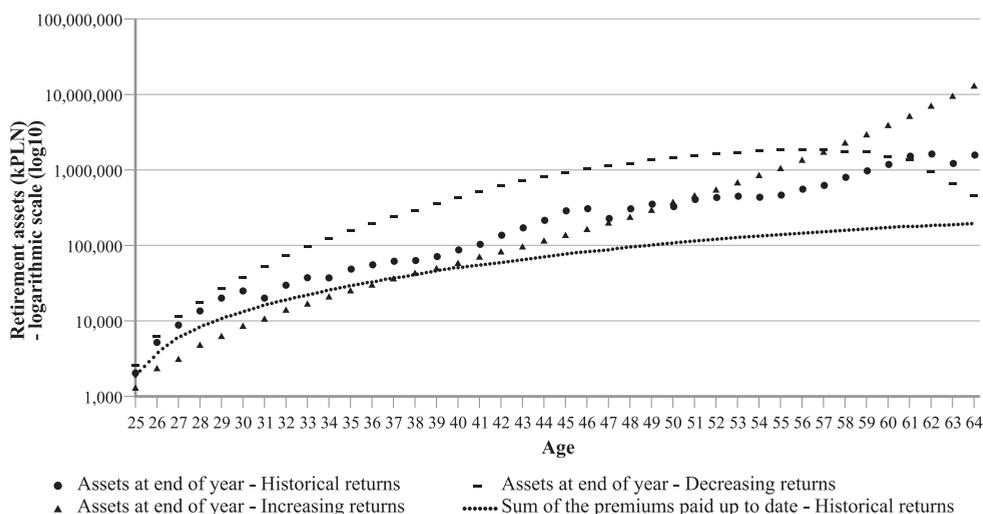


Figure 1 shows that despite a long domination of assets of the descending returns path which occurred for as many as 33 of 40 years of accumulation (due to very high returns and quick accumulation in the initial period), the deeply negative returns in the pre-retirement period fully cancel this effect out, yielding the final result worse than the historical path. On the other hand, the laborious accumulation

in the ascending returns path, although burdened with losses in the initial saving period (deep, in relative terms although minor in nominal terms), brings, however, a perfect end-effect owing to high returns in the pre-retirement period. The final result of accumulation in historical path is somewhere between the results of the descending and ascending paths. Just based on this simple relation of order, one may suspect that the deciding stage for the diversification of the saving result is the pre-retirement process.

We obtain interesting results when determining internal rates of return and assets at the end of the accumulation phase for 10,000 random historical permutations of historical rates of return¹⁵. Table 2 presents the distributions of these permutations' statistics. The distribution of internal rates of return in terms of order (position statistics) corresponds to the distribution of assets (it is a property of internal rate of return (IRR)) but is more symmetrical. For IRR, the mean is very close to median, whereas for assets, the mean is clearly higher. The distribution of assets demonstrates a strong right-side asymmetry, has a "heavy" right tail and maximum over seven times higher than the mean or median.

Table 2. Statistics of assets distribution at the end of accumulation phase and IRR in 10,000 random permutations of historical returns path

Result	Internal rate of return (IRR) during accumulation phase	Assets at the end of the accumulation phase
1 st percentile	8.0%	1,065,999
5 th percentile	8.6%	1,234,933
10 th percentile	9.0%	1,346,777
25 th percentile	9.6%	1,576,335
Median (percentile 50%)	10.4%	1,897,200
Average	10.4%	2,015,729
75 th percentile	11.2%	2,325,158
90 th percentile	12.0%	2,825,451
95 th percentile	12.4%	3,182,328
99 th percentile	13.3%	3,987,724

Source: Authors' own calculation.

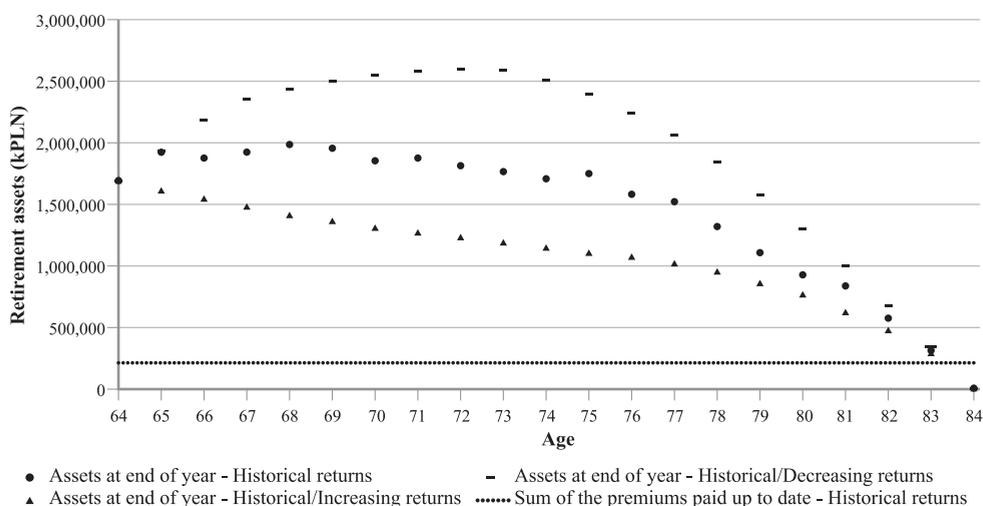
¹⁵ The total number of possible settings of the set of 40 rates of return is 40! and it is an enormous number. Despite the fact that 10,000 permutations is just a small part of this number, it is a sample that is sufficient to illustrate the diversity of results which stems from the sequence of returns.

The comparison of the distribution of these permutations' statistics with the results for the historical path, both descending and ascending in Table 1 shows that the descending path determines the minimum of distribution of assets at the end of the accumulated phase and the ascending path sets the maximum. The historical path turned out to be better than 33% and worse than 67% permutations within the sample.

4.2 Impact of sequence in the decumulation phase

Assuming that the capital remains in the retirement fund, also over the withdrawal period (decumulation phase), the sequence of returns is also significant in this phase and, as we will demonstrate, may considerably influence the amount of benefits paid. The starting point for the analysis of the decumulation phase are the assets collected in the accumulation phase, at historical returns path.

Figure 2. Assets in the decumulation phase (year end) - natural scale



Source: Authors' own calculation.

The impact of sequence in the decumulation phase was presented (similarly as for the accumulation phase) in variants of three returns paths: historical, descending and ascending, for a safe portfolio comprised in 100% of bonds. Figure 2 shows the projection of retirement assets remaining within the portfolio at the end of individual years of the decumulation phase for each of the three paths. It is easy to notice that the assets in the descending path are at any time higher (except for the starting and end point) and in ascending path they are lower than when compared with the historical path. In the decumulation phase, the descending path is thus the best, and historical path is intermediate, and the ascending path - the worst.

Negative returns in initial years of the decumulation phase cause a quick drop in funds and affect all future withdrawals (only a minor part of withdrawals has been realised). It is a reverse relation than in the case of the accumulation phase, wherein the ascending path yielded the best result and the descending path - the worst.

The fundamental part of the difference between individual paths develops over the first 5 years after retirement and is maintained over a number of years thereafter. The strongest impact on the total amount of withdrawals and average replacement value is made by rates of return obtained in the first few years after retirement, as these rates will be reflected in most of retirement withdrawals, and returns in later periods will not be as powerful.

Table 3 presents the major results of the retirement withdrawal phase. The amount of annual benefit is converted each time by dividing the funds remaining in the plan by the number of years left for the participant to reach 85 years of age. The average monthly pension has been calculated as the total amount withdrawn from the plan, divided by 240 months (20 years x 12 months).

Table 3. Results of saving in a retirement plan – decumulation phase

Retirement plan period	Returns path in the decumulation phase		
	Historical	Descending	Ascending
Internal rate of return (IRR) during decumulation phase (20 years)	7.5%	10.6%	4.3%
Total benefits paid out (nominal values)	3,569,808	4,641,618	2,679,260
Average monthly pension (nominal values)	14,874	19,340	11,164

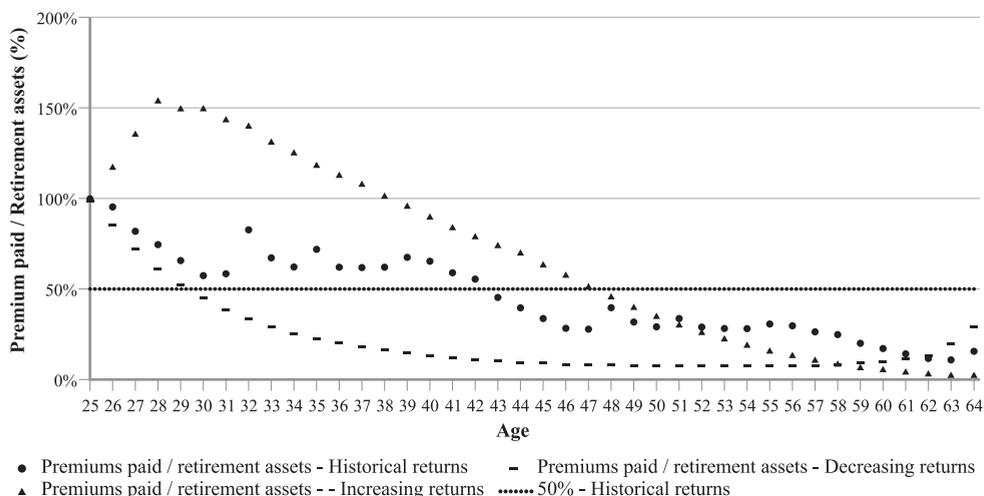
Source: Authors' own calculation.

When comparing the total amount of withdrawn retirement benefits with the value of assets collected at the end of the accumulation phase (both amounts for historical path), we can see that over a half of the withdrawn funds come from returns on investment already generated in the accumulation phase. On one hand, this confirms the considerable importance of keeping the funds invested and properly managed during the decumulation phase, which is concurrent with the 60:30:10 principle described earlier and presented by Ezra [2009, pp. 44-45]. On the other hand, it is a result of extraordinarily high returns on bonds on the Polish market, with average level of 6.5% over the period of 16 years (2002-2017). This above-average high rate of return is significant also for the earlier discussed results of the accumulation phase (which realises on average a 6.5% return on bonds and an additional 3.5% premium for equity investment). It should be noted, however, that in the analysed period, the Polish financial market was still realising the risk premium for a developing market and over a longer period one needs to expect further convergence to the developed markets which will reduce the premium.

4.3 Risk zone. Investment portfolio size effect

The determination of risk zone is a very important issue for designing investment solutions for saving purposes. The dropping share of assets coming from contributions paid in total assets is a key measure of the growing importance of rates of return for the development of portfolio value. When the total amount of contributions in relations to assets is lower than 50%, the rate of return is the decisive factor affecting capital accumulation (portfolio size effect). Figure 3 shows the change in the share of contributions paid in assets for three variants of rates of return. The comparison to the line of 50% share of contributions paid illustrates a different starting point for the portfolio size effect for the analysed rate of return paths.

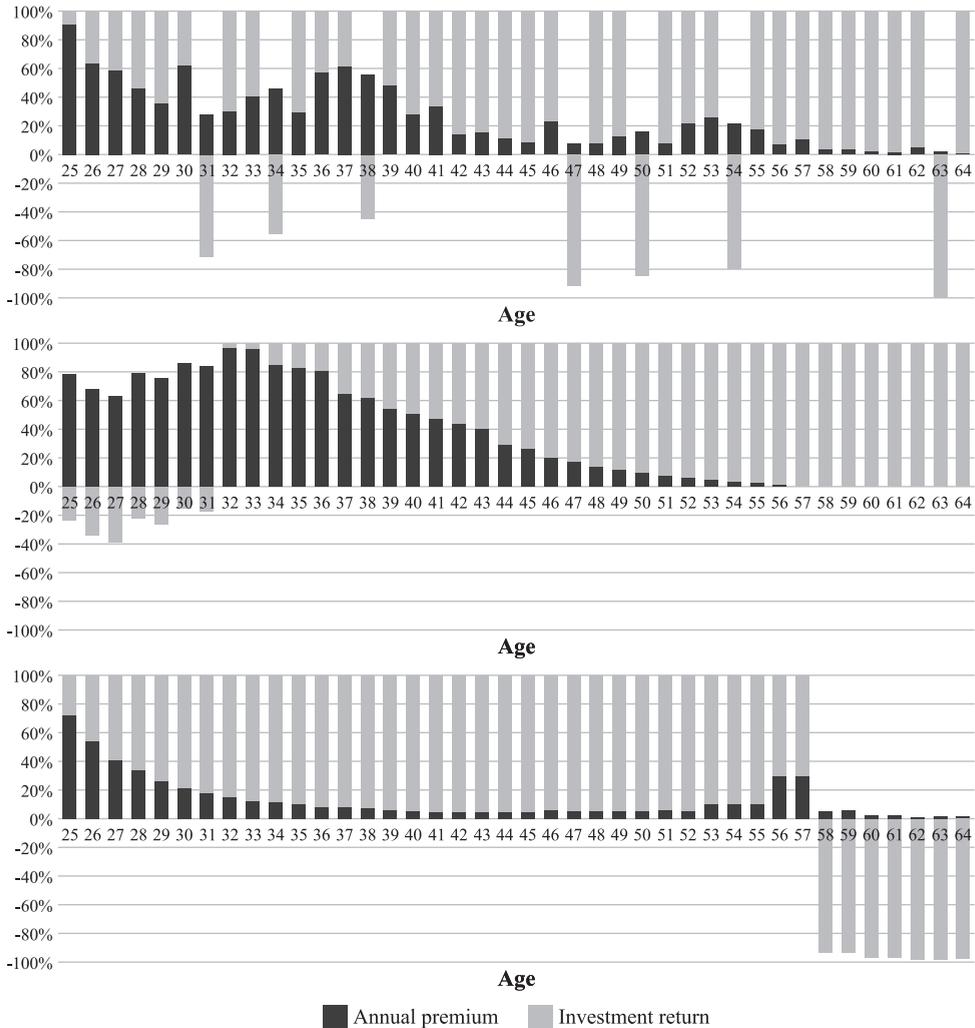
Figure 3. Contributions paid in the percentage of assets (at the beginning of the year)



Source: Authors' own calculation.

The growing importance of the rates of return, along with the increase of portfolio value is demonstrated by the analysis of the sources of growth in retirement investments presented in Figure 4. For the historical path, the dominant importance of returns on investments (as compared with contributions) is visible as soon as after 15 years of saving. The comparison of the relation of investment results to contributions for descending and ascending paths of returns is a good illustration of the combined impact of sequence of returns and portfolio size on the accumulation of capital. For the ascending path (favourable) the dominant importance of investment results is becoming visible after 15 years (similarly as for the historical path) and for the descending path (unfavourable) - as soon as in the third year of saving.

Figure 4. Source of growth in retirement investments by path of returns: historical (top panel), ascending (middle panel) and descending (bottom panel)



Source: Authors' own calculation.

5. Conclusions

The simulation conducted for a potential participant in employee capital plans demonstrates the significant importance of the sequence of returns and the portfolio effect for the process of accumulating retirement savings and withdrawal of benefits. In combination with the presented experience from international markets, it shows the need to take into consideration the sequencing risk when designing investment

solutions, assessment of the efficiency of investment strategies and communication of investment results to participants in retirement plans.

The importance of the risk zone for the result of the savings process is linked with the proposal of various solutions for the management of sequence risk in this key period of saving. Some academics and market experts recommend life-cycle strategies as the best for preserving the accumulated capital. Other methods for curbing the negative impact of rates of return when the accumulated assets are high include portfolio insurance using option strategies, guarantees of rates of return provided by entities offering the product and diversification, both geographical and in terms of the class of assets.

The importance of sequencing risk and portfolio effect for the retirement outcomes leads to a conclusion that when assessing the investment strategies risk based on the asset allocation glide path, the average money-weighted allocation (i.e. the amount of retirement assets accumulated at the given point) should be compared as opposed to the simple arithmetical mean of percentage allocations over the investment period. The sequence of returns and portfolio effect should also be taken into consideration when assessing the efficiency of investment strategies employed for management of retirement savings. The assessment of strategy merely based on moments of distribution is incorrect.

In annual statements of results presented to clients, asset managers in employee capital plans should provide the money-weighted and not only time-weighted rates of return.

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Abbreviations

IGTE – Pension Fund Societies' Chamber of Commerce (*Izba Gospodarcza Towarzystw Emerytalnych*); IRR - internal rate of return; OFE – Open Pension Fund (*Otwarty Fundusz Emerytalny*); ZUS – Social Insurance Institution (*Zakład Ubezpieczeń Społecznych*).

Increasing life expectancy – the impact on old-age pension benefits

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Abstract. The demographic changes currently observed in European markets have an important effect on the stability of pension systems and the amount of old-age pension benefits. One of the most important changes is increasing life expectancy, which will significantly affect the amount of old-age pension benefits. These old-age pension benefits come from both the statutory and the voluntary parts of the pension system and are the main source of income for most elderly households. The reduction of these benefits as a result of increasing life expectancy is a major threat to the financial situation of retiree households. The purpose of this paper is to identify the impact of increasing life expectancy on old-age pension benefits from both the statutory part and selected forms of the voluntary part of the pension system operating in Poland. To achieve this aim, life annuity calculations were used. The results obtained clearly indicate the impact of increasing life expectancy on the amount of benefits received by elderly people, in particular from the compulsory part of the pension system. In the case of selected voluntary forms of the optional part of the pension system, the possibility of differentiating benefits based on gender has a significant effect on the amount of these benefits.

Keywords: life expectancy, old-age pension benefits, life annuities.

JEL Codes: G22, J26, J11.

1. Introduction

The population ageing² is a global and irreversible process, and the degree of advancement depends on the phase of development of a given society. The demographic trends observed in Poland that have a direct effect on the age structure of the population and simultaneously on the process of the ageing of the population are the consequence of many factors, among which the systemic and

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² The process of the population ageing as well as its effects have been discussed in the literature (*inter alia* [Lipczyńska, 2015; Dragan 2011; Kilian 2010; Szukalski 1998]).

structural changes that began in the 1990s should be mentioned. Noteworthy most of all are the trends in the development of average life expectancy, the level of fertility and migration abroad, which determine the changes in the age structure of the population as well as the intensity of the process of the population ageing.

In Poland, much as in other European countries, there is a visible positive trend toward the regular extension of average life expectancy, which is regarded as one of the greatest successes in the history of humanity [Bloom et al. 2015]. Available forecasts regarding the average life expectancy at birth in Poland indicate that the average life expectancy for men will increase from 72.8 years in 2013 to 82.6 years in 2060, whereas the average life expectancy for women will increase from 80.9 years in 2013 to 88.1 years in 2060 [European Commission (EC) 2015]. This situation may have a significant effect on the realisation of demographic risk (in particular the risk of longevity) in the Polish pension system [Kowalczyk-Rólczyńska 2016; Szczepański 2014], because increased longevity implies extension of the period during which old-age pension benefits are received. If together with the growth of the period of receiving old-age pension benefits there is no corresponding growth in capital³ accumulated through the pension system during the period of professional activity, the amount of those benefits will become progressively lower. It should be emphasised that the realisation of demographic risk in the pension system is also influenced by the decreasing number of births which in the years to come imply a decreasing number of individuals of productive age [Góra 2003]. Significant is the fact that the growing number of individuals in retirement generate increased needs for the payment of old-age pension benefits, which in pay-as-you-go systems are financed by current old-age pension insurance contributions by working individuals. If there are fewer and fewer of these individuals, then the problem of maintaining financial liquidity appears and consequently payments of pensions from the statutory part of the pension system become not only a substantial burden on public finances, but also do not achieve their fundamental aim of ensuring material security for old-age [Szumlicz 2015]. It should be noted that the low amount of old-age pension benefits from both the statutory and the supplementary parts of the pension system (under the condition that a given person has any additional forms of old-age insurance at all) will have an effect on the growth in the risk of poverty among the elderly [Babiak 2012; Zaidi 2010]. Women are at a decidedly greater risk of poverty among the elderly. This is linked with the fact that they live longer than men and receive lower old-age pension benefits. Moreover, during their working lives, women receive lower compensation, which translates into lower old age pension insurance contributions, and consequently into a lower amount of accumulated capital, which is the basis for the calculation of old-age pension benefits [EC 2011].

³ Under the concept of capital one should understand here both accumulated pension entitlements (if the pension system is financed on a pay-as-you-go basis) (cf. [Ortyński 2010], indicated also by the abbreviation MKUE – Międzypokoleniowy Kapitał Uprawnień Emerytalnych [Intergenerational Pension Entitlement Capital] (cf. [Owczarek 2009]), as well as financial resources invested in financial assets (if the system is equity funded) (cf. [Szczepański 2015]).

The aim of this article is to evaluate the effect of the increase in longevity on the amount of old-age pension benefits paid to older persons living in Poland as part of the statutory pension system as well as selected supplementary retirement security. To this end, life annuity calculations were used.

2. Old-age pension benefits paid from the statutory part of the pension system and increasing longevity

People living in Poland receive old-age pension benefits from the Social Insurance Fund (FUS), which is administered by the Social Insurance Institution (ZUS). The benefit is paid as part of the statutory part of the pension system. The amount of old-age pension benefits in the reformed pension system (a reform of the pension system in Poland entered into force on 1 January 1999) is equal in value to the sum of old-age pension insurance contributions collected after 31 December 1998 plus the amount of valorised initial capital funds and the sum of funds credited to a subaccount, divided by average remaining life expectancy, expressed in months, for individuals of the same age as the person applying for the granting of old-age pension benefits [ZUS 2016]. Because of a legal settlement, the first old-age pension payments according to the new rules were made in 2009. The amount of such old-age pension benefits can be written as:

$$b = \frac{K}{e_x}$$

where: b – the amount of old-age pension benefits, K – the sum of accumulated capital, e_x – average life expectancy of a person aged x (expressed in months) who is applying for granting of an old-age pension.

In 2009, the amount of the average old-age pension benefit paid by the ZUS was PLN 1602.34 [Statistics Poland (GUS) 2010]. In that same year, the average life expectancy for 60-year-olds (that was the retirement age for women at that time) was 247.3 months [GUS 2010]. On the basis of these two statistics the amount of capital K was calculated, which simultaneously constituted the basis for further calculations. The amount of this capital was estimated as PLN 396,258.68. Calculations for the following years were made only for the first pillar of the pension system; capital accumulated within the second pillar was not taken into consideration. As mentioned above, in 2009 began the payment of old-age pension benefits from combined first and second pillars, however, the amount of money paid from the second pillar was insignificant⁴. Table 1 presents the amount of old-age pension benefits from the first pillar in the years 2009-2015, calculated according to the algorithm used by the ZUS. Moreover, it was assumed that the amount of accumulated capital was the same

⁴ According to estimates by *Gazeta Podatkowa* [2007], the monthly old-age pension benefit from the second pillar paid in 2009 should be between PLN 40 and PLN 70.

for each year⁵ and the table of average life expectancy for both sexes published each year⁶ was used. The assumption made that in each successive year, a person deciding to retire would hold exactly the same amount of accumulated capital that is the basis for granting old-age pension benefits, means that the results presented in Table 1 are an approximate representation of the actual average amount of monthly old-age pension benefits from the first pillar of the retirement system. Table 1 also presents for each of the analysed years the ratio between the average monthly old-age pension benefit paid from the first pillar of the pension system to the average monthly gross wages and salaries [GUS, undat.].

Table 1. Results of the calculation of old-age pension benefits paid by ZUS

Year	Average life expectancy for 60-year-olds [months]	Average monthly amount of old-age pension benefit from the first pillar for persons aged 60 [PLN]	Average monthly gross wages and salaries [PLN]	Ratio between the average monthly amount of old-age pension benefit paid from the 1 st pillar of the pension system to average monthly gross wages and salaries
2009	247.3	1602.34	3 315.38	0.4833
2010	247.5	1601.05	3 435.00	0.4661
2011	251.5	1575.58	3 625.21	0.4346
2012	254.8	1555.18	3 744.38	0.4153
2013	255.2	1552.74	3 877.43	0.4005
2014	256.4	1545.47	4 003.99	0.3860
2015	261.4	1515.91	4 150.88	0.3652
2016	259.6	1526.42	4 118.63	0.3706

Source: Author's own calculations based on GUS data.

The obtained results unambiguously indicate that in each successive year, a person aged 60 entering retirement would receive progressively lower benefits from the first pillar of the old-age pension system (assuming that each of these persons at the moment of retirement held exactly the same amount of capital, which constituted the basis for granting old-age pension benefits). Unsettling is also the fact that from year to year the ratio of the old-age pension benefit received from the first pillar to average monthly gross wages and salaries grew progressively worse. The cause of this situation was not only the increase in life expectancy for individuals aged 60, but also the increase in wages and salaries. These results, although they are only an approximation of real conditions, unambiguously indicate the need to accumulate additional retirement savings.

⁵ Changes in the value of capital (e.g. indexing capital to the level of inflation) could interfere with the reading of the effect of increasing life expectancy on the amount of old-age pension benefits.

⁶ These tables are published as attachments to the Announcements of the President of GUS regarding the table of the average life expectancy of women and men in March of every year (since 2009).

It should be emphasised that the clear fall in the standard of living of people entering retirement with each successive year may have a significant effect on the realisation of the previously mentioned risk of poverty among older people. The EC has indicated that in many countries in Central and Eastern Europe the poverty rate among the elderly population will increase. The problem of poverty will in particular affect women over the age of 65 who live alone [EC 2011]. In the Polish market, this problem may affect people who receive minimal old-age pension benefits. In 2009, this was PLN 675.1 [GUS 2010], which constituted a mere 42.13% of the average old-age pension benefit paid by ZUS in 2009. In March 2017, the amount of the minimum old-age pension benefit in Poland was raised to PLN 1000⁷. Considering that the amount of the average old-age pension benefit paid by ZUS in March 2017 was PLN 2,085.60 [ZUS 2017], the ratio of the minimum old-age pension benefit to the average old-age pension benefit rose insubstantially to 47.95%. It should be emphasised that in the Polish market, women receive substantially lower old-age pension benefits than men. Moreover, as many as nearly 70% of women receive old-age pension benefits lower than the average old-age pension benefit paid by ZUS⁸.

3. The effect of the increase in life expectancy on the benefits paid as part of equity release products

One source of additional retirement income may be equity release products, which are offered in many countries either on the loan model, the sales model, or both models combined [Salter 2014; Reifner et al. 2009; Tse 1994]. This article focuses on the sales model (*home reversion*). On the Polish market, this model is offered by mortgage funds (the best known are Fundusz Hipoteczny DOM, Fundusz Hipoteczny Familia), which as a rule pay a monthly life annuity benefit (although there is the possibility for a lump sum benefit or payment in several instalments [Fundusz Hipoteczny 2017]). Thus, the actuarial life annuity served here as well [Skałba 2003; Gerber 1990; Milevsky 2013]. According to Matłoka [1997] a life annuity is paid periodically, but only as long as the beneficiary is alive. The amount of the periodic (e.g. monthly) life annuity benefit paid to a person aged x at the beginning of every m of this payment period by the mortgage fund, if that person is still living can be written as:

$$b = \frac{RW_0 \cdot \alpha}{m \cdot \ddot{a}_x^{(m)}}$$

where:

b – the amount of the monthly life annuity benefit, $RW_0 \cdot \alpha$ – the value of home reversion, defined as a percentage of the market value of the property at the moment

⁷ According to the Act of 2 December 2016 regarding changes to old-age and other pensions from FUS, as well as several other acts [Journal of Laws 2017 item 2].

⁸ Calculated on the basis of data from March 2017 [ZUS 2017].

the contract is concluded between an older person and a mortgage fund (also defined as Loan-to-Value, LtV), $\ddot{a}_x^{(m)}$ – the actuarial present value of a whole life annuity of 1 per year, payable in instalments of $1/m$ m -times per year at the beginning of every $1/m$ part of a year as long as the person aged x is alive. It is defined using the formula [Błaszczyszyn, Rolski 2004; Bowers et al., 1997]:

$$\ddot{a}_x^{(m)} = \frac{1}{m} \sum_{k=0}^{\infty} v^{\frac{k}{m}} \cdot \frac{k}{m} p_x$$

where: $v^{\frac{k}{m}} \frac{k}{m} p_x$ – the actuarial current value of payments in the amount 1 at the moment $\frac{k}{m}$, $v^{\frac{k}{m}}$ – discount factor, $\frac{k}{m} p_x$ – probability of survival by the person aged x for further $\frac{k}{m}$ periods.

The formula above can be written, assuming uniform distribution of deaths over the year, as:

$$\ddot{a}_x^{(m)} = \ddot{a}_x - \frac{m-1}{2m}$$

where: \ddot{a}_x – is the actuarial present value of a whole life annuity paid in the amount 1 per year at the beginning of each year as long as the person aged x is alive, m – number of payment periods in 1 year.

With the aim of showing the influence of increasing life expectancy on the amount of monthly life annuity benefit paid by an equity release product on the sales model, the following assumptions were made:

- the monthly life annuity benefit was determined for a 60-year-old woman and a 65-year-old man for the years 2009-2016;
- for each year the life expectancy table for women and for men issued by GUS was used,
- for the price per square meter for residential property, the average price per square meter of residential property on the secondary market was adopted, calculated as the average price for the largest cities in Poland in 2010⁹ (since 2010, a stabilisation of residential real estate prices on the Polish market can be observed);
- the area of the residential unit adopted for the calculations was 60 m²;
- the average interest rate for mortgages issued in Polish currency, i.e. 4.5%¹⁰ (as the average of all analysed years) was adopted as the discount rate;
- α was set at the level of 0.5¹¹.

The results of the calculations are shown in Table 2.

⁹ The data for the calculations come from [National Bank of Poland (NBP) 2011]. The average value for 1 m² of residential property in 2010 for the largest Polish cities was 2688.25 PLN.

¹⁰ Calculated based on data from the report on residential loans and sales prices for real estate published by Sarfin-Amron [undat.].

¹¹ In developed markets the value of α as a rule depends on the age of the individual wishing to take out an equity release product. For example, on the Australian market, where the loan model is offered,

Table 2. Amount of monthly life annuity benefits paid through equity release on the sales model (PLN)

Year	2009	2010	2011	2012	2013	2014	2015	2016
for a man aged 65	1293.95	1273.77	1256.62	1252.81	1245.88	1222.91	1233.63	1217.53
for a woman aged 60	917.57	909.96	903.75	904.06	902.41	892.74	895.83	888.53

Source: Author's own calculations based on GUS data.

The presented results show the amount of monthly life annuity benefit a 60-year-old woman or a 65-year-old man would receive if they were to conclude contract for equity release on the sales model with a mortgage fund. It can be seen that in each successive year (from 2009-2014), the amount of the life annuity benefit paid to a man who turned 65 in that year was lower. Only in 2015 was it slightly higher. This is a consequence of the change in the number of people surviving in the subsequent years. In the end, the difference in the amount of monthly life annuity benefit paid to a man who turned 65 in 2009 and a man who turned 65 in 2016 was PLN 76.42. Bearing in mind the fact that equity release products are directed toward individuals (known as *asset-rich, cash-poor* [Li et al. 2010]), who have low income and simultaneously own property of moderate or high value, this difference may be significant. In the case of payments for women, they fall in the years 2009-2011, 2012-2014, as well as 2015-2016. However, these differences are minor.

When determining the amount of monthly life annuity benefit paid from equity release products, a certain pattern should be kept in mind that the older a beneficiary is, the higher the amount of the benefit received from this product will be, assuming price stability on the residential real estate market. Thus, also from the point of view of potential beneficiaries, the time the decision is made to use equity release services is very important. To illustrate this phenomenon, the amount of monthly benefits received for whole life were calculated for women aged 60 to 85, living in a city¹² and owning a residential unit 60 m² in size. For the calculations, the life expectancy table from 2015 was used.

the LtV value rises with the age of the beneficiary and for a 60-year-old woman, the value of this indicator is between 25-30% [MoneySmart, undat.]. In contrast, Fundusz Hipoteczny Familia, operating on the Polish market, provides the information that through their sale model between 60% and 80% of the value of the property is paid [Familia SA, undat.]. The value for LtV adopted in this paper is a value located in the middle of these two solutions.

¹² For calculation of these values the life expectancy table for women aged x living in a city was used. It should be pointed out that mortgage funds are mainly interested in properties in large cities [Fundusz Hipoteczny, undat.]. It should be added that GUS publishes life expectancy tables both for the population as a whole as well as for urban residents and for those living in the country (by gender).

Table 3. The amount of monthly life annuity benefits paid to women aged 60-85 living in cities

Age	Average life expectancy [months]	Amount of the monthly life annuity benefit [PLN]	Age	Average life expectancy [months]	Amount of the monthly life annuity benefit [PLN]
60	289.8	793.74	73	168.60	1122.83
61	279.84	809.44	74	159.96	1166.41
62	270.00	826.19	75	151.56	1213.70
63	260.28	844.09	76	143.28	1265.89
64	250.68	863.24	77	135.24	1322.84
65	241.08	884.03	78	127.44	1385.11
66	231.72	906.08	79	119.88	1453.35
67	222.36	930.10	80	112.56	1528.32
68	213.12	956.01	81	105.60	1609.39
69	204.00	984.00	82	99.00	1696.94
70	195.00	1014.33	83	92.64	1793.26
71	186.12	1047.26	84	86.64	1897.23
72	177.24	1083.63	85	80.88	2011.68

Source: Author's own calculations based on GUS data.

The significantly increasing amount of monthly life annuity benefits, shown in the table above may constitute an important criterion in deciding to take out an equity release product. An individual wishing to use these services may postpone their decision for later, being aware that the older they are when they sign the contract with the entity offering the product, the higher the benefits they will receive¹³. It should still be emphasised that the appropriate time to decide to take advantage of the capital accumulated in real estate will be affected by factors regarding the potential beneficiaries themselves, including their financial situation, their financial needs in the coming years, and the state of their health.

4. Benefits paid by unit-linked insurance products and increasing life expectancy

Older individuals, seeking to raise their standard of living in retirement, may also take advantage of funds that they accumulate during their working lives, including through available forms of voluntary retirement insurance. One of these forms are

¹³ Assuming that life expectancy for persons aged x does not rapidly increase in subsequent years.

unit-linked insurance products, offered by life insurance companies. The accumulated funds in this form of voluntary retirement insurance may be paid out in a lump sum, for life, or with a fixed time horizon. Taking into consideration the third option, calculation of the benefit can be made on the basis of an actuarial n -year temporary life annuity. The amount of the periodic (e.g. monthly) benefit paid to a person aged x at the beginning of every m of this payment period by the life insurance company, if that person is still living can be written as:

$$b = \frac{K}{m \cdot \ddot{a}_{x:\overline{n}|}^{(m)}}$$

where: K – the amount of capital accumulated in the unit-linked insurance product, $\ddot{a}_{x:\overline{n}|}^{(m)}$ – the actuarial present value of a temporary (n -year) life annuity of 1 per year, payable in instalments in the amount $1/m$ m -times a year at the beginning of every $1/m$ part of a year over n years as long as a person aged x is alive. This can be determined using the formula [Gerber 1990]:

$$\ddot{a}_{x:\overline{n}|}^{(m)} = \alpha(m) \ddot{a}_{x:\overline{n}|} - \beta(m) (1 - {}_n p_x v^n)$$

where:

$\alpha(m) \approx 1$, $\beta(m) \approx \frac{m-1}{2m}$ assuming the uniform distribution of deaths over the year, $\ddot{a}_{x:\overline{n}|}$ – the actuarial present value of temporary (n -year) life annuity paid in the amount 1 per year at the beginning of each year for a maximum of n years as long as the person aged x is alive, ${}_n p_x$ – the probability that a person aged x will survive at least n years.

In order to examine how increasing life expectancy affects the amount of benefits received from savings accumulated in unit-linked insurance, the amount of monthly benefits paid out over the subsequent 20 years for a 60-year-old beneficiary has been outlined. The monthly amount of the benefits has been calculated for the years 2009-2016 (Table 4), using the life expectancy table for both genders¹⁴ for each of the analysed years. Moreover, the following assumptions were made:

- the amount of accumulated capital is PLN 200 000;
- an annual interest rate of 2.5%¹⁵;
- provisions and additional fees charged by the insurance company have been omitted.

¹⁴ The Act of 14 December 2012 regarding the change in the act on the insurance business introduced the provision, which remains in effect and states that *the use by an insurance company of the criterion of gender in the calculation of insurance premiums and benefits may not lead to differentiation of insurance premiums of benefits for specific individuals*. In the legal act in force, i.e. the Insurance and Reinsurance Business Act of 11 September 2015, this provision is found in Art. 34.1 [Journal of Laws 2013 item 53].

¹⁵ The value adopted for the percentage rate is close to the interest rate for 10-year Polish Treasury obligations. Moreover, the value of 2.5% adopted for the calculations is lower than the average maximum technical rates in force during the period 1 May 2009-30 April 2016. According to § 46.3. of the Ordinance of the Minister of Finance of 12 April 2016 regarding detailed accounting rules for insurance

Table 4. The amount of monthly benefits paid to a person aged 60 over the following 20 years from capital accumulated in unit-linked insurance

Year	2009	2010	2011	2012	2013	2014	2015	2016
Amount [PLN]	1041.72	1035.74	1031.45	1031.16	1029.67	1021.43	1025.19	1020.67

Source: Author's own calculations based on GUS data.

The above results point to two relevant questions. First, over the course of the eight analysed years, the amount of the monthly benefits paid over twenty years to individuals who have turned 60 in the given year showed a declining trend, although these changes were not particularly large (from year to year the amount of the benefits differs by only a few zlotys). Secondly, if insurance companies were able to differentiate benefits based on gender, women would receive lower benefits than men. The inability to differentiate benefits by gender causes that women can receive higher benefits than they would if gender differentiation was applied. It should be mentioned that if insurance companies operating on the Polish market offered equity release services, the benefits women shall receive would be higher than in the case of those benefits paid by entities for which differentiation of benefits by gender does not apply.

It should be indicated that the above calculations of the impact of increasing life expectancy on the amount of benefits received from unit-linked insurance is not significant.

5. Conclusion

The calculations presented in this paper of the payment of old-age pension benefits from the statutory part of the pension system as well as the benefits paid by selected forms of supplementary retirement security are lower from year to year. A clearly greater decline is noted by using the life expectancy tables for women and men. The decline in these values is greater for benefits paid to men, and lower in the case of benefits paid to women. It can thus be concluded that increasing life expectancy has a greater impact on the amount of benefits paid to men as a group than to women as a group. It should be pointed out that in the above calculations many different assumptions were made, which means that the results obtained are an approximation of reality. Reduction of the number of assumptions and consideration of other factors affecting the amount of benefits could be the next stage in research in this area. Nevertheless, the annually declining amount of old-age pension benefits paid

and reinsurance companies, *the maximum technical rate is set and announced by the supervisory body on 31 January of each year*. Analysis of the General Terms and Conditions of Insurance (GTC) regarding unit-linked insurance clearly shows that life insurance companies use for proper calculations a technical interest rate lower than the maximum technical rate announced for a given year [Journal of Laws 2016 item 562].

from the first pillar of the pensions system together with the simultaneous increase in average wages and salaries in the national economy cause the ratio of these two values to decline significantly from year to year. The lack of additional retirement security could thus lead to an increase in the number of elderly people in danger of poverty. It is therefore also essential to accumulate additional savings during the period of professional activity.

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Abbreviations

EC – European Commission; FUS – Social Insurance Fund (*Fundusz Ubezpieczenia Społecznego*); GTC – General Terms and Conditions of Insurance; GUS – Statistics Poland (*Główny Urząd Statystyczny*); LtV – Loan-to-Value; MKUE – Intergenerational Pension Entitlement Capital (*Międzypokoleniowy Kapitał Uprawnień Emerytalnych*); ZUS – Social Insurance Institution (*Zakład Ubezpieczeń Społecznych*).

Supplementary pensions: what can we learn from Czech, Spanish and Portuguese experiences?¹

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Abstract. The aim of this study is to compare the Czech, Spanish and Portuguese experiences in the area of voluntary pension development. Although these countries are not included in the group of states with the greatest importance of supplementary pensions, they have already reached a considerable level of supplementary pensions expansion and have potential for further strengthening of their role. This paper analyses in a qualitative, as well as a quantitative framework the implemented solutions and their effects in terms of membership, assets, and contributions paid to the voluntary pension plans. It provides some findings with regard to the relationship between supplementary pension arrangements coverage and savings, as well as the efficiency of financial incentives for employers and plan members, or the impact of the design of a voluntary pension system on its development.

Keywords: voluntary pensions, comparative analyses, occupational pension plans, personal pension plans.

JEL Codes: J32, I38.

1. Introduction

In recent years, a substantial increase in the role of private pensions has been observed. The pension funds' assets, both mandatory and voluntary, in the OECD countries have grown to USD 38 trillion, which is the highest level ever reported [OECD 2017]. To a large extent, this is a result of the growing importance of supplementary pensions, which are often seen by policymakers as a remedy for unfavourable projections of the adequacy of mandatory pensions in the near future. In the last two decades, many countries have undergone reforms of their pension systems in order to foster greater retirement savings in the form of voluntary pension arrangements. However, the efficiency of the measures taken varies. In the OECD

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area there are countries such as the United States, the United Kingdom, Canada, New Zealand or Ireland, where voluntary pensions are relatively highly developed [Marcinkiewicz, Chybalski 2017]. Some countries can be also distinguished, where the importance of supplementary pensions arrangement is smaller, however it is still growing. This group includes *inter alia* Austria, Czechia, Denmark, Iceland, Spain and Portugal.

Surprisingly little attention in the current literature is paid to this subject, and the majority of previous studies that discuss the implemented solutions focus on case studies of countries from the group in which supplementary pensions play a greater role. A study by Golinowska [1994] is one of the earliest Polish domestic works that deals with the issue of supplementary pensions development and the other countries experiences in this field. Pieńkowska-Kamieniecka [2016] analyses the participation of the young in the voluntary pension programs in Germany, New Zealand and the United States. Szczepański [2017] refers to the solutions developed on the basis of behavioural economics and implemented in New Zealand and the United Kingdom. Similarly, Bednarczyk [2017] focuses on the experiences of Canada and New Zealand.

The aim of this study is to compare the experiences in this area of some other countries that have already reached a considerable level of supplementary pensions development and have potential for further strengthening of their role. These countries are Czechia, Spain and Portugal. The paper analyses in a qualitative as well as quantitative framework the implemented solutions and their effects in terms of membership, assets, and contributions paid to the voluntary pension plans.

The study is structured as follows. First, it discusses the socio-economic conditions, as well as the labour market situation and current generosity of the mandatory pension systems, that can have a potential impact on the development of voluntary pensions in the countries studied. In the subsequent section, the paper provides an overview of the design of voluntary pension arrangements in Czechia, Spain and Portugal. This qualitative analysis is complemented by quantitative assessment. In the last section, the paper presents the main findings of this comparative study.

2. The background: socioeconomic situation, labour market and pension system generosity

To conduct further comparative analysis regarding the importance of supplementary pensions in Czechia, Spain and Portugal, some insight into the socioeconomic situation, labour market conditions and adequacy of pension benefits from the mandatory pension system may be useful. Table 1 presents the aforementioned factors that can affect the unequal patterns in voluntary pensions development in the countries studied. All three countries are of a comparable level of GDP per capita, which is smaller than the EU average. However, Spain and Portugal are characterised by greater income inequality than Czechia. Savings in supplementary pension plans can be also determined by the labour market situation

in terms of unemployment and the scope of self-employment. Such factors can limit the access to occupational pension programmes, as well as negatively affect savings in pension plans due to their restricted liquidity. Among the three analysed countries, the highest unemployment is reported for Spain, whereas in Czechia it is very low. However, in Czechia the self-employment rate in the population 15-64 is the highest. With regard to the demographic conditions measured by the dependency ratio, the least favourable situation is observed in Portugal.

Table 1. Socio-economic and labour market indicators (2012-2016 averages)

	Czechia	Spain	Portugal	EU-28
GDP per capita (PPS)	23820	25220	21320	27840
Gini coefficient	24.9	34.3	34.2	30.8
Unemployment rate [%]	3.7	15.4	9.2	6.3
Self-employment rate [%]	11.5	9.3	9.7	9.2
Old-age dependency ratio [%]	44.5	42.4	49.3	46.2
Young-age dependency ratio [%]	35.4	35.2	36.6	38.7
Population with tertiary education level [%]	19.8	32.1	20.3	26.6

Source: Eurostat.

Table 2 presents replacement rates of the pension benefit adequacy indicators in the countries studied. The first one, i.e. the aggregate replacement ratio (ARR), is published by Eurostat and is defined as ratio of income from pensions of persons aged between 65 and 74 and income from work of persons aged between 50 and 59. It reflects the relative level of retirement income for the current beneficiaries (the elderly population). The second – pensions replacement rate (PRR) – can be considered as a benefit adequacy indicator regarding the current working-age population. It is a theoretical replacement rate developed by OECD [2015], calculated for a modelled agent under current pension system rules (as of 2013), with a set of assumptions regarding the career path of such an agent, his or her income from work, and other factors. Table 2 reports net PRR separately for an average income earner (1.0 of the average wage), as well as for a low-income earner (0.5 of the average wage) and a high-income earner (1.5 of the average wage). The generosity of the mandatory pension system determines the need for additional saving for retirement. Considered from this perspective, this factor may either foster or discourage individual old-age savings, depending on its low or high level. This can be reflected in the involvement of individuals in savings in voluntary pension schemes; however, this implication is not unambiguous. When benefits from the mandatory pension system are expected to be low, individuals may use long-term saving mechanisms other than voluntary pension plans. The other possibility is that they fail to save additionally, which results in undersaving for retirement.

Table 2. Pension system generosity indicators

	Czechia	Spain	Portugal	EU-28
Aggregate replacement ratio (2012-2016 average)	53.4	61.4	61.0	56.2
Pensions replacement rate (Low earner)	79.7	79.5	77.7	n/a
Pensions replacement rate (Average earner)	50.7	80.1	67.8	n/a
Pensions replacement rate (High earner)	40.1	79.8	68.4	n/a

Source: Eurostat, OECD.

Note: n/a – not available

As shown in Table 2, in Czechia the (relative) pension benefits of current retirees are lower than in Spain and Portugal, as well as the average in the EU. In Spain and Portugal, they exceed the EU average level. In relation to the current working-age generation in all three countries studied, the theoretical replacement ratio is comparable for modelled agents earning a low wage. Where in Spain and Portugal the benefits of other two income groups are similarly adequate, in Czechia the estimated PRR ratios for average and low-income earners are significantly lower.

3. Institutional settings for supplementary pensions

Czechia

In Czechia private pension programs were first established in 1994. As this country did not implement the World's Bank multi-pillar model [Holzmann, Hinz 2005; World Bank 1994], unlike in many other Central and Eastern European countries, the private pension scheme was designed as a solely voluntary one. It took the form of personal plans, however with the significant role of employers, who can also contribute to a plan. A serious reform of the Czech supplementary pension system was introduced in 2013. The existing voluntary pension plans were closed and renamed transformed funds (*Transformované fondy*). At the same time, a new kind of pension plan, called participating funds (*Účastnické fondy*) was established. There were several differences between the “old” and the “new” pension plans. These comprised of, among others, significantly lowered operating costs, as well as different options with regard to the payout phase (for detailed review see [Vostatek 2016]). In 2013, another reform also took place. The government introduced the 2nd pillar scheme embodied by so-called retirement funds (*Důchodové fondy*). Their establishment was preceded by a very long political debate [Adascalitei, Domonkos 2015; Loužek 2014]. Participation in this kind of scheme was set as optional: every insured person could decide whether her or his mandatory pension contribution would be transferred in total to the PAYG scheme (1st pillar), or whether it would be divided between the 1st and the 2nd pillar. However, retirement funds never gained considerable

interest, and, as a result, this pillar was terminated shortly after it started operation. Apart from the aforementioned pension plans, private pension insurance offered by life insurance companies is also available in Czechia. However, its importance can be assessed as marginal [Vostatek 2015].

From the very beginning, private voluntary pensions were intended to significantly complement the PAYG mandatory pension system. It was a result of the implemented pension model, which can be referred to as close to liberal one, with a low level of pension benefits. As a consequence, the state strongly encourages participation in the voluntary pension scheme. Individual contributions are subjected to the TEE regime³, whereas employer contributions are subjected to the EEE regime, respectively [OECD 2015b]. The magnitude of financial incentives is large. They include tax relief as well as state subsidies, which depend on the contribution of a plan member. The state matching contribution varies between CZK 90 and CZK 230 per month. The former is added to a minimum member contribution amounting to CZK 300, whereas the latter refers to the contribution equal to CZK 1000 or higher. Starting in 2016, the maximum tax deduction for the plan member has been doubled (the maximum tax advantage rose from CZK 1800 to CZK 3600). Additionally, the benefit for contributing employers is also increased up to CZK 5000.

Spain

Pension benefits in Spain from the statutory social security scheme (PAYG) have been at a fairly high level so far. However, due to the threatened sustainability, in 2011 and 2013 new rules were implemented that are expected to gradually reduce pension benefit adequacy [Díaz-Giménez, Díaz-Saavedra 2017]. Nonetheless, the coverage of supplementary pension programmes, even before the reform, can be considered as large. As pointed out by Antón et al. [2014] this resulted from a favourable tax treatment of such pension plans in the period 1999-2007. In Spain, supplementary pensions function as private personal and private occupational schemes. The former are offered directly by financial sector institutions in the form of pension funds (*Fondo de Pensiones personal*) and in the form of insurance contracts (PPA - *Plan de Previsión Asegurado*). Only a member can contribute. There is also a special category of associated plans (*Fondo de Pensiones asociados*), sponsored by associations, which are, however, classified as individual [OECD 2009]. Similar to the personal schemes, occupational schemes comprise pension funds (*Fondo de Pensiones de empleo*) and insurance contracts in two forms (PPSE - *Plan de Previsión Social del Empleador*, as well as *Seguros colectivos*).

³ TEE abbreviation refers to the taxation rules in three subsequent phases of retirement saving: pension contribution payment, investment returns and pension funds withdrawal (pension benefit payment), where T denotes tax and E stands for exempt. The other taxation solutions employed in various countries with reference to private pension plans comprise of the following regimes: EET, ETE, TET, ETT, TTE, EEE [see Bravo 2016 for a review].

The tax treatment of the private pension plans is subjected to the EET regime. As a rule, occupational and individual plans are treated in the same manner. The cap on the total annual contributions amounts to EUR 8000 [OECD 2015b]. The maximum tax deduction is limited to 30% of aggregate income and cannot exceed EUR 8000.

Portugal

The Portuguese pension system has undergone frequent reforms since 2000 in order to improve its sustainability and low levels of savings [Garcia 2017; 2004]. These have comprised also the legal environment for the private supplementary schemes. In Portugal, the pension system is similar in terms of its design to the Spanish system, and it includes the 2nd pillar of voluntary private occupational pensions, and the 3rd pillar of the voluntary private personal pensions. The former can be established by employers on a voluntary basis as open or closed pension funds (*Fundos de pensões*) or as collective insurance contracts (*Contratos de seguro de grupo*). Members of the occupational pension plans are subjected to auto enrolment, but they are not obliged to contribute. The employer contribution is mandatory. The latter comprises of personal plans in different programmes (PPR - *Planos poupança-reforma*, PPA - *Planos poupança acções* oraz PPE - *Planos poupança educação*) which can have the form of insurance contracts, investment funds, and pension funds. It is permitted to join an open occupational pension fund on an individual basis. The member contribution to the personal plan is mandatory, but an employer can subsidise it voluntarily.

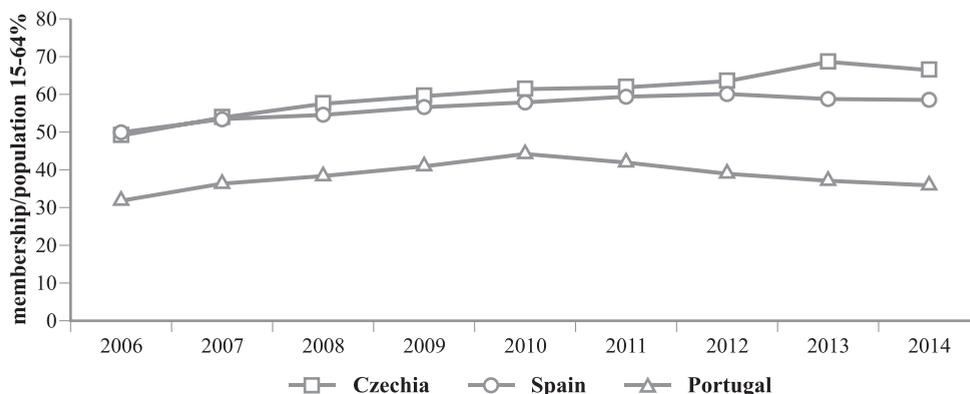
In Portugal, the tax incentives for employers are more favourable than those for plan members. Member contributions are subjected to the TET tax treatment, whereas employer contributions are subjected to the EET tax treatment. The latter is tax deductible at different rates depending on the plan characteristics [see Bravo 2016]. In the most favourable variant, a full deductibility is granted. Individual contributions to both personal as well as occupational plans are tax-deductible at the level of 20% of contributions paid, with a maximum limit that depends on the member's age [OECD 2015b].

4. Quantitative assessment

This section presents quantitative aspects of the development of voluntary pensions in Czechia, Spain and Portugal. The reported data on the membership, contributions and assets accumulated in personal as well as occupational pension plans was obtained from local (country-level) sources. For Czechia, all the information is provided by the Association of Pension Funds of the Czech Republic (APS CR - *Asociace penzijních společností ČR*). The data excludes retirement funds (2nd pillar) and private insurance (which is of negligible importance). The data on the Spanish pension plans in the form of pension funds is delivered by the Association of Collective Investment Institutions and Pension Funds (INVERCO - *Asociación de*

Instituciones de Inversión Colectiva y Fondos de Pensiones), whereas the information on plans in the form of insurance contracts is provided by the General Directorate of Insurance and Pension Funds, Ministry of Economy and Competitiveness (DGSFP - *Dirección General de Seguros y Fondos de Pensiones, Ministerio de Economía y Competitividad*). The latter covers PPA, PPSE and group insurance contracts. Statistics for Portugal are presented on the basis of information reported by the Insurance and Pension Funds Supervisory Authority (ASF - *Autoridade de Supervisão de Seguros e Fundos de Pensões*). The data includes full information on occupational pension plans in the form of closed and open pension funds, as well as on personal pension plans in the form of open pension funds, together with pension funds under PPA and PPR schemes, and investment funds and insurance contracts under the PPR scheme. The data on plans in the form of investment funds under the PPA scheme is not available. Additionally, the data on occupational plans in the form of group insurance contracts is not included. However, this kind of voluntary pension plans is of marginal importance in Portugal.

Figure 1. Membership in voluntary pension programmes among the working-age population

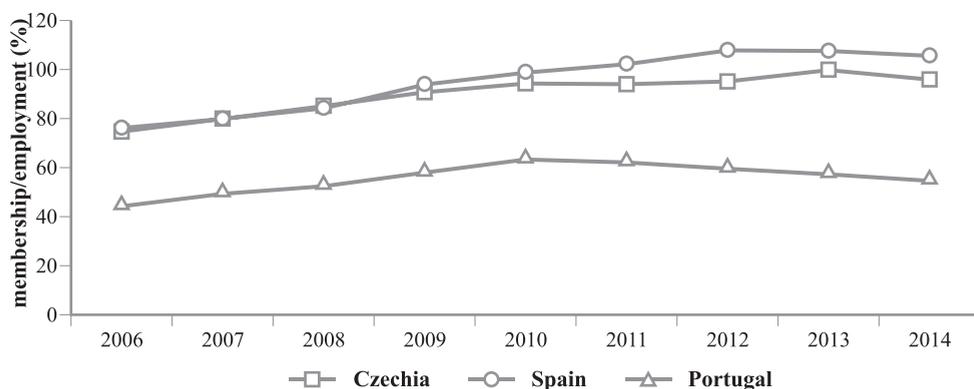


Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF, Eurostat data.

Figure 1 presents the scope of participation in voluntary pension schemes reflected by the number of plan members with regard to the size of the 15-64 population. This ratio does not fully correspond to the percentage of covered working-age individuals, because individuals can participate in more than one pension plan (e.g. an occupational and a personal one), and it is impossible to distinguish between such cases when the available data is aggregated at the national level. However, it can be considered as a proxy for coverage. Among the three countries studied, supplementary pensions are the most widespread in Czechia. In 2014, the reported number of pension plans amounted to 67% of the size of the working-age population. Also in Spain, membership is recorded at a quite high level. It reaches 60% with

relation to the 15-64 population. For Portugal, this number is lower, as the membership rate only slightly exceeds 35%. The presented number of voluntary pension plan participants can be directly compared with the estimates of supplementary pension coverage delivered by OECD [OECD 2015a]. Whereas for Czechia, the results shown in Figure 1 are very similar to the membership (with regard to 15-64 population) reported by OECD, for Spain and Portugal the differences are significant. However, OECD underestimates coverage, as it does not include pension insurance contracts in both countries in its Global Pensions Statistics database⁴. Such plans as *Seguros colectivos* in Spain or *Planos poupança-reforma* in the form of insurance contracts in Portugal have the greatest popularity compared to other programmes, and their exclusion results in reporting of inadequately low coverage rates.

Figure 2. Membership in voluntary pension programmes with regard to the size of employment



Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF, Eurostat (LFS) data.

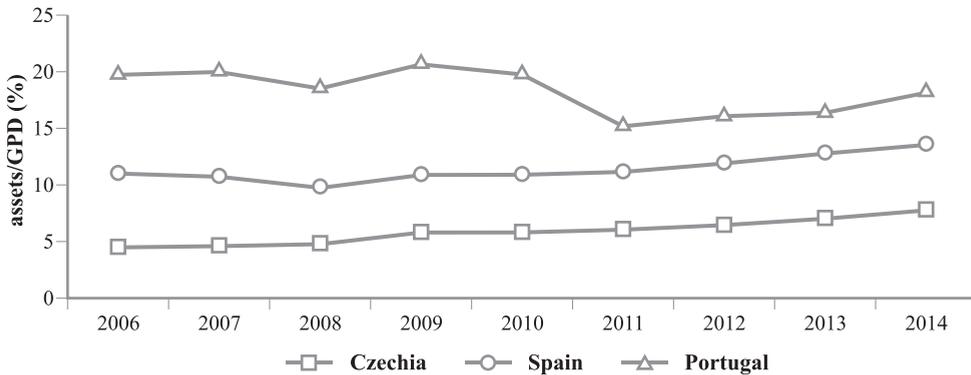
Membership can be also referred to the size of employment. Figure 2 presents the number of voluntary pension plans participants expressed as a percentage of the number of persons employed⁵. This indicator accounts for the differences between countries in the labour market situation, i.e. employment rates, and these differences, as shown in Table 1, are large. For Czechia and Spain, membership expressed in this manner exceeds 100%. However, this does not imply full coverage. It may result from labour force fluctuations (persons enrolled in voluntary pension programme maintain their member status also when not working), as well as from duplicate participation in personal and occupational plans. A considerably smaller rate is reported for Portugal, as it reaches 55% of the persons employed.

⁴ The complete list of supplementary pension programs included in the GPS database is published at <http://www.oecd.org/daf/pensions/gps>.

⁵ The data on employment is obtained from the Eurostat Labour Force Survey statistics. It includes self-employment.

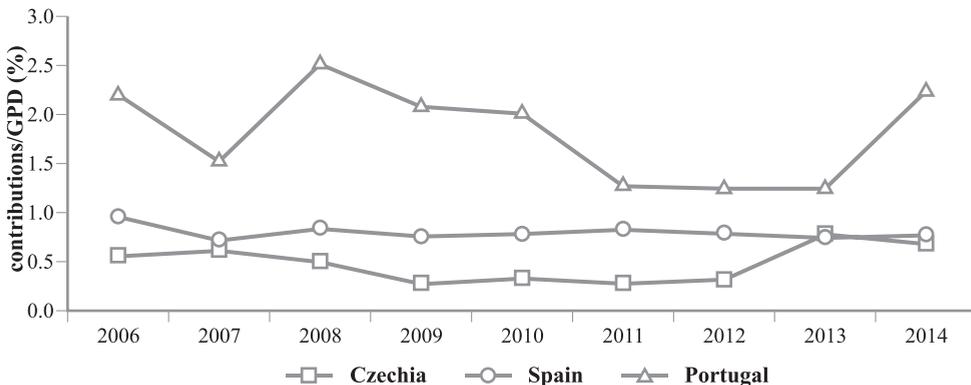
As shown in Figure 3 the largest funds are accumulated in Portuguese voluntary pension schemes. Their value exceeded 18% of gross domestic product in 2014. The assets in Spain and Czechia reported for this period were smaller (comparing to output), as they amounted to 13% and 8%, respectively. However, these numbers imply a rather low level of assets, especially when compared to the average private pension assets (total voluntary and mandatory) in the OECD countries that reach almost 83% of GDP [OECD 2015a]⁶. There are countries such as the United Kingdom or Ireland where private pensions are exclusively voluntary, but the assets are significantly greater comparing to their GDP.

Figure 3. Assets of voluntary pension plans as a share of GDP



Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF, Eurostat data.

Figure 4. Annual contributions paid to voluntary pension plans as a share of GDP

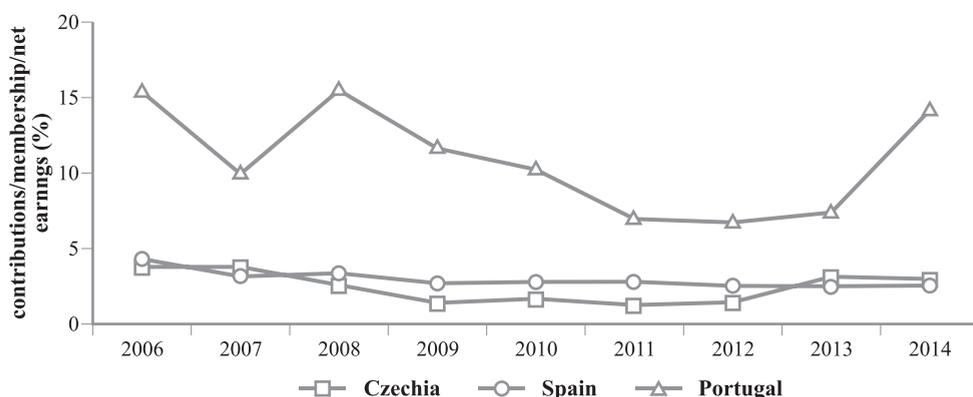


Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF, Eurostat data.

⁶ This is a weighted average for 34 OECD countries reported for 2013. However, it should be taken into account that this value may be underestimated due to the incomplete coverage of the private pension programmes by the OECD database.

Figure 4 presents the level of contributions paid from 2006 to 2014 to voluntary pension plans with relation to output. The highest contributions are reported for Portugal (2.6% in 2014). In Spain and Czechia, these levels have been comparable in recent years, as in both cases they amounted to 1% of GDP. From a somewhat different perspective, the level of contributions is shown on the graph presented in Figure 5. It reports aggregated contributions paid in each year divided by the number of plan members and with relation to net annual earnings⁷. As such, it can be considered as a rough proxy for the savings rate connected solely with savings in voluntary pension plans. For Portugal, this rate exceeded 14% in 2014, whereas for Czechia and Spain it amounted to approximately 2.6%.

Figure 5. Annual contributions paid to voluntary pension plans per plan member as a percentage of annual net earnings



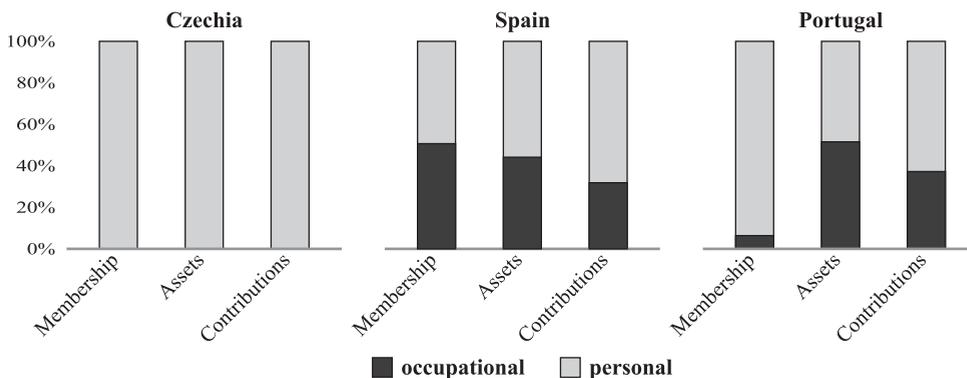
Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF, Eurostat (SES) data.

Another aspect that the development of supplementary pensions can be related to, is the split between occupational and personal plans. Figure 6 presents how membership, assets and contributions are distributed between these two types of pension plans. In Czechia, only personal plans function under voluntary pension schemes, but with a possible employer contribution to a plan. However, according to the information reported by OECD Funded Pensions Statistics, their share accounted for approximately 18% of the total contributions to voluntary pension plans paid in 2014. Spain is the country with a mixed system, where neither personal nor occupational plans prevail. Only in the case of contributions does the share of personal plans slightly exceed 65%. In Portugal, personal plans are characterised by extensive membership, however, the prevalence of this kind of plan is not reflected in contributions and assets accumulated in voluntary pension schemes.

⁷ The information on the annual net earnings is provided by the Eurostat (based on the EU Structure of Earnings Survey). It is given for a single person without children, earning 100% of the average wage.

While occupational plans account only for 7% of the total membership, the shares of assets and contributions in the corresponding categories amount to 52% and 37%, respectively.

Figure 6. Shares of occupational and personal plans in supplementary pensions (as of 2014)



Source: Author's own elaboration based on APS CR, INVERCO, DGSFP, ASF data.

5. Discussion and conclusions

In the previous sections, qualitative as well as quantitative comparative analyses for three countries, namely Czechia, Spain and Portugal, with regard to the development of supplementary pensions schemes, are presented. Table 3 summarizes the main aspects of the functioning of voluntary pensions in the countries studied.

Table 3. Voluntary pensions in Czechia, Spain and Portugal – a summary

	Czechia	Spain	Portugal
membership level	high	high	moderate
asset level	low	low	moderate
contribution level	low	low	high
auto enrolment	no	partly (only occupational plans)	partly (only occupational plans)
occupational/personal structure	personal only (employer may contribute)	mixed	mixed (with prevalence of personal plans)
financial incentives	greater towards plan members (highest in the group)	comparable between employers and plan members	greater towards employers

Source: Author's own elaboration.

In all three countries, the role of voluntary pensions can be regarded as limited, especially compared to countries such as the United Kingdom, New Zealand or Ireland. However, the performance of this sector (in terms of membership, accumulated assets and contributions paid) in Czechia, Spain and Portugal is still much better than in many European countries, such as France, Italy, or other Central and Eastern European countries. The analyses conducted prove that two main dimensions of voluntary pension development, which are extensive coverage and sufficient saving rates, do not necessarily converge. In order to increase the importance of supplementary pensions and their role in providing adequate pensions in the future, both should be equally regarded by policymakers. Czechia can serve as an example of a country where very generous tax incentives resulted in broad participation, but these means turn out to be inefficient when it comes to the saving outcomes measured by assets and contributions paid⁸. Quite different findings can be formulated for Portugal, where contributions and assets are considerably higher than in Czechia, but coverage is much smaller.

Comparisons of the effects of quasi-mandatory solutions regarding membership in occupational plans delivers some interesting findings. In Czechia, there are only personal plans, and individuals are not subjected to auto enrolment. In Spain and Portugal, employers can establish pension programme on a voluntary basis, but employees are auto enrolled [EIOPA 2014]. However, as shown in the previous section, in Czechia the participation in voluntary pension plans is at a comparable level as in Spain, and significantly greater than in Portugal. Consequently, one can conclude that the quasi-mandatory measures are not a necessary condition for achieving a high take-up rate. In Spain, where personal plans account for a more or less half of the total number of voluntary pension plans, the role of auto enrolment is limited. The auto enrolment solution adopted in Portugal also does not seem to be an effective tool to promote high supplementary pensions coverage. It applies only to plans set up on voluntary basis by employers. Thus, the results imply that in Portugal there may be some barriers (or lack of sufficient incentives) on the side of employers that prevent them from establishing pension programmes on a larger scale.

The design of supplementary pension schemes that include measures promoting occupational or personal plans in a different (smaller or greater) scope does not seem to be crucial as far as the saving effects are concerned. The countries analysed in this study have quite different structures with regard to the relevance of these two kinds of pension arrangements. In Czechia, an occupational scheme does not function, in Spain both schemes are balanced in terms of the dimensions analysed, whereas in Portugal the size of the occupational scheme measured by participation rate is small, but it is very efficient in terms of contributions and accumulated assets.

In the countries studied, different policies are implemented in connection with financial incentives to encourage greater savings. In Czechia, they are the most

⁸ Similar findings are also presented by Rutecka-Góra [2016] who concludes that generous state subsidies and tax relief in Czechia have resulted in high coverage, however their impact on the contribution levels remains highly questionable.

generous and mainly addressed to plan members. In Spain, employers contributing to pension plans are favoured equally to plan members. In Portugal, employers can benefit from tax advantages to a greater extent than plan members. The examples of Portugal and Czechia may indicate that financial incentives towards employers are more efficient than tax incentives and state subsidies aimed at members, i.e. employers are more responsive to favourable tax treatment. The efficiency of Portuguese occupational pensions in terms of average saving rates compared to Czech personal pensions supports this view. However, as this conclusion is formulated on the basis of single-countries case studies, caution is required, as there are more in-depth analyses needed.

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Abbreviations

ARR – aggregate replacement ratio; CZK – Czech koruna; PAYG – Pay-As-You-Go; PRR – pensions replacement rate.

(Ir)responsibility for future generations – us and the life of those to come or to miss

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Abstract. The current and forecasted image of the demographic processes and condition of the socio-economic order of the West (evident e.g. the in case of pension systems based on intergenerational solidarity) calls for thorough reflection. Not only potential, but also increasingly real economic problems in this area indicate that the possibility of serious conflicts and tensions within Western civilisation is growing. To analyse and diagnose this developing crisis one needs to look “under the surface” of current social phenomena and processes and draw attention to fundamental cultural shifts. These are the background of such challenges as the advancing depopulation of Western countries. The question that lies behind these, which deserves thorough reflection, is the problem of responsibility for future generations and the related crisis of solidarity. The paper aims at exploring these issues.

Keywords: responsibility for future generations, fertility, individualism, population ageing, solidarity.

JEL Codes: I31, J11, J12, J13, J14, J24.

1. Introduction

We are links in a chain; it is up to us to keep things going because who knows which generation will be the one to make the big difference
[Handy 1994, p. 241]

Current transformations in social life in the West, understood here in general as the European Union and countries such as the United States, Canada and Australia, call for multidimensional analysis and reflection. Even though I will refer to a somewhat simplified or statistical picture of these societies, it is necessary to remember that there are some differences in the levels or intensity of these phenomena within the West. Some of them – such as low fertility or changes in marriage and family patterns – have already been studied, yet other are still waiting for researchers to engage and explore

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them. It seems that the problem I call “the (ir)responsibility for future generations” is one of these which remains as yet undiscovered and unstudied. This concept, which I am introducing here, means that the current picture of socio-economic processes indicates that the welfare and well-being of the generations to come is endangered due to inadequate and irresponsible demographic, socio-cultural, political and economic decisions. In my opinion, the most promising direction for study is an approach which tries to explore these issues in the perspective of the coherence and continuity of culture. This framework – most often associated with cultural sciences or cultural studies – seems to be most promising in explaining the paradoxes we are observing currently. At the same time, the existing literature in this field does not often engage this perspective. If at all, it appears mainly in the works of such authors as Ronald Inglehart, Ron Laesthaghe, Daniel Bell or Peter L. Berger. My analysis to an extent follows the research path chosen by Daniel Bell, the author of the book *The Cultural Contradictions of Capitalism*, who offered an interesting proposal for exploring and understanding the challenges and difficulties faced by Western capitalist systems in the second half of the twentieth century. According to him, Western societies are undergoing serious perturbations and are losing their potential to develop due to conflicts in the sphere of culture. It means that the society is organized not by one value system but – in case of the West – by three colliding orders which contradict each other [Bell 1976, pp. XXX–XXXI].

The purpose of my article is to continue and develop this line of research in the context of the beginning of the twenty first century and the question of the influence of current decisions and actions on the life of the next generations. That is why I am proposing a thesis which claims that Western civilisation loses its cultural coherence and continuity due to collision of competing value systems and lack of the ability to place current processes in the long-term perspective. This all creates some kind of ‘irresponsible civilisation’ which seems not to care about consequences of its actions and its future condition. It becomes already evident within societies we are part of that they are more atomized and individualistic, and less caring about communities – especially primary groups such as family or neighbourhood. This observation was made by different scholars [Putnam 1995; Beck, Beck-Gernsheim 2004]. One of them, Robert D. Putnam wrote in the context of social capital importance, that

the most fundamental form of social capital is the family, and the massive evidence of the loosening of bonds within the family (both extended and nuclear) is well known. This trend, of course, is quite consistent with – and may help to explain – our theme of social decapitalisation

[Putnam 1995, p. 73].

In this article, this thesis is illustrated and verified by the problems of: (1) rejection of responsibility for others which is evident in the increase of such phenomena as divorces, broken homes, out-of-wedlock births, single-parent families; (2) rejection of engagement in long lasting commitments such as traditional marriage and raising a family (which also suggests a lack of willingness to take responsibility for others);

(3) decreasing solidarity and support between generations which are manifested through such actions as euthanasia or abortion.

In terms of explaining the roots of the situation analysed in the article, I intend to explore the following assumption: present and future intergenerational tensions and conflicts are and will be the result of the socio-economic crisis which is caused by demographic decline and cultural – meaning here spiritual and moral – crisis.

When it comes to terminological aspects regarding the relation between concepts of culture and civilisation, I will understand “culture” as norms, values and beliefs, and “civilisation” as the material realisation of a given culture.

2. Why responsibility for future generations?

One of the most important questions that can and should be raised here is the problem of responsibility for future generations. At first it may not seem obvious that this responsibility not only exists but also refers to people living now. This appears to be a profound and complex problem demanding separate discussion, which cannot be presented comprehensively here. All that can be done here is to depict some interesting and insightful voices from this field which confirm that embracing this kind of approach towards the future is indeed necessary.

When it comes to the origins of the reflection on this topic, one should mention Hans Jonas, the author of the influential work *The Imperative of Responsibility*, who argued that the growing scientific and technological potential together with the influence of human beings on the environment, society and their future condition calls for renewed reflection. In his view, new possibilities introduce new challenges and potential risks which were unknown to previous generations. That is why it is the duty of our times to develop the analytical and ethical tools for addressing future issues and consequences of contemporary actions. According to Dieter Birnbacher, who summarized Jonas' views,

even though the 'world of impacts' and the 'world of perception' still differ enormously and we can barely foresee the consequences of our present acting, the more historical experiences we make, the better backed up ideas we get of chances and risks of our interventions in nature and the human world

[Birnbacher 2009, p. 75].

The first step in the concept of responsibility is to ensure that the future society will exist. Jonas explains this, saying that

it is this sort of duty that is involved in a responsibility for future mankind. It charges us, in the first place, with ensuring that there be a future mankind – even if no descendants of ours are among them – and second, with a duty toward their condition, the quality of their life

[Jonas 1985, p. 40].

Here, Jonas discusses the issue which may seem to be obvious, although current fertility rates and the advancing depopulation of the West prove that this knowledge is still not widespread enough. What is more, we should be really alarmed and

concerned by it – not only because of our responsibility for those to come but also for ourselves with the prospects for our own old age and retirement, as it is us who will be in need of care and support. Each of the situations included here present one important characteristic of responsibility, which is a kind of asymmetrical relationship. It is important to understand this, because today we are so immersed in the sphere of symmetrical, market-like, interactions in our contemporary societies. This phenomenon has been analysed previously by different authors and is known e.g. as the process described by Jürgen Habermas as the colonisation of lifeworld.

Asymmetry means that both parties in the responsibility relationship are not equal in their potential and power. This is well expressed by Jonas, who wrote that

(...) the future is not represented, it is not a force that can throw its weight into the scales. The nonexistent has no lobby, and the unborn are powerless. Thus accountability to them has no political reality behind it in present decision-making, and when they can make their complaint, then we, the culprits, will no longer be there [Jonas 1985, p. 22].

This asymmetrical character of responsibility also means that there is no reciprocity – or even possibility to expect it in the interactions – between us and those to come. And what is quite interesting, this lack of symmetry characterizes these relationships which are most important in terms of the functioning of society and its long-term continuity. This is confirmed by Gilder who writes that,

capitalism begins with giving. Not from greed, avarice, or even self-love can one expect the rewards of commerce, but from a spirit closely akin to altruism, a regard for the needs of others, a benevolent, outgoing, and courageous temper of mind [Gilder 1993, p. 21].

In this context, it is well-justified to point to the non-market sphere of primary socialisation, which, according to Charles H. Cooley, is mainly realised within family, neighbourhood or peer groups. This is especially evident in the functioning of the family, where this asymmetry is natural and unavoidable. The most spectacular of such relationships is parent-child bond, described by Jonas as the archetype of any responsible action (see [Jonas 1985, p. 101]).

It seems that the more popular and dominant symmetrical relations in our contemporary world become, the more important it is to discuss this nature of responsibility. This happens mostly through a process that can be called the marketisation of public and private life, where more and more often people behave as partners or consumers and treat human relationships as contracts.

It is possible to observe in the domain of marriage and family where the indissolubility and stability of these institutions seem to be ignored by growing number of people, who treat these bonds as a subject to ongoing negotiation and their duration depends only on individual satisfaction and separate decisions of both parties. This kind of relationship is called a “pure relationship” by Anthony Giddens [1992]. As a consequence of this individualistic – and hedonistic one must admit – orientation developing in the sphere of intimate relationships, responsibility becomes marginalised.

In this perspective the phenomenon of growing irresponsibility for future generations can be seen as breaking off what is called the ‘intergenerational contract’, which underlies the functioning of the social order in the temporal perspective and regulates the relations between generations.

3. The irresponsibility epidemic and some examples

Societies do much better if they face facts rather than ignore them.

[Roback-Morse 2001, p. 27]

The problem I call here, namely the ‘epidemic of irresponsibility’ – which may sound like an exaggeration – is closely linked to the socio-cultural and technological transformations that took place in the twentieth century in the West. The most significant period of these was the sexual revolution which acted as a catalyst for many changes and processes that started earlier – also due to the scientific and technological revolution in the household domain (see: [Cowan 1976]). It accelerated and legitimised many profound shifts not only in the sexual culture of Western civilisation but also, among others, started to change relations between generations. In its various aspects, one can see a common element, namely the departure from responsibility as the foundation of human interactions.

As was mentioned in the Introduction, to illustrate this problem one may point at three issues, which are somehow connected. The first of these refers to existing marriages and families and the problem of increasing dissolution and disintegration of these fundamental bonds for the functioning of the society [Berger, Kellner 1964, p. 5]. For the purpose of this analysis, I propose to treat this phenomenon as a rejection of responsibility for others, which leads to such consequences as divorces, single-parent homes, lower-quality socialization, the feminisation of poverty and blended families. The second one refers to rejection of engagement and commitment in long-term relationships such as marriage and stable, intact families, and the third issue is connected with the sphere of procreation and the approach to human life. I am going to describe these issues in the following points.

3.1. Irresponsibility and marriage – divorces, single parenthood, the feminisation of poverty, blended families and intergenerational relations

When it comes to matrimony, which can be described as one of the most important regulatory institutions of the West (see: [Berger, Kellner 1964]), it is certainly experiencing a crisis and downturn. This means that more and more marriages break-up – spouses split and families are fragmented. According to Eurostat, almost half of the marriages in the European Union and United States end in divorce [Eurostat 2017; National Center for Health Statistics 2016].

Leaving aside different explanations and analyses, one can treat this shift in general as a decreasing will to accept and bear responsibility for the relationship and the life,

well-being and welfare of other, in this case the people. These days, there is abundant data showing that the family disintegration has diverse serious consequences, especially for children [Albertini, Garriga 2011, p. 271]. Firstly, it is necessary to say that divorces weaken the stability of marriages and families in general, and also decrease fertility [Alesina, Giuliano 2006], and secondly, they negatively influence not only development of children, but their whole life as well [Wallerstein et al. 2000]. What is more, divorces are directly linked to single parenthood which has a serious influence on outcomes in children. This happens because of the decrease in potential parental investments. According to Heckman,

intact families invest greater amounts in their children than do single-parent families (...). The evidence on disparities in child-rearing environments and their consequences for adult outcomes is troubling in light of the shrinking proportion of children being raised in intact families

[Heckman 2011, p. 33].

One of the problems connected with marriage break-up is the feminisation of poverty, which means that women are more likely to experience a worse material situation after family dissolution. This will be explored in greater depth further below.

When it comes to blended families, which are formed by spouses who were divorced earlier, it may also cause some disadvantages in terms of the welfare and well-being of children living in such a new situation. An interesting explanation is offered by Lisa A. Gennetian, who writes:

in a two-biological parent family, children may be considered collective or public goods and it is efficient for both parents to invest in a child's well-being. When parents separate, investment in a child decreases, as children are no longer viewed as a public good (formalized by Weiss and Willis 1985). Thus, in a single parent family with no contact with the nonresident parent, children may be considered a private good and only one parent efficiently invests in their well-being. Under fairly general conditions, (...) the optimal level of investment in a child who is a public good is strictly greater than that in a child who is a private good

[Gennetian 2005, pp. 417-418].

There is also interesting data showing that in the case of their ability to complete more years of schooling, children from intact families had better results on average. This means, among other things, that the likelihood of graduating from high school and the chances for good performance in college and completing this level of education were greater in the case of children from intact families than for their peers living in blended or single-parent families (see: [Ginther, Pollak 2004, pp. 671-696]).

Finally, it is worth looking at the influence that divorces have on intergenerational relations, especially understood as those between parents and children. In the research on the consequences of divorce, there are at present two declining effect hypotheses. According to the first one, the negative effects of divorce decline as children's age

increases. In the second hypothesis, it is claimed that the more frequent divorces are in a society, the more the negative consequences of parental split-up decrease [Albertini, Garriga 2011, p. 261].

In their analysis, Marco Albertini and Anna Garriga have found no support for either of these hypotheses [Albertini, Garriga 2011, p. 273] and showed that in fact intergenerational relations deteriorate through divorce. They argue that

(...) divorced parent-child dyads are less likely to have daily or weekly contact than married parent-child dyads. Furthermore, the proportion of dyads for which the relation is absent or almost broken is significantly higher among the former group [Albertini, Garriga 2011, p. 273].

This is all the more important in the context of data which shows that contacts between elderly parents and children are crucial from the perspective of avoiding the social isolation of older people, and more important than functioning networks of elderly individuals (see: [Albertini, Garriga 2011, pp. 257-258]). This seems to be a very useful finding in the context of ageing populations and the serious challenges it brings, such as social isolation.

3.2. Rejection of long-term commitments – cohabitation, out-of-wedlock births, extramarital sex and sexually transmitted diseases

In this section, I wish to discuss phenomena, connected with the transformations of marriage and family life discussed above, which show profound changes of the preferences of people in Western societies.

The first one is cohabitation, which is growing more and more popular as the desirability of marriage decreases. In this case, it is evident that those engaged in this kind of relationship are not interested in such serious commitment and responsibility as is usually in the case of matrimony. First important feature of this form of quasi-family life is its lower stability which – as has already been indicated – influences the development and achievements of children and may also foster the feminisation of poverty. The research also shows that the stability of marriage in the case of earlier experienced cohabitation decreases [Waite, Gallagher 2000, p. 46]. There is also a greater likelihood of infidelity between cohabiting partners [Wellings, Field, Johnson, Wadsworth 1994, p. 116; Steinhaiser 1995]. Finally, it has been shown that cohabiting couples do far worse in terms of accumulating wealth than married couples [Waite, Gallagher 2000, pp. 111-114; Akerloff 1998: pp. 299-303].

When it comes to out-of-wedlock births they are more numerous these days. According to Eurostat, *in 2012, 40.0% of live births in the EU-28 were outside marriage, which is 12.7 percentage points higher than the share of 27.3% in 2000* [Eurostat 2015]. According to the data for 2016, it seems that this trend is stable [Euronews 2018].

In the case of births outside marriage, it is also worth recalling that they often lead to single-parenthood, as described above. Let me just present a statement by George A. Akerlof, Janet L. Yellen and Michael L. Katz, who wrote in their article that

rising out-of-wedlock birthrates are of social policy concern because children reared in single-parent households are more likely to be impoverished and to experience difficulties in later life [Akerlof, Yellen, Katz 1996, p. 278].

In the discussion about out-of-wedlock births it is useful to mention an important change in the sphere of sexual behaviour which occurred in the second half of the twentieth century and is also connected with technological shifts in the area of birth control. According to Akerlof et al. [1996, p. 278], *a major role in the increase in out-of-wedlock births has been played by the declining practice of ‘shotgun marriage’*. *Until the early 1970s it was the norm in premarital sexual relations that the partners would marry in the event of pregnancy*. Since that time, this custom – a kind of mutually binding contract – started to disappear and according to Akerlof et al.; the reason was introduction of abortion and contraception which have become legalised and more easily available. This transformation seemed to improve the situation and – speaking in economic terms – the ‘competitive advantage’ of women, but the results were different. In fact, it was men who became the ‘beneficiaries’ of this new situation when the ‘shotgun marriage’ contract was no longer in force. From now on, it was technology not man who was deemed responsible. It is well concluded by Akerlof et al. who write that *the sexual revolution, by making the birth of the child the physical choice of the mother, makes marriage and child support a social choice of the father* [Akerlof et al. 1996, p. 281].

As a consequence, even though it was expected that accessibility of contraceptives and abortion would decrease the number of out-of-wedlock births, they started to grow. At the same time – due to this technological and other general changes in sexual mores – the expectation to engage in premarital sex without obligations started to become more common [Greenwood, Guner 2009, p. 1]. As we read in the book *The Hidden Epidemic* published by the Committee on Prevention and Control of Sexually Transmitted Diseases, *by the twelfth grade, nearly 70 percent of adolescents have had sexual intercourse, and approximately one-quarter of all students have had sex with four or more partners* [Eng, Butler 1997; p. 10]. This means that young people are especially at risk when it comes to contracting venereal diseases. The publication mentioned above discusses the issue and calls it ‘hidden epidemic’ which has huge costs for society. We read there that

sexually transmitted diseases (STDs) are hidden epidemics of tremendous health and economic consequence in the United States. (...) Of the top ten most frequently reported diseases in 1995 in the United States, five are STDs. (...) Approximately 12 million new cases of STDs, 3 million of them among teenagers, occur annually. The committee estimates that the annual direct and indirect costs of selected major STDs are approximately \$10 billion or, if sexually transmitted HIV infections are included, \$17 billion. Along with the human suffering associated with STDs, this cost is shared by all Americans through higher health care costs and taxes. STDs represent a growing threat to the nation’s health and national action is urgently needed [Eng, Butler 1997, p. 1].

Speaking of costs, it is also worth considering other evaluations of the consequences of family fragmentation and changes in sexual behaviours in terms of the financial burden for the whole society. According to estimates of the authors of the report *The Taxpayer Costs of Divorce and Unwed Childbearing*, the cost of divorces and out-of-wedlock births for taxpayers in the United States amounts to at least \$112 billion each and every year, or more than \$1 trillion each decade [Scafidi 2008, p. 5].

3.3. Decreasing intergenerational solidarity and support

The last, but not least important issue that will be presented here is the phenomenon I call decreasing solidarity and support between generations which are manifested through such actions as euthanasia, abortion and contraceptives. Some aspects of this approach have already been indicated, and here I shall devote some more space to illustrate the problem.

These practices jointly communicate that human life is not unconditional, which means that fundamental features of Western culture such as respect for every human life and the dignity it deserves no longer seem to be in force. More and more often they are being replaced by a utilitarian and pragmatic approach – combined with social Darwinism, where such criteria as utility and quality of life become prioritised. Paradoxically, this approach which stresses the effectiveness, productivity and profitability of human beings has not resulted in real growth of welfare and well-being in the West. This has been signalled among others by Robert E. Lane, the author of the book *The Loss of Happiness in Market Democracies* (see: [Lane 2000, pp. 3-4]).

Another paradox is that the West suffers from very low fertility and depopulation and at the same time does not respect human life by denying the right to live of the weak, sick or unwanted for whatever reason (see: [Black 2003]). In practice, this means that the right to life is not unconditional and becomes subject to individual subjective decisions of those who are in power.

When it comes to current demographic problems of the West, one can describe this civilisation as highly unsustainable in terms of caring about future welfare and well-being. This problem can also be analysed from the perspective of human capital which is becoming a scarce good these days.

It is worth examining the research conducted by Henry Potrykus and Anna Higgins, the authors of the article *Abortion: Decrease of the U.S. Population & Effects on Society*, who offer an evaluation of the loss of human capital caused by abortion in the United States. They claim that the analysis of social and economic consequences of forty years of legal abortion is important because it influenced society in many ways. According to their calculations,

(...) approximately 10 million workers have been eliminated by abortion. Of these 10 million, approximately 5 million would be of age to actively participate in the labor force today. Without legalized abortion, over 5

million additional people would be part of the current labor force. This is a substantial fraction of the present labor force of 150 million workers

[Potrykus, Higgins 2014, pp. 4-5].

After estimating the number of missing employees that were not allowed to be born, the authors try to evaluate the work they would perform in case they had lived. The final result is the loss between 70 billion and 135 billion dollars every year in the United States [Potrykus, Higgins 2014, p. 5].

This numbers certainly should be considered and inspire reflection on the means and ends that the West chooses on its path to the future. Undoubtedly, our civilisation pays more and more for achieving its goals which no longer guarantee not only a safe and happy life, but respect and dignity for everyone.

4. Conclusion

The analyses presented in this article were intended to show how Western civilisation is abandoning the idea of responsibility for future generations. This becomes evident on the basis of all of the three areas described, to a large extent interrelated, which have one common feature. All of them show growing individualism and lack of responsibility for others, which put at risk not only the current functioning of society, but also its future continuity and success. In various behaviours and decisions, one may observe more and more often people who do not want to care about and support each other. This means that intergenerational solidarity, understood more broadly than accepting financial duties in terms of pension systems, which underlies the social contract, is endangered.

When it comes to the nature of this crisis, one should admit that first of all it is cultural. Even though we mainly observe the socio-economic symptoms of it, we already understand well that its background is demographic, but its roots are spiritual or existential one might say. The possible explanation of this dramatically depopulating civilisation may be that it has lost its sense and desperately seeks to find one. The only problem is that the West is looking for it in the wrong place, because the modernity and postmodernity may be misleading in this case.

Historically, one can see that this kind of inspiration for culture and its civilisation used to be placed in the long-term perspective, reaching far beyond the scope of one or two generations. This means for the West that its unique development and civilisational achievements were the results of accomplishing goals more profound than just earthly welfare and well-being. It means that it is possible to explain the limitations and impotence of the modern and postmodern project through their secular inclinations which shorten the civilisational horizon of actions and aspirations. It is well expressed by Takeshi Umehara, who wrote that, (...) *if there is nothing beyond death, then what is wrong with giving oneself wholly to pleasure in the short time one has left to live? The loss of faith in the 'other world' has saddled modern Western society with a fatal moral problem* [Umehara 1999, p. 46].

I must admit that I am committed to the diagnosis offered by such authors as Umehara and David P. Goldman, who point to secularisation as the reason for this situation. According to Goldman, *without the hope of immortality we cannot bear mortality. Cultures that have lost the hope of immortality also lose the will to live. Culture is the stuff out of which we weave the perception of immortality* [Goldman 2011, p. 351].

This would confirm the hypothesis about the cultural roots of our crisis and explain well the paradox of the wealthy and healthy West which is underperforming in terms of demographic reproduction and is heading towards decline (see: [Goldman 2011, p. 15]).

One can think of many different solutions to this situation. Perhaps it would be reasonable to recommend that economics must give way to ethics, e.g. in terms of permanence and the responsibility for the future and to understand that the role of non-economic cultural factors cannot be ignored in the process of social reproduction. In terms of social and demographic policy, it would certainly be wise to assume responsibility for those to come and simply let them come, because we will need their care and support in the future.

All of these remedies may seem useful, but I am afraid that they will work only if we rethink the shape and essential components – norms, values and beliefs – of Western culture which ignited the unprecedented developments and achievements in the past. It is also necessary to admit that without them our civilisation will return to the state of irresponsible barbarism it once overcame.

I believe the West is able to take this responsibility for the future.

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The evolution of critical illness insurance product design on the Polish insurance market in the context of international trends

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Abstract. The first critical illness insurance was sold in 1983 in South Africa. As was determined in the research process, the first critical illness insurance in Poland was commercialised in 1995. Since that time, it has become a standard insurance cover offered in many markets around the world. This type of insurance has also achieved an established position in the product range offered by domestic insurers especially as an additional cover to life insurance policies. The purpose of this paper is to reconstruct and present the evolution of critical illness cover in the product range domestic insurers offer from the product design point of view. The international background of the analysis applies primarily to those markets which have significantly affected the worldwide development of critical illness insurance products (South Africa, United Kingdom, the United States, Australia and East Asia). The author tries to generalize the dimensions of the product development which were identified as dominant. The time scope of the analysis involves the period between introduction of the first critical illness insurance onto the Polish insurance market and January 2017.

Keywords: health insurance, critical illness insurance, insurance product design, Polish insurance market.

JEL Codes: G22, N24.

1. Introduction

Public opinion research has shown that in the area of health, those that arouse the greatest fear among Poles are cardiovascular diseases (25% of those surveyed), while there is significantly less anxiety about cancer (“only” 9% of respondents)². For decades, cardiovascular diseases have been responsible for over 40% of deaths

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² Survey “*Ocena stanu zdrowia Polaków*” [Evaluation of the health of Poles] conducted using the CAPI method by Millward Brown from 5-10 April 2013 on a representative group of over 1000 individuals aged 15-75 [Rynek Zdrowia 2014].

annually [GUS 2017, p. 324]. Among cardiovascular diseases, the most common causes of death are coronary artery disease and cerebrovascular disease. Cancer thus places second among the causes of death of people in Poland, nevertheless with an increasing trend in the overall structure of mortality (17.1% in 1980 vs. 27.4% in 2015) [GUS 2017, p. 324]. The scale of this growing cancer problem is shown not only by the number (or percentage) of deaths, but also the number of new cases and the number of people living with a diagnosis. In 2014, there were 159,000 new cases noted in Poland and over 574,000 people living with cancer identified in the previous ten years, of whom over 364,000 had been diagnosed within the previous five years [Wojciechowska, Olasek, Czuderna, Didkowska 2016, pp. 3, 12].

In the European Union (EU-28) as well, clearly the most frequent causes of death are cardiovascular disease and cancer. According to the most recent data, in 2014 cardiovascular disease was the cause for 126 deaths per 100,000 of the population of the EU-28 countries, whereas the mortality rate for cancer was on average 262 deaths per 100,000 [Eurostat 2017].

The genesis of critical illness (CI) insurance, also called a dread disease policy, is linked precisely with the incidence of circulatory disease and cancer as well as the financial consequences for households caused by the illness of one of its family members. The standard product design was based on a catalogue of defined events. The first cover sold in South Africa in 1993 guaranteed benefits in the event of a malignant tumour, heart attack, stroke, or the need for coronary artery bypass surgery [*The Insurance Hall of Fame*, undat.].

The purpose of this paper is to present the evolution of critical illness insurance on the Polish market and, strictly speaking, in the product range domestic insurers offer. Reconstruction of the changes was thus made omitting foreign insurers. Evolution is understood as the process of transformation and is regarded as synonymous with development. The subject of research was critical illness cover on the micro scale, i.e. as an insurance product, as opposed to the macro scale where insurance can be identified with a social institution, within which a product constitutes only one component. [Michalak, undat., pp. 5-10; Petin 1992, p. 165]. Product design is analysed above all based on the extent of cover³.

The title of this paper suggests a comparative analysis of Polish and international experience. As mentioned above, critical illness cover originated in South Africa. It next developed in the British (1986), Australian (1987), American (1988), and East Asian markets (1988) [Munich Re 2011, p. 5; König 2011]. The international context of the analysis thus refers above all to those markets which are regarded as important for the development of the insurance studied. Reconstruction of the international experiences will take the shape of generalisation of the dominant dimensions of product development.

Identification of the changes in the product design of critical illness insurance also requires definition of the time period of the research. Recognition of the changes

³ A separate area for research, not considered in this paper, in the development of critical illness insurance products could be e.g. the causes of the changes observed.

applies to the time frame between the commercialisation of the first products of this insurance and January 2017. The research undertaken refers mainly to comparison of the dominant product solutions at the two outermost points in time and to draw conclusions on this basis. This paper thus is more of a static analysis (a “*comparison of two snapshots*”), partially considering the dynamics of the product transformation over the research period in its entirety.

Research into the development of critical illness insurance was conducted through critical analysis of the domestic and foreign subject literature, including publications in academic journals⁴, conference proceedings and, in particular, popularising industry publications⁵. The results of this review of domestic academic publications shown in this text in the footnotes, allow one to conclude that critical illness insurance, a few exceptions aside, practically is not a subject of broader (comprehensive) academic research, neither from a product point of view nor – as opposed to the literature in English – cf. [Gatzert, Maegebier 2015, p. 256] – from a point of view of an actuarial analysis or insurance risk assessment.

Regarding the analysis of the current design of critical illness insurance on the Polish market, the empirical material was constituted by the General Terms and Conditions of Insurance (GTC) of individual products offered by domestic insurers. It should be remembered that the GTC constitute “*solely*” a medium for standard product information, *de facto* the prototype of the final insurance product. This is created only with the participation of the insured pursuant to a specific insurance policy. Insurance contracts protected by insurance confidentiality cannot constitute source material for the research undertaken here. It was determined that in January 2017, 22 out of 27 domestic insurers offering products in the life branch of insurance, provided for individual critical illness insurance.⁶ Some companies offered more than one product of the type studied here. The justification for the analysis based on the individual insurance offered by life branch is found in section 2 below.

2. Insurance product design – main trends on foreign markets

Critical illness insurance ensures payment of a flat sum benefit in the case of diagnosis of a disease entity listed and defined in the policy. After receiving the benefit, the policyholder is free to spend it as she/he pleases. Although

⁴ The inquiry included back editions (since 1990 or the first edition, if it appeared after 1990) of such journals as *Wiadomości Ubezpieczeniowe*, *Prawo Asekuracyjne*, *Prawo, Ubezpieczenia, Reasekuracja*, *Przegląd Ubezpieczeń Społecznych i Gospodarczych* (subsequently appearing as *Przegląd Ubezpieczeń Społecznych i Zdrowotnych*).

⁵ Such publishers include *Miesięcznik Ubezpieczeniowy*, *Dziennik Ubezpieczeniowy* and the website of *Gazeta Ubezpieczeniowa* (gu.com.pl).

⁶ In alphabetical order, using abbreviated names, these were Aegon Życie, Allianz Życie, Aviva Życie, Axa Życie, Compensa Życie, Concordia Capital, Ergo Hestia Życie, Europa Życie, Generali Życie, Inter-Życie, Macif Życie, MetLife, Nationale-Nederlanden, Open Life, PKO Życie, Polisa Życie, Pramerica Życie, PZU Życie, Signal Iduna Życie, Uniqa Życie, Vienna Life (only terminal illness), Warta Życie. Pocztowe Życie was omitted on account of the very limited (in fact micro) extent of cover.

the intent of the cover designers is that the funds paid out are to make it possible for the policyholder to finance the costs of treatment, the design of this insurance in no way guarantees / imposes that the funds received by the policyholder are put to use for medical purposes.

As long as this insurance has been in existence, an enumerated event with guaranteed benefit did not only apply to disease entities, but also to surgical procedures, and today also to various forms of disability. CI insurance is most frequently offered as a rider policy to some type of life insurance, although there is no obstacle to its operating as a stand-alone policy. From the point of view of a guaranteed benefit, critical illness cover guarantees either (1) payment of a separate (additional) benefit with no effect on the insurance sum from the life (main) insurance policy or (2) payment of one (joint) sum for the life insurance policy and the critical illness cover as well. In the latter case, CI cover is called an accelerator (in part or in entirety) of the benefit from the underlying life insurance policy [Munich Re 2001, pp. 7-11; Reynolds 2016; Stroński 2003, p. 271]. In the second case, if the diagnosis of the critical illness occurs earlier than the death of the policyholder (by any cause), the paid benefit from the CI insurance reduces the sum of the remaining cover in the event of the death of the policyholder.

Reconstructing the main tendencies on foreign markets, beginning at the time of the first commercialisation of the insurance in question, the following product transformations can be identified⁷:

- extension of the catalogue of qualified diseases – from the “big four”, i.e. heart attack, stroke, malignant tumour and bypass surgery, to several dozen disease entities that constitute the extent of cover of the insurance;
- design of “dedicated” insurance products – this concept includes insurance targeted toward a particular group of clients or a narrowly defined life situation. With regard to critical illness insurance this occurs in the form of offering products profiled by gender (separate products for women and for men), age (e.g. for children), or by profession (e.g. for teachers, for medical professions). In this spirit one can also evaluate the return to the prototype of critical illness insurance and the offer of cover for a single type of disease, which in market practice leads de facto to cover for cancer;
- Giving up the catalogue of illnesses in favour of listing the attributes of disease more generally (e.g. incurability leading – according to the current state of medicine – to mortality within a certain time → terminal illness cover) or traits of the policyholder (e.g. associated with the inability to independently perform certain activities of daily living → chronic illness cover);
- the transition from cover for the first incidence of illness to cover for multiple incidences and popularising this second type of insurance. Because of the significant rise in the level of technical risk, the design of products for multiple incidences of illness is accompanied by introduction of additional conditions that

⁷ These results are the synthesis of in-depth analysis of the development of critical illness insurance on foreign markets [cf. Osak 2017] and literature referenced there.

- eliminate the interdependence of diseases listed in the catalogue of benefits (e.g. creation of a matrix of exclusions or groups of correlated diseases and classes, with the reservation that from each class there is a right to one payment only);
- extension of the primary coverage with an additional clause – for example a clause being a surrogate for multiple benefits insurance (e.g. reinstatement clause, renewable term clause or buy back option to enable a restoration of the insurance sum), a clause related to the payment of premiums (premium waiver, (partial) return of premiums in the case of the expiration of the insured period without any benefit payment) and a clause regarding support services (e.g. fitness/wellness, or preventative medicine benefits).

3. Critical illness insurance offered by domestic insurers – reconstruction of the changes

While bearing in mind that the first critical illness insurance policy was concluded in 1983, the natural turning point in the analysis of the development of critical illness insurance offered by national insurers can be seen as the beginning of the systemic transformations in Poland and the creation of the legal conditions for the establishment of a market economy, including the insurance market. The formation of the insurance market in Poland is linked to passage of the Act on the Insurance Activity from 28 July 1990.

The starting point for the considerations presented in the next section of this paper is the perceptual judgement that the development of critical illness insurance in the world was and is linked with the creation of life insurance. This explains the analysis of the evolution of the product based on the general terms and conditions of insurance offered by insurers in the life branch business. Moreover, this perception together with the domestic legal regulations is important insofar as it explains why the first mentions of critical illness insurance being offered in Poland appear in the industry press only after 1995.

Ever since the insurance market in Poland was built, the statutory division of insurance into branches, groups and types has been in effect and resulting from that, what is known as the separation principle. This means that domestic insurers may not simultaneously operate in the first branch (life insurance) and the second branch (other personal and property insurance). The first law regarding the insurance business in the category of life insurance provided for only three groups of insurance, namely life insurance (group 1), marriage insurance (group 2) and life insurance linked to an investment fund (group 3) [*Appendix to the Act of 28 July 1990*]. Thereby in Poland, did not exist the legal basis for insurance undertakings to offer critical illness insurance. This possibility appeared with passage of the amendment of 8 June 1995 which expanded the catalogue of groups in the first branch to include annuities (group 4) and accident and sickness insurance (group 5) if these supplement the kinds of insurance specified in groups 1 to 4. Critical illness insurance is one of the components of this last category.

One of the leading authors of domestic publications on life insurance (and also on personal insurance more broadly) wrote in 1996 that “*more and more frequently, ‘pure’ life insurance is supplemented with additional benefits in case of accident or in case of sickness*” [Stroiński 1996, p. 7/125]. As the most frequently appearing additional option in Poland he listed at that time benefits in case of death resulting from an accident, benefits in case of disability resulting from an accident, benefits in case of inability to work (permanent disability), waiver of payment of premiums because of an inability to work, and – interesting in the context of the topic of this paper – benefits in case of illness [Stroiński 1996, p. 7/126].

It is justified to presume that at that time, critical illness insurance was practically non-existent in the product range offered by domestic insurers. In Stroiński’s considerations, one looks in vain for an example of this kind of product on offer, whereas while discussing other types of life insurance the author does not refrain from making references to examples of market solutions. Moreover, in another – it can probably be said without exaggeration – historic insurance publication in the domestic publishing market of that time, namely the *Vademecum pośrednika ubezpieczeniowego* [The Insurance Agent’s Handbook] edited by Tadeusz Sangowski, the authors in their discussion of types of additional benefits in life insurance do not even mention “benefits in case of illness” [Sangowski 1996, pp. 204-206], as could be found in Stroiński. It also does not appear in the section of the book devoted to the characteristics of the product range offered by insurance companies of the time [Sangowski 1996, pp. 206-212].

Study of the publications from the second half of the 1990s, including in particular by publishers of guides as well as popular science periodicals⁸ made it possible to conduct a deeper analysis and to establish a few findings regarding the product range and design of critical illness insurance in its early phase of development in Poland.

The first provider to offer traditional CI insurance in Poland was Polisa Życie SA. Formally the product was introduced in July 1995 under the trade name “POLISA 100” [Polisa Życie 1995]. This was life insurance under which the policyholder could expand the cover with two riders, i.e. the risk of permanent or partial disability or the risk of becoming ill with cancer, a heart attack, stroke, or renal failure. Interpretation of the GTC provisions leads to the conclusion that this cover was an insurance that guaranteed accelerated payment of the sum insured in the event of death of the policyholder. The insurer, in case of diagnosis of one of the four listed diseases, guaranteed payment of 100% of the sum. The occurrence of an indemnifiable event was not subject to any additional conditions beyond the presentation of a medical diagnosis and passage of 9 months grace period. Together with the payment of the sum insured, the insurance protection were expired. This insurance was an individual

⁸ Aside from the domestic sources already called upon, the following were also used: [*Polski rynek ubezpieczeń życiowych...* 1999; Dziubińska-Michalewicz 1998; Gadkowski 1998; Pieczykolan 1997; *Rynek ubezpieczeń w Polsce...* 1996]; a set of products available published in *Gazeta Ubezpieczeniowa* as well as *Asekuracja&Re: pierwszy polski miesięcznik ubezpieczeniowy*, and archival texts of general terms and conditions of insurance.

one⁹, which is interesting insofar as at the threshold of development in the insurance market in Poland, the clear majority of premiums written were generated by group insurance for employees.

Table 1. Critical illness insurance offered by domestic insurers in 1997-1998

Abbreviated name of the provider	Brief product description
INDIVIDUAL INSURANCE	
POLISA ŻYCIE	<ul style="list-style-type: none"> – rider to life insurance “Polisa 100”, “Polisa 100 Plus” – critical illnesses: cancer, heart attack, stroke, renal failure – accelerated benefit type (100%) – grace period: 9 months – protection period: until the policyholder turned age 64 maximum
POLISA ŻYCIE	<ul style="list-style-type: none"> – rider to life insurance and whole life “Premium” – critical illnesses: cancer, heart attack, stroke, renal failure – insurance with a benefit in addition to the primary death benefit (30% of the sum insured) – requirement that the policyholder survives 30 days after diagnosis of a critical illness – cover for one incidence of illness – grace period: 9 months – protection period: until the policyholder turned age 65 maximum
WARTA VITA	<ul style="list-style-type: none"> – rider to life insurance and whole life “Pewny Zysk” [Sure Profit] – right to expand protection for the insured sum that exceeds a specific level (30,000 PLN) – critical illnesses: cancer, heart attack, stroke, renal failure, major organ transplant (if the policyholder was the recipient) – insurance with a benefit in addition to the primary death benefit (30% of the sum insured) – grace period: 6 months – protection period: until the policyholder turned age 55 maximum
AMPLICO LIFE	<ul style="list-style-type: none"> – rider with the trade name “Zdrowie” [Health] – critical illnesses: cancer, heart attack, vascular disease requiring surgical treatment, stroke, renal failure, organ transplantation (lungs, liver, pancreas, kidney), vision loss – insurance with a benefit in addition to the primary death benefit (100% of the sum insured) – cover for one incidence of illness – grace period: 6 months – requirement that the policyholder survives 30 days after diagnosis of a critical illness – age of the policyholder at the time the policy is issued: 20-55(60) years

⁹ The same version as an additional option for critical illnesses appeared also a little over a year later in the subsequent individual insurance of Polisa Życie SA, [cf. Polisa Życie 1996].

Abbreviated name of the provider	Brief product description
GROUP INSURANCE	
WARTA VITA	<ul style="list-style-type: none"> – benefits as part of “Grupowy Fundusz Emerytalny” [Group Retirement Fund] – critical illnesses: cancer, heart attack, stroke, renal failure, major organ transplant (if the policyholder was the recipient) – insurance with a benefit in addition to the primary death benefit (30% of the sum insured)
NATIONALE NEDERLANDEN	<ul style="list-style-type: none"> – supplemental option to insurance with an investment fund – critical illnesses: stroke, cancer, heart attack, renal failure, bypass – insurance combining accelerated benefits from the main policy and additional benefits – the value of the benefit was 50% of the sum insured in case of death and was not deducted from the sum insured owed in case of death under the condition that the policyholder survived at least half a year after falling ill; if death occurred earlier then the critical illness insurance acted as an accelerator and the payment for death constituted the remaining 50% of the sum insured. – period for the supplemental policy: 5 years minimum – protection period: until the policyholder turned age 65 maximum
PZU ŻYCIE	<ul style="list-style-type: none"> – benefits as part of the “Życie” [Life] policy, a supplement to the insurance “Pogodna Jesień” [Pleasant Autumn] – critical illnesses: heart attack, bypass, cancer, stroke, renal failure – insurance with a benefit in addition to the primary death benefit (30% of the sum insured) – age of the policyholder at the time the policy is issued: up 50 years – protection period: until the policyholder turned age 55 maximum
POLISA ŻYCIE	<ul style="list-style-type: none"> – benefits as part of “Rodzinne Grupowe Ubezpieczenie na Życie” [Family Group Life Insurance] – critical illnesses: cancer, heart attack, stroke, renal failure – insurance combining accelerated benefits from the main policy and additional benefits – the value of the benefit was 30% of the sum insured in case of death and was not deducted from the sum insured owed in case of death under the condition that the policyholder survived at least 30 days after falling ill; if death occurred earlier then the critical illness insurance acted as an accelerator and the payment for death constituted the remaining 70% of the sum insured. – grace period: 9 months
ATU-LIFE	<ul style="list-style-type: none"> – benefits as part of “Grupowe Ubezpieczenie na Życie” [Group Life Insurance] – cover for multiple incidences of illness – insurance with benefits in addition to the primary death benefit: in the first incidence of critical illness the benefit was 50% of the sum insured
PBK ŻYCIE	<ul style="list-style-type: none"> – supplemental option to “Grupowe Terminowe Ubezpieczenie na Życie” [Group Term Life Insurance] and “Grupowe Ubezpieczenie na Życie z Funduszem Inwestycyjnym” [Unit-link Group Life Insurance] – insurance with benefits in addition to the primary death benefit (50% of the sum insured)

Source: Author’s own work on the basis of sources in references as well as [Cenne życie...1998; Życie na wagę polisy... 1998, Życie na wagę polisy–część II ...1998; Polisa Życie 1997; Polisa Życie 1997a; Polisa Życie 1995].

Since 1996, there has been a clear growth in interest from investors in establishing life insurance companies and at the onset of that year a steep rise in the number of insurance companies with foreign capital has been recorded [State Insurance Supervision Office (PUNU) 2001, pp. 15, 25]. As a result, it is not surprising that the reports from which one can deduce the significant expansion of the number of critical illness insurance products offered are dated from 1997-1998. This was assuredly in part caused by the growth in the number of potential providers as well as the transfer of know-how from international markets by foreign shareholders. Table 1 presents systematically the critical illness insurance products offered in 1997-1998.

At the end of 1998, in the category of life insurance there were twenty-four insurers operating in Poland [PUNU 2001, p. 25]. This information, together with the tabular arrangement leads to the conclusion that only a few providers guaranteed protection in case of critical illness. In this period, the dominant rider to cover in case of death was insurance in case of permanent inability to work or permanent disability¹⁰.

Analysing the information contained in Table 1, one may state that the initial phase of the development of critical illness insurance in Poland, as opposed to foreign markets, was dominated by insurance with benefits in addition to the death benefit. In this context, it should not come as a surprise that the clear majority of products designed were then covering a single incidence of illness. In this way, the technical risk was limited, and insurers for calculation of premiums knew the maximum value of potential claims from the insurance policy.

The standard/primary catalogue of covered events came down to four events, i.e. cancer, heart attack, stroke, and renal failure. The products of that time rather rarely provided for payment for coronary artery bypass surgery, which again made them different from the prototypical solutions from abroad. Noteworthy is the fact that even with the small number of providers, insurers began to use a rather natural way of rendering their product more attractive than the competition, namely by adding other types of serious events to the extent of cover (e.g. organ transplantation).

As a result of the design of insurance with additional benefits, insurers, much as in foreign markets, from the beginning of the commercialisation of the insurance in question limited the extent of guaranteed cover through the introduction of the condition of a "survival period" [Munich Re 2001, p. 16]. By the same token, for the occurrence of an indemnifiable event, diagnosis of an illness after the effective date was not sufficient, but additionally it was required that the policyholder survives for a period stipulated in the policy (typically 30 days) after establishment of the diagnosis. As Stroiński wrote, *the point [of this] insurance is not to give preference to a few causes of death and payment of a higher benefit in case of death by one of these causes, but rather to pay a benefit to a living person who is seriously ill* [Stroiński 2003, p. 273], and the extended period of illness causes increased financial demands.

¹⁰ On the basis of analysis of the publications cited as in Table 1.

The basis for determining the amount of the benefit for critical illness, both in the additional benefit variant as well as in the accelerated benefit variant, was in all cases the sum insured in case of death. The flat-rate benefit from CI insurance was always – different in case of various insurers – a percentage of the primary sum insured. Insurers did not then directly indicate an amount (value) for the benefit in case of critical illness. This was also a result of the design of CI cover products solely by life insurance providers. By the same token, for formal and legal reasons, critical illness insurance was always a rider (optional) policy to a life insurance policy, and not a stand-alone policy.

Critical illness insurance was much more frequently a supplement to group insurance policies than to individual ones, which was a result of the dominance of the group form of life insurance generally (especially employee group insurance). One can thus speak in some ways of a reversal of the time sequence of the appearance of the two forms of distribution of critical illness insurance (group and individual). Insofar as in the holistically viewed history of commercial insurance the appearance of group insurance is preceded by the operation of individual insurance [cf. Szczeńniak 2003, pp. 30-35], in the contemporary history of life insurance in Poland (including critical illness insurance) the phenomenon appeared rather in reverse order. Thus, the appearance of individual critical illness insurance can be seen as an indicator of the development (progressive changes) of the insurance in question [Osak 2009, pp. 115-119]. This state of affairs justifies, at least partially, the choice of the general terms and conditions of individual insurance as the empirical material for research into the evolution of the design of CI cover for its early period.

An intense development of critical illness insurance occurred from 1999-2003, which can be concluded at least on the basis of analysis of the content of articles and press reports posted on the Gazeta Ubezpieczeniowa website.¹¹ It can be easily seen that the later boundary of the time frame coincides with the substantial beginning of the reform of the public health insurance system in Poland¹². Subsequent academic publications [Więckowska 2006; Osak, Więckowska 2005] then point to the grounded practice of insurers in offering critical illness insurance and the expansion of the catalogue of illnesses covered. In the first decade of the twenty-first century, insurers have moved away from apportionment of a primary extent of cover, then a catalogue of six critical illnesses (malignant cancer, stroke, heart attack, bypass, renal failure, major organ transplant) in favour of a single expanded catalogue consisting of a dozen

¹¹ Among academic articles published in the pages of the journals referenced above, the only one about the standard design of critical illness insurance that appeared at the time was in fact [Szczepeńska 2000, s. 14-17].

¹² Since 1 January 1999 rules have been in effect that are specified in the Public Health Insurance Act from 6 February 1997 (Dz.U. [Journal of Laws] No. 28, item 153), extensively amended still during the *vacatio legis* – see the amendments to the Public Health Insurance Act as well as several other laws of 18 July 1998 (Dz.U. [Journal of Laws] No. 117, item 756), the amendments to the Public Health Insurance Act of 9 November 1998 (Dz. U. [Journal of Laws] No. 144, item 929) and the amendments to the Public Health Act as well as several other acts from 16 December 1998 (Dz. U. [Journal of Laws] No. 162, item 1116).

or so disease entities. The initial standard of diseases expanded to include such events as loss of vision, speech, or hearing, loss of a limb, severe burns, Creutzfeldt-Jakob disease, multiple sclerosis, aplastic anaemia, coma or HIV infection¹³ (through performance of professional duties or through a transfusion).

The expansion of the catalogue of benefits is still most visible in product design. Currently, the widest catalogues of critical illnesses offered on the market by domestic insurers include 40 events. At the opposite pole are products that guarantee payment with regard to a few (4-6) critical illnesses. Insurers choose two ways of shaping the extent of this cover: either they offer one catalogue of illnesses or it is left to the policyholder to decide by making a choice between a basic catalogue or an expanded one. In the latter – less frequent [cf. Jędrzejewska-Wnuk 2013, pp. 21-22] – case, the basic catalogue includes from 7 to 20 events, whereas the content of the expanded catalogue includes from 17 to 36 illnesses. Aside from the previously mentioned illnesses, one can now find insurance providing cover for burns, Alzheimer's disease, Parkinson's disease, bacterial encephalitis, essential hypertension, chronic organ dysfunction, sepsis or severe head trauma. Among the more “exotic” diseases, there appeared falling ill with viral haemorrhagic fever, elephantiasis, and cerebral malaria. The addition of subsequent disease entities to the catalogue of indemnifiable events, given epidemiological data regarding the incidence of such diseases, may often be evaluated in the category of pure marketing. [Jędrzejewska-Wnuk 2013, pp. 28-31]. On the other hand, media references to the threat of an epidemic (or even a pandemic) of some diseases (e.g. swine flu in 2009, or viral haemorrhagic fever caused by the Ebola virus in 2014) are an incentive for insurance companies to expand the extent of cover or to create new critical illness insurance products - cf. [*Antidotum na nową grypę...* 2009].

Despite the expansion of the extent of cover, which varied among insurers, no efforts were undertaken to develop standard definitions of illnesses¹⁴. One may only hope that the high-profile legal proceedings by the Antitrust and Consumer Protection Office against PZU na Życie SA [President of the Office of Competition and Consumer Protection (UOKiK) 2010], which – after a court battle – ended with the imposition of a fine against the insurer for use in the GTC of a definition of heart attack that significantly narrowed the extent of cover and deviating from medical standards for diagnosis, may bring about that the definition of illnesses, while still very complicated, will be set on the basis of the standards of current medical practice.

¹³ It should be added that insurance in case of HIV/AIDS in the history of the development of critical illness insurance in Poland is the “primogenitor” of these policies. It was commercialised for the first time in 1998 by the Spółdzielczy Zakład Ubezpieczeń Westa [Westa Mutual Insurance Company] in Łódź on the basis of Resolution No. 52/88 of the Insurance Supervisory Board regarding the general terms and conditions of cover in case of AIDS-related illness – material found in the State Archive in Łódź under the name of the company: Zakład Ubezpieczeń WESTA SA Zarząd w Łodzi, file signature 1/40 (pp. 367-371). It must be emphasised that the cover was for various circumstances of infection, not restricted, as it is now, to transfusion, receiving a transplant or in the execution of professional duties.

¹⁴ Regarding the standardisation of definitions in the domestic literature, broadly [Gumna 2015; 2014].

In 2002, critical illness insurance for children appeared on the Polish market [Dygas 2002]. It has remained in the product range offered by domestic insurers, although one cannot say that it is a standard element of cover (it is offered by seven of the group of providers studied). In the majority of cases, insurance for children is not a “permanent” element of insurance cover for parents but may be concluded on the basis of a separate supplemental option. In establishing the maximum eligible age for a child, there were two solutions applied equally: cover until age 18 or cover to age 25. Not infrequently did insurers also introduce a minimum age requirement for a child to be eligible for cover, i.e. being from one to three years of age. The number of illnesses in the catalogues of “paediatric” illnesses ranged from 7 to 21 events¹⁵.

An example of dedicated insurance are also separate policies for cancer. On the Polish market, much like on foreign markets, we can observe the return to a product which is recognized as the classic prototype of CI insurance [Dinani et al. 2000, p. 6]. At first, policies for cancer were only available in Poland in a version for women for breast cancer¹⁶. Currently, separate policies for cancer diagnosis are found in the product ranges offered by Axa Życie, Compensa Życie¹⁷, Nationale-Nederlanden, and BZ WBK Aviva¹⁸. Cover profiled by gender for cancer apply to, in the case of women, also cervical cancer, cancer of the ovary, fallopian tube, vagina or vulva. Also a cover is available for malignancies that are characteristic for men, i.e. prostate cancer, testicular cancer, or penile cancer. Additional cover is not necessarily limited to cancers that are particular to one gender but may be expanded to all other cancers classified in the International Statistical Classification of Diseases and Related Health Problems (ICD-10) under the blocks C00 to C97. Moreover, some insurers make it possible to expand cover to include preinvasive cancers or non-malignant tumours.

In the course of this research, the author did not encounter any offer of stand-alone CI insurance, which – for legal reasons – could be a product offered solely by insurers in the second branch in possession of a permit to operate in group 2. It was thus concluded that with regard to the design of guaranteed benefits on the domestic market, the dominant model remained distribution of CI insurance as a rider to another policy (here: life insurance) whereby the policyholder is entitled to receive

¹⁵ Pramerica Życie has in its product range a supplemental option of insurance for parents in the event of a child falling ill not only with a critical illness, but also or a hospital stay, operation, or death of a child. In the case of this product, the catalogue of critical illnesses includes as many as 32 illness events.

¹⁶ Cover for cancer was introduced into distribution in March 2003 after the case STU Ergo Hestia SA [Femina... 2004]. Cf. also [Kurzępa 2004, p. 30; Więckowska 2006].

¹⁷ Aside from the option for contracting cancer, the insurer offers a separate option for the treatment of malignancy.

¹⁸ Since April 2017 a separate additional option to life insurance, “Diagnoza Nowotworu” [Cancer Diagnosis], is also offered by MetLife [MetLife realizuje... 2017]. A policy for consequences of suffering from cancer called „Triumf” [Triumph] is also available on the Polish market and is offered by the foreign provider AIG Europe Limited Spółka z ograniczoną odpowiedzialnością Oddział w Polsce.

benefits with addition to that provided by the primary policy¹⁹. Among the products analysed, three are based on an accelerated life benefit, whereby it should be added, that acceleration in these is reserved only in the case of non-survival 180 days (or six months) after diagnosis. After the required survival period, cover then changes into a guaranteed additional benefit. The survival period as a condition for insurer liability has been from the beginning a standard parameter of regulating insurer liability. Aside from the exceptionally long period mentioned above, the remaining insurers set a thirty-day survival period (with the exception of one where the survival period is shortened to 20 days).

Supplementing of critical illness insurance may in practice take one of two forms. An insurer may add cover for critical illness as a permanent (integrated) element to life insurance. This solution is of course not very flexible from the client's point of view, who when deciding on a primary product is forced to take additional cover in case of critical illness. In the product range offered by domestic insurers this solution is rather on the margins (cf. e.g. numerous products of PKO Życie). Insurers choose the second formula of offering the protection of a supplemental, i.e. in the form of an additional clause/option, which the interested party (insurant) decides whether or not it will be added to the policy.

A fundamental change in the area of benefit design regards the commercialisation of products for multiple incidences of illness. They have achieved a permanent place "in the architecture" of the critical illness insurance market and as of today for certain are not a marginal design type for this sort of cover²⁰. Among all of the group of products subjected to analysis, a little over half were offered as cover for multiple incidences of illness. Much as in foreign markets, there typically appear in the design of such products additional limits to insurer liability. On the domestic market, these are set as limits to the amount of payment (100-200% of the sum insured)²¹ or limits on the number of payments (typically up to three events). Of course, regarding subsequent illnesses insurers, through very general rules of the GTC, do not guarantee cover for *the same critical illness that was the basis for [an earlier] insurance benefit, nor regarding an illness related to the "original" illness or an illness resulting from the same pathological factors*. In the area of eliminating liability for interrelated diseases, only two insurers made use of the method of grouping illness and a guarantee of one payment for each group, and one used a matrix of correlations (multiple event exclusions).

The dominant practice of domestic insurers has been to issue CI insurance as a term policy, in the clear majority of cases for a five-year period of cover [cf. Jędrzejewska-

¹⁹ For the sake of completeness, it should be added that critical illness insurance is sold in Poland also as a supplemental option to cover for the costs of treatment, and in this area products are offered not only by life insurance providers, but also by insurers in the second branch in the area of other personal insurance policies.

²⁰ In a different way regarding the frequency of the appearance of cover for multiple incidences of illness wrote – in relation to what was offered in 2012 [Jędrzejewska-Wnuk 2013a, pp. 148-149].

²¹ In such cases, the setting of a maximum limit to the total value of benefits is accompanied by a percentage scale (gradation) of benefits with regard to each type of illness.

Wnuk 2013a, p. 148]. Thereby insurers provide themselves with the ability to not extend a policy for a given policyholder, and above all to recalculate premiums, which – even in the case of a guarantee of no re-evaluation of the medical risk – are subject to increase on account of the policyholder's higher age. One can thus state that domestic insurers use the restrictive (subject to the right to recalculate premiums) version of the clause regarding the extension of the period of cover also used in foreign markets.

In relation to the early 2000s, the maximum age of the policyholder, to whom insurers guaranteed issuance of insurance cover underwent extension. The period of protection lasts in the clear majority of cases up to the anniversary of the policy (or the year after) when the policyholder turns 65, whereas earlier that was normally to age 60. Nevertheless, in case of the incidence of illnesses highly dependent on age such as Alzheimer's disease or Parkinson's disease, frequently an element of insurance cover, an upper age limit to insurance cover still remains unsatisfactory [cf. Jędrzejewska-Wnuk 2013, pp. 30-31].

The standard for today's products is to set a separate amount of the sum insured, not directly linked to the amount of the guaranteed sum in case of death. In effect, the dependence between the amount of cover in the supplemental policy and the amount of the sum insured under the primary policy, dominant in the past, is currently a solution in decline. Frequently enough in the GTC a provision appears regulating the amount of the minimum sum insured for CI insurance. In such cases, insurers relatively often require a sum of at least PLN 10,000²².

4. Conclusion

Insurance practitioners indicate that critical illness insurance in Poland is attached to the majority of group life insurance policies [Kowalski 2014]. As a result of this fact, taken as the indicator of progressive change in this article is the change of the product design of individual insurance as a kind of higher stage of development in insurance (including critical illness insurance). The analysis conducted here allows one to state that also individual critical illness insurance over the course of over two decades found a solid place in the product range offered by domestic insurers. The further spread of this insurance will proceed along with the development of private health insurance. The entire time, this indicates the distribution of CI insurance as a rider to the primary policy (life insurance or health insurance). Nonetheless, supplementing health insurance with an option for critical illness insurance expands the group of providers to include insurers in the second branch. This fact creates a potential area for comparative research into the design of critical illness insurance as a supplement to life insurance or as a supplement to health insurance. However, marginal at the market level, the premiums written from health insurance causes that

²² A product is also distributed that offers three variants of a minimum sum insured: PLN 18,000, PLN 50,000 and PLN 150,000.

the appearance of significant differences and product innovations in CI insurance as part of supplements to health insurance is rather unlikely.

The universality of insurance availability is not necessarily accompanied by product recognition among potential consumers, or still further, the ubiquity of consumption of (individual) critical illness insurance. Data published by the Polish Financial Supervision Authority or the Polish Insurance Association do not permit quantitative characterisation of critical illness insurance policies, including those that constitute a supplement to life insurance. Aggregation of data from group 5 of the first branch thus leads to two subcategories, i.e. accident insurance and health insurance. These two categories are internally differentiated. Health insurance includes, aside from critical illness insurance, cover for hospital stays, cover for damage to health as a result of illness, and cover for surgery. Thus, referring to the available data, the question remains how many insured individuals hold the option for critical illness and what gross volume of premiums written are received on account to this product. At the end of 2016, insurance companies held in their portfolios nearly 1.17 million active health insurance policies, of which individual policies accounted for 70% [KNF 2016, Table D.1.a.b]. The number of insured individuals was 11.4 million, of whom as many as 10.6 million held cover as part of a group insurance policy [KNF 2016, Table D.1.a.b]. The gross premiums written received by insurers from health insurance were PLN 1.06 billion, of which 35% proceeded from individual policies [KNF 2016, Table D.1.a.b].

Results of public opinion surveys conducted for the Genworth Consumer Focus insurance group from 27-30 September 2013 by Ipsos MORI on a representative sample of 1012 Poles aged 16-60 show that in case of the need to cover medical costs not paid by NFZ [the National Health Fund] in excess of PLN 100,000, one in three Poles would be forced to turn to charitable and non-governmental organizations for help [Rynek Zdrowia 2014]. In the same study, 26% of respondents indicated that they hold a critical illness insurance policy. It should be noted, however, that PLN 100,000 as the sum insured in case of critical illness is a value that applies to a marginal percentage of policies. Moreover, cover currently applies to enumerated illnesses, and not any illness incurring prospective costs of treatment at a particular level. This “cost” approach to product design may be assessed in the context of proposals that appear in the literature abroad to move away from the creation of critical illness insurance on the basis of medical definitions of numerous diseases in favour of making insurer liability dependent on the occurrence of a “life changing event” for the policyholder [Reynolds 2015].

It emerges from the analysis performed here that in principle the changes in the design of the extent of critical illness cover offered by domestic insurers correspond to trends identified in foreign markets. A departure from these patterns is the practical absence of any use (other than a marginal one as part of cover for cancer) of an expansion of the primary extent of cover with an additional clause regarding support benefits.

In the view of the growing threat of falling ill with some serious lifestyle disease, one may accept that creation of insurance products that are adequate to the threat, as well as the promotion of their use in society, remains a challenge for domestic insurers. Some insurance market experts single out here a particular role for the development of supplemental products dedicated to cancer [Kalbarczyk 2015, p. 48]. Yet adequacy should be measured not only through the lens of the content of the catalogue of illnesses and their definitions, but also the size of the sum insured that is possible, as well as the adjustment of products to demographic trends related to the ageing of society. The question of price is also important from the perspective of the affordability of the product for a potential client. In this context, practitioners on foreign markets point to the importance of reducing comprehensive insurance cover and limitation of the “slackening” of the boundary conditions of insurer liability [Dreyer et al. 2013]. A chance to fulfil these postulates may be seen in the creation of an “oncopolis”, as cancer is seen as likely to be the main cause of death in the future.

To conclude, it should be emphasised that the object described in this article comprised of products sold by insurers via traditional distribution channels. One may also see as an evolutionary change the means of distribution (at very least as part of bancassurance), which in turn may affect the design of the product offered. Market reports from the past two years confirm that the bank channel may play the role of a stimulant in the CI insurance segment in the direction of distribution of “essential” critical illness insurance without “packaging” them in the construction of primary (life insurance) policies as well as simplification of the extent of cover in favour of increasing the guaranteed sum insured [cf. BZ WBK AVIVA 2016; mBank 2015]. Consequently, comparison of the product solutions distributed by banks and through traditional distribution may constitute the next area for research.

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Abbreviations

CI – critical illness; GTC – General Terms and Conditions of Insurance; ICD-10 – International Statistical Classification of Diseases and Related Health Problems; PUNU – State Insurance Supervision Office (*Państwowy Urząd Nadzoru Ubezpieczeń*); UOKiK – Office of Competition and Consumer Protection.

Applicability of selected concepts of corporate social responsibility management in insurance companies in Poland¹

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Abstract. The aim of the article is a comparative analysis of two business management concepts that take into account the economic, social and ethical dimension: corporate social responsibility management (CSR) and total responsibility management (TRM). The authors of the article ask whether these concepts can be applied in the insurance sector in Poland and what impact their implementation may have on management styles in insurance companies. The results of our own research indicate that at the level of declared values and adopted corporate governance principles, the majority of insurers covered by the study refer to the CSR concept. In practice, however, there are numerous deviations from CSR principles, especially in relations with clients. An issue requiring further, in-depth studies is the analysis and assessment of the impact of respecting in practice the principles of CSR and TRM on the choice of management style of managers of insurance companies in Poland (immoral, amoral, moral). There are many indications that the immoral style of management has been limited in the Polish insurance sector. Verification of this hypothesis, however, requires further empirical research.

Keywords: total responsibility management, corporate social responsibility, strategic management, insurance sector in Poland.

JEL Codes: J32, J38, H55.

1. Introduction

The aim of the article is a comparative analysis of two business management concepts that take into account the economic, social and ethical dimension: corporate

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social responsibility management (CSR) and total responsibility management (TRM). The authors of the article ask whether these concepts can be applied in the insurance sector in Poland and what impact their implementation may have on management styles in insurance companies.

The following materials were used for the purposes of the present article: case studies concerning management styles in an organization in the insurance sector in Poland, comparative analysis of documents and online resources of chosen insurance companies as well as data from the institutions representing consumers' interests on the financial market (Financial Ombudsman, Office of Competition and Consumer Protection (UOKiK)).

2. Theoretical bases of corporate social responsibility management

The issue of CSR management may be analysed with reference to management studies, business ethics, legal studies or from the historical perspective – depending which aspect of this practice the researcher intends to analyse. Among multiple definitions of CSR, the one by J. Backman deserves attention as it states that social responsibility refers to non-economic purposes and motives determined by the business environment, such as the reduction of environmental pollution, greater participation in programs aiming at improving living conditions of the society, improvement of healthcare conditions [Backman 1975, pp. 2-3]. In the 1990s and at the beginning of the 21st century, new and more precise definitions of CSR were developed, taking into consideration both the subject-related scope (responsibility for social and natural environment) as well as different stakeholders groups.

In the Green Paper document, prepared upon the order of the European Commission in 2001, very precise definition of CSR was formulated, according to which *economic units voluntarily include social and ecological aspects in their commercial activities as well as in contact with their stakeholders* [Rojek-Nowosielska 2006, p. 40]. CSR includes two dimensions: internal and external one. Inside the company – as it was specified in Green Paper – it refers mainly to aspects concerning the staff (health, security, investing in human capital, change of management) as well as the shareholders (respecting primary economic interest of the owner including the interests of other groups of internal and external stakeholders). Within the external dimension, in turn, CSR requires to take into consideration the interests of such stakeholders as: commercial partners and suppliers, clients, public authorities, or non-governmental organizations representing local communities or taking care of the natural environment [*Green Paper* 2001]. The unquestionable advantage of this definition consists in its completeness, but it can be discussed whether in the reality of the 21st century presenting CSR as completely voluntary activities of businessmen would be sufficient.

The application of CSR in company management does not influence in a significant way the changes in strategic management. This means moving away from concentrating exclusively on maximising the profit and increasing market value

of the company for the interest of its owners towards the direction of sustainable growth, realised with respect to the benefit of different groups of people remaining in the circle of influence of organisations and with respect to the standards and rules of economy, ethics and ecology [Korpus 2006, p. 22]. Such behaviour builds common trust in relationships with stakeholder groups and ensures the stability of a financial institution in a comprehensive way.

Source literature includes the description of multiple CSR models. We can enumerate here among others: A. B. Carroll and A. K. Buchholtz [2000], W. Nord, and S. Riggs Fuller [2009], S. Waddock and J. Leigh [2006], or Laszlo [2008]. Attitudes towards CSR management are often difficult to reconcile [Pyszka 2011, pp. 54-65].

According to M. Rojek-Nowosielska, the beginning of CSR in Poland dates back to 2001. From that time, gradual development of the concept together with its practical applications is visible in our country, which is proved by the increase in the number of undertaken activities, growing number of scientific and journalistic publications, reports or empirical studies [Rojek-Nowosielska 2001, p. 30]. However, it would be difficult not to agree with this author's opinion that *in spite of the time passing by and constant development of the concept (CSR), numerous insufficiencies are visible in the univocal understanding of the concept concerned*.

It is of course worth asking the question to what extent CSR policy translates into trust among clients, if the enterprises did not follow this strategy, would they have lower market share, worse financial results, would they be less often chosen by potential employees? According to Piotr Płoszajski, the clients do care about the manufacturer's social image and the importance of the following soft factors is increasing: business and administration ethics, the organization's friendliness, its organizational culture as well as likability of the company (which is indicated by the author as the fifth element of the marketing mix [Płoszajski, undat., p. 7]). The companies may identify stakeholders' expectations and set the directions of changes taking these expectations into account [Aniszewska 2012].

TRM constitutes the concept related to CSR. This attitude exposes holistic and multi-dimensional attitude towards corporate social responsibility management or more broadly: organizational social responsibility. According to Waddock and Leigh [2006, pp. 409-426], who base on the TRM concept, responsibility management consists of the following elements (Diagram 1):

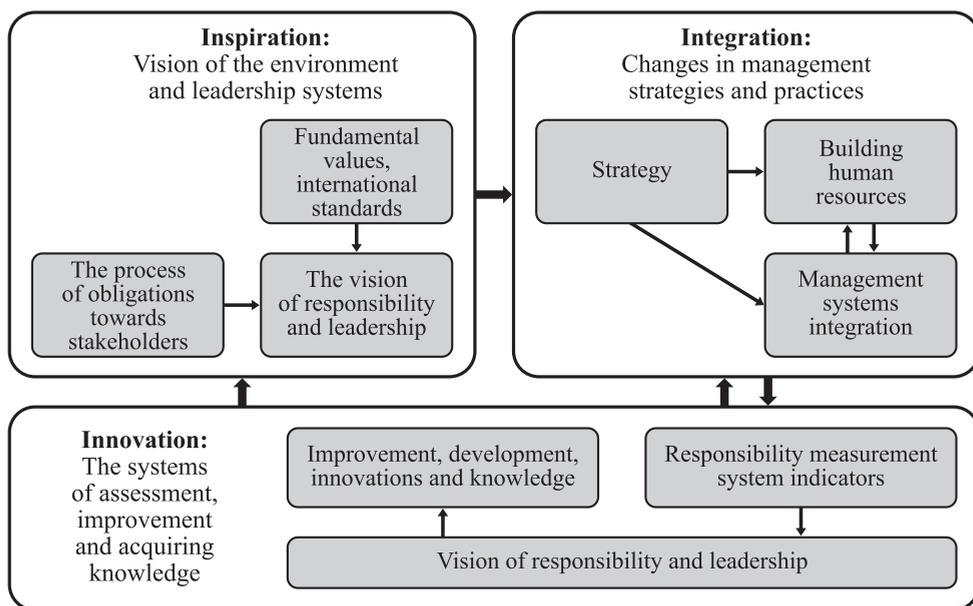
- inspiration (expressed in the vision of the environment and leadership systems as well as the company's mission, the management should identify this vision and spread it in the entire organization);
- integration of responsibility management with the organization's strategy and management practices (generating desired activities and results);
- innovation, development and learning.

The inspiration comes from specifying the objectives of the organizations. Their formulation ensures the clarity of the possessed vision of the organization's environment. It arises from fundamental values followed by its authors and

stakeholders as well as obligations towards stakeholders. These obligations result in the development of responsibilities forming the combination coming from the specific competitive position of a given institution, groups of stakeholders concentrated around it as well as the history of its activity. The vision, mission, way of accepting responsibility for the functioning of the organization together with lawful leadership form organizational context for the TRM model. Obligations of the companies are addressed both to internal stakeholders (employees of the company) as well as external ones (clients, investors, local communities and non-governmental organisations). The development and improvement of processes connected with fulfilling the obligations leads to the increase in efficiency and the involvement of employees as well as contributes to improving the relationships with clients, suppliers as well as other stakeholders [Korpus 2006, p. 154].

Declared vision and values should be reflected in the practices concerning the activities undertaken within the management of human resources. The key factor seems to consist in making the employees and managers aware of the benefits resulting from the implementation of the idea of corporate social responsibility in the organization as well as ensuring the compliance with high management and ethical standards. In these circumstances, it is important to educate the employees in this field. TRM attitude includes corporate responsibility in operational activities and company management systems [Korpus 2006, pp. 154-156].

Diagram 1. Structure of Total Responsibility Management



Source: Authors' own elaboration based on [Paddock, Bodwell 2006, p. 155]

The last, third element of the TRM model consists in innovation and concentrates on the systems of assessment, improvement and acquiring knowledge. This requires evaluating the activity of the organization with the use of assessment and reporting systems which form the bases for further development and innovativeness [Waddock, Bodwell 2007, p. 25].

The implementation of social responsibility systems forms a continuous and cyclical process. In social responsibility management the institutions and companies may refer to ready-made guidelines as well as implement rules and standards developed by international organizations (such as: International Organization for Standardization ISO, European Committee for Standardization CEN, European Foundation for Quality Management EFQM or Social Accountability International SAI) together with national organizations. They developed basing on the concept of Total Quality Management (TQM). It is here worth emphasising that the management system including all aspects of CSR does not exist.

But what happens when a financial institution acts in the way violating the interest of stakeholders? It is here necessary to refer to the characteristic of management styles³, which – from the point of view of the ethics of business – was performed by A. B. Carroll [1979, pp. 497-505; 1987] dividing these management styles into immoral, amoral and moral. Immoral management is characteristic for those managers whose decisions, actions and behaviours suggest to be in active opposition to what is perceived as moral. Such managers care only for their own profit and success or for the profit and success of the organization which they represent. Their motivation consists of egocentrism and orientation on the goal itself, achieved by all means. They use every opportunity to achieve the success (we could quote here the saying “*the end justifies the means*”). Decisions made by immoral managers are often inconsistent with commonly accepted ethical standards, which entails active opposition towards what is moral. They perceive legal provisions as obstacles or inconveniences which have to be overcome (got around) on the way to success [Carroll 1991, p. 13].

The second main management type is amoral management – it is realised by managers who in their everyday activities do not pay attention to the fact whether their decisions have a negative influence on other people. They are neither moral nor immoral – they are insensitive to the ethical dimension of their undertakings. Such amoral managers may have good intentions, but they do not notice that their decisions and activities may act to the detriment of subsequent stakeholders. They are mainly profit-oriented. Some of these managers may remain convinced that ethical standards are applied in their private life, but there is no space for them

³ Following M. Mroziewski we assume here that management style is: „*the set of methods fixed in company management system preferred by the managing authority, which ensure the coordination of the activity of its social and technical sub-systems in the scope of achieving strategic goals. Following this reasoning, management style includes the rules of creation, technical, economic and social order as well as its adaptation to requirements coming from the modification in the company's environment as well as inside the organisation. The following instruments are usually applied for this purpose: plans, patterns, product standards or standards of conduct.*” [Mroziewski 2005, pp. 22-23]

in business, which results in the conviction that decisions they make are beyond moral assessment [Carroll 1991, pp. 13-14].

The last, third management type according to Carroll's typology is moral management, where ethical standards are necessary and present in business decision making process. In contrast to management styles described above, in moral management all decisions are related to ethical standards – here we refer to ethical leadership. Ethical managers (as we can call them in this way) not only adjust to the accepted ethical standards, but they also constitute the example of ethical and professional behaviour for their subordinates. They do not resign from the company's basic objective, which is making profits; on the contrary, they strive for success on the market, but acting within legal provisions and such ethical norms as honesty, justice and making legitimate decisions. Good is the main motif of their activities. Their decisions are made not only due to the letter, but also the spirit of law. In this case we can refer to social responsibility of the organisation [Carroll 1991, pp. 14-45].

Specific management type is shaped, according to A. B. Carroll, under the influence of among others the standards and values accepted by a given community, the level of its education, type of religion or for example organisational culture practiced in public institutions dominating within it [Bombała 2000, p. 174].

Behaviours pathological from the economic perspective occur usually when the managers aim at achieving the goals in a way which remains in contradiction to the standards accepted in a given group. Strong pressure from stakeholders to achieve wealth, which is very often considered as basic indicator of success, without specifying the framework for accepted ways of achieving it (or without getting interested in the way in which this objective is supposed to be achieved) contributes to undertaking by the employees the activities inconsistent with the applicable legal and/or ethical standards. The convergence of goals of honest and dishonest managers (profit) often leads to the willingness to be ahead of the rivals (competitors) and satisfy high aspirations through unethical or – in extreme cases – criminal activities [Bylok, Sikora, Sztumska 2005, p. 196].

The aspect which is particularly visible in the financial activity is the interpenetration of politics and business, which constitutes the factor influencing the occurrence of pathological phenomena on the financial market⁴. Very often politicians “fill” the posts in the most important financial institutions with people who are favourable for them. They also try to influence their independence. This is not the characteristic of one government of even one country. This situation has many sources, such as: having the opportunity to regulate cash flow making it impossible to apply diversified financial and credit-related policy towards economic entities, the lack of clear borders between the political and economic sphere, unclear provisions of law and leaving the officials with too much freedom in making simple decisions [Bylok, Sikora, Sztumska 2005, p. 196].

⁴ Pressure groups from the world of the media, politics and finance may turn out to be very dangerous for companies and state economy, in particular within the combination of the erosion of moral standards and destructive political and economic authority – cf. [Pacholski 2003, pp. 240-255].

3. CSR and TRM in the practice of chosen insurance companies in Poland – the results of own research

Insurance companies, in order to serve the function of ensuring insurance protection against negative consequences of fortuitous events as well as the preventive function should – similarly to banks – constitute public trust institutions. In exchange for payment (insurance premium), they offer financial services based on trust. The clients have to be sure that when indemnifiable accident occurs, the payment or benefit guaranteed in the agreement, in the circumstances of difficult life situation, will be realised. They also need to be sure that insurance protection is a fact.

In practice, within the loss indemnification process following the occurrence of the indemnifiable accident, serious conflicts between the insurer and the insurance company may arise and, as it can be concluded from the statistics of the former Insurance Ombudsman and present Financial Ombudsman⁵, they do arise. Disputable matters are frequently settled even in court, they finish with the intervention of the Insurance Ombudsman or in the arbitration court [Szumlicz 2005, p. 41]. Observation of the market together with the analysis of scientific studies clearly demonstrate that in order for the insurance company to be able to function effectively, consumers should hold the confidence that the insurance protection is real. In this way, the promotion of public trust towards insurance companies is necessary [Szumlicz 2010, p. 347]. What is more, also the efficient realisation of the preventive function (i.e. decreasing the risk of occurrence of fortuitous events with negative consequences) is based on trust towards the insurance company. These businesses should thus not only care for their own interests (profit for the owners, long-term growth of the value of the company), but also express particular care for consumers (the insured, insurers, assured) as well as take into account the interests of other groups of stakeholders.

In this context, the application of corporate social responsibility in business practice of insurance companies seems natural – both at the level of management strategy as well as operational activity (tactical level of management, shorter time perspective). The authors decided to take a closer look at the activity of chosen insurance companies in Poland from the point of view of corporate social responsibility rules declared by them and those actually implemented.

While looking at an insurance company from the perspective of its pro-social activities, bearing in mind CSR and TRM criteria, it is necessary to focus on four aspects that follow:

- 1) inspiration;
- 2) vision and value;

⁵ In 2015 the function of Insurance Ombudsman has been replaced in Poland by Financial Ombudsman, with more responsibilities concerning also clients of other financial institutions. The Act concerning the complaint handling procedure by financial service providers and Financial Ombudsman was adopted in 05.08.2015 and announced in the Journal of Law in 10.09.2015.

- 3) integration of responsibility management with the organization's strategy and management practices (generating desired activities and results);
- 4) innovation, improvement and learning.

In the present article the authors concentrated on the analysis of the first three elements (inspiration, vision, declared values as well as chosen management practices concerning the integration of responsibility management with the strategy of organization).

The basis to verify whether and to what extent insurance companies – at least in the sphere of declarations – benefit from the inspiration with CSR concepts and possibly also TRM, as well as to which values and stakeholders groups they refer, was constituted by the analyses of 15 websites of insurance companies selected at random (it is one of the elements of the research on CSR in financial institutions in Poland and its various subsequent aspects are going to be presented in the next articles). The compliance of these declarations with actual following of CSR and TRM rules was in turn verified based on secondary sources, including the reports of Financial Ombudsman and UOKiK.

As it is commonly known, insurance companies often declare to follow CSR. In order to verify these declarations, it is necessary to take a closer look at their activities, starting from the analysis of provisions and documentations published in publicly available websites of financial institutions and concerning the mission, vision and activities which prove that pro-social actions are undertaken. According to the research presented in literature on the subject of CSR, the following are considered to be the key factors having the influence on the restoration or increase in trust: protection of clients and employees as well as clear and responsible communication [Iwko 2013, p. 79]. From the analysis of documentation it may be concluded that websites include constantly repeating elements of management through values in the following documentations:

- 1) information on using the provident fund;
- 2) autopresentation of the organisation (often included in the section “About us”);
- 3) visions setting the directions;
- 4) missions indicating objectives;
- 5) codes and principles of good practice;
- 6) reports;
- 7) guidelines;
- 8) procedures.

They standardise the rules of conduct, include the declaration of values, describe ways of solving conflicts, procedures for supervision, implementation and controlling the compliance with standards and claims.

Table 1. Values and CSR-related activities declared by chosen institutions of the financial sector in Poland – based on the analysis of websites of the companies (as of 30.06.2017)

Inspiration and vision: information on the website concerning corporate order and business ethics	Declared values together with specifying the stakeholders	Information on chosen pro-CSR management practices: corporate volunteering and exposed activities (actions, provided support) on the website
1.	2.	3.
Aegon Towarzystwo Ubezpieczeń na Życie S.A. Website: http://www.aegon.pl/		
The following documents were published on the AEGON website: <ul style="list-style-type: none"> ▪ Corporate Governance Principles: information on adopting CGP for the Supervised institutions developed by KNF – Polish Financial Supervision Authority on 22.07.2014 ▪ Information Policy ▪ Information Policy and the Rules for Creating and Spreading Advertising Messages by Aegon TUnŻ S.A. ▪ Communication on adopting Corporate Governance Principles by Aegon TUnŻ S.A. ▪ Communication on applying Corporate Governance Principles by Aegon TUnŻ S.A. in 2016 	Declared values: information on adopting CGP for the Supervised institutions developed by KNF – Polish Financial Supervision Authority on 22.07.2014 Specified stakeholders: “all stakeholders”, employees, clients, partners, shareholders, institutions supervised by KNF	Website of the insurance company includes the information on supporting the following non-governmental organizations: Special Care Facility in Katowice; SOS Children’s Villages Association – the village in Siedlce and the village in Karlino; Association „mali Bracia Ubogich” involved in providing aid to the elderly; three MARKOT institutions helping in getting out of homelessness: Colony for the Homeless in Wilczyńska, the home for Single Mothers with Children in Zgorzelec, Fellowman Support Center in Lubliniec; Foundation for the help of children from the Grodno region; “Bardziej Kochani” (More Loved) Association of Families and Carers of Persons with Down Syndrome; Children’s Friends Society TPD Community Educational Center in Warsaw, Praga Północ district; Community After-School Center in Suwałki; L.A. Ciołkosz’s 9th Children’s Home in Warsaw; Zenon Nocoń’s “Pomocni Ludziom – Rucewo” (Helpful for People) Association
Chubb (merger of Chubb and ACE) Website: http://www.aceurope.pl/ or https://www2.chubb.com/pl-pl/		
Documents presented on the website: <ul style="list-style-type: none"> ▪ Practical tips for clients ▪ Section “our values” with the declaration of values that Chubb is supposed to follow 	Declared values: honesty, client-oriented attitude, respect, perfectionism, team work, compliance with law, diversity, trust, mutual respect Specified stakeholders: clients, employees, partners, communities, brokers	

1.	2.	3.
Compensa T. U. S.A. (Compensa Towarzystwo Ubezpieczeń S.A. Vienna Insurance Group; Compensa Towarzystwo Ubezpieczeń na Życie S.A. Vienna Insurance Group) Website: http://www.compensa.pl/		
<p>The following content was among others published on the website:</p> <ul style="list-style-type: none"> ▪ Mission, ▪ Vision, ▪ Aspirations, ▪ Annual Report, ▪ Corporate Governance Principles ▪ Anti-fraud policy 	<p>Declared values: security, trust, quality</p> <p>Specified groups of stakeholders: clients, partners, “all members of the environment”</p>	
Allianz Polska: Towarzystwo Ubezpieczeń i Reasekuracji ALLIANZ Polska S.A.; Towarzystwo Ubezpieczeń ALLIANZ Życie Polska S.A. Website: http://www.allianz.pl/		
<p>Information on the implementation of the following documents can be found on the website of the insurance company:</p> <ul style="list-style-type: none"> ▪ Employee’s Ethics Code, ▪ Agent’s Ethics Code, ▪ Procedures concerning the detection and prevention of crime and corruption. ▪ Corporate Governance Principles of TUiR Allianz Polska S.A. or TU Allianz Życie Polska S.A. ▪ Ethics code, voted on December 17th 1998 by the Meeting of the Representatives of Polish Insurance Association. According to Art 66 ▪ §2 point 6 of the Civil Code “Principles of Ethics in insurance activity”. ▪ The website includes the information on the possibility to contact the Compliance Management Department in order to inform Allianz Polska about the incidents of dishonest activity or unconscious violation of legal rules and provisions together with e-mail address provided for this kind of communication. 	<p>Declared values: activity compliant with legal provisions, no discrimination, enabling professional development, protection of confidential information, attention paid to customer service quality, caring for contacts with stakeholders, examining complaints, transparent financial reporting, no corruption or bribery, limitations in giving and receiving presents and other benefits, protection of natural resources, preventing money laundering and financing terrorism, prohibition of illegal activities, protection of employees in case of informing on illegal or suspected activities, professionalism in risk assessment, the sale of products and post-sales service, honesty, avoiding the conflict of interests, respect, avoiding misspelling.</p> <p>Specified stakeholders: employees, clients, agents, middlemen, business partners</p>	<p>No information on corporate volunteering or CSR actions</p>

1.	2.	3.
Mondial Assistance (AWP P&C S.A. Oddział w Polsce) Website: http://www.mondial-assistance.pl/		
<p>The website includes the information on following corporate social responsibility by Mondial Assistance, including among others:</p> <ul style="list-style-type: none"> ▪ Section “social responsibility” ▪ Sub-site “True stories” ▪ Practical information for clients 	<p>Declared values: trust</p> <p>Specified stakeholders: employees, local communities, service providers, business partners</p>	<p>Since 2009, Mondial Assistance has been cooperating with the Association of the Friends of Integration (activities for people with disabilities); what is more, Mondial Assistance supports the organization of the Integration Gala. Involvement in the project: “Would you really like to be in our place?” (convincing drivers no to park their cars in handicapped parking spaces), involvement in the project of the abovementioned Association entitled “Shallow imagination equals disability” (attracting young people’s attention to tragic consequences of jumping into the water) as well as in the MASSIVEGOOD action (fight undertaken by the touristic industry against HIV/AIDS, malaria and tuberculosis in developing countries). From 2009 to 2014, Mondial Assistance published so called “True stories” aimed at educating and warning the clients – which constitute an educational asset for consumers.</p>
AIG (AIG Europe Limited sp. z o.o. Oddział w Polsce) Website: http://www.aig.com.pl/		
<p>The website includes AIG’s annual report, which includes information about the organization’s vision and mission.</p>	<p>Declared values: caring for relationships, quality</p> <p>Specified stakeholders: clients, brokers, employees, supervision, local communities, shareholders.</p>	<p><i>AIG Corporate citizenship agenda</i> (philanthropy, supporting local communities, supporting diversity)</p>
Atradius Credit Insurance NV Spółka Akcyjna Oddział w Polsce Website: www.atradius.pl		
<p>Pro-social activities included in the following content can be noticed while analysing the content of the website:</p> <ul style="list-style-type: none"> ▪ Declaration of the company’s orientation on high quality of customer services, cooperation as well as getting to know and understanding client’s business, ▪ “Customer service standards”, ▪ Professional development plan for employees. 	<p>Declared values: disclosure of information, quality, good relationships with clients</p> <p>Specified stakeholders: clients, employees</p>	<p>The website does not include any information on corporate volunteering or CSR actions.</p>

1.	2.	3.
AVIVA Towarzystwo Ubezpieczeń Ogólnych S.A.; AVIVA Towarzystwo Ubezpieczeń na Życie S.A. Website: http://www.aviva.pl/		
<p>The website includes the following information relating to CSR:</p> <ul style="list-style-type: none"> ▪ Description of pro-social activities of the company, ▪ Description of CSR experience, ▪ Principles of good practice, with the following ones enumerated among them: <ul style="list-style-type: none"> – “Aviva Business Ethics Code” – “Code of Activity of Agents and Representatives – „Principles of ethics in insurance activity” prepared and recommended by Polish Insurance Association – Uses “The Code of Good Practice of institutional investors” – “The Code of Bancassurance Good Practice” published by the Polish Bank Association in cooperation with Polish Insurance Association), ▪ Corporate volunteering ▪ Description of the set up Aviva Foundation. ▪ Mission and vision. 	<p>Declared values: care for the interest and relationships with stakeholders, observing human rights and the rights of employees, as well as undertaking initiatives for the benefit of the society,</p> <p>Specified stakeholders: clients, contractors, local communities, middlemen, supervision, media</p>	<p>CSR: „Aviva Group also established the corporate foundation. In the years 2009-2012, the Aviva Foundation spent over PLN 2 million within the framework of activities for Polish sportspeople with disabilities. In the period of three years, 50 sportspeople and their 18 trainers received grants facilitating their preparations to London 2012 Paralympic Games. The foundation also promoted the attitudes which constitute the condition of success in Paralympic sports and presented the achievements of the sportspeople, who won 36 medals in London.</p> <p>In 2014, the Aviva Foundation began new program of activities – regular grant competition “This matters for me”, the purpose of which is to support social initiatives. (...). In 2014, the subject of the competition consisted in helping the parents in raising small children.”</p>
Axa Ubezpieczenia TUiR S.A. (former BRE Ubezpieczenia TUiR, Liberty Ubezpieczenia AXA TUiR), AXA Życie TU Website: www.axaubezpieczenia.pl		
<p>While analysing the content of the website, declaration can be noticed that the insurance company follows Corporate Governance Principles for supervised institutions, accepted by KNF – Polish Financial Supervision Authority on 22.07.2014. Information on the agreement made with the President of the Office of Competition and Consumer Protection UOKiK:</p> <ul style="list-style-type: none"> ▪ Concerning the agreements in force, thanks to which termination fee for clients who need to discontinue insurance contracts concluded before 01.01.2016 is going to be reduced. 	<p>Declared values: included in Corporate Governance Principles</p> <p>Specified stakeholders: according to the Corporate Governance Principles, including: shareholders, clients, supervision.</p>	<p>AXA supports World’s 4th Road Safety Week</p> <p>Preventive action: Smart bell – Polish invention which may become the revolution for drivers and cyclist</p> <p>No information on corporate volunteering or CSR actions</p>

1.	2.	3.
<ul style="list-style-type: none"> ▪ Concerning the discontinued agreements – clients over the age of 65 years who comply with agreement conditions described in this communication, may apply for the return of part of termination fee paid in the past during the discontinuation of life insurance contracts with insurance capital fund. ▪ information on the realisation of obligations covered by administrative decision number RWR 18/2015 published by the President of UOKiK on 02.11.2015 		
Balcia Insurance SE Spółka Europejska Website: www.balcia.pl		
No CSR declaration	Declared values: no entries Specified stakeholders: no entries	No information on corporate volunteering or CSR actions
BZ WBK-Aviva Towarzystwo Ubezpieczeń na Życie S.A. BZ WBK-Aviva Towarzystwo Ubezpieczeń Ogólnych S.A. Website: http://www.bzwbkaviva.pl/		
Website of the insurance company includes: <ul style="list-style-type: none"> ▪ Information on the compliance with “Insurance Good Practice Principles”, voted on 08.06.2009 by the General Meeting of Polish Insurance Association. ▪ Business Ethics Code. ▪ Corporate Governance Principles for supervised institutions were adopted, published by KNF – Polish Financial Supervision Authority on 22.07.2014. ▪ Audit and Risk Committees as well as Supervisory Boards of the Companies performed for the first time, during the meetings in December 2015 and March 2016, the assessment of the application of the Rules in 2015 and the assessment is positive. ▪ Information policy rules 	Declared values: reliability, transparency, facilitating access to information, equal treatment, observing legal provisions in force, in particular concerning the protection of insurance secret and the protection of personal data as well as those specified in the “Principles of Insurance Good Practice” and “Corporate Governance Principles” Specified stakeholders: shareholders, clients, as well as those specified in the “Principles of Insurance Good Practice” and “Corporate Governance Principles”	No information on corporate volunteering or CSR actions

1.	2.	3.
Powszechny Zakład Ubezpieczeń S.A Powszechny Zakład Ubezpieczeń na Życie S.A. Website: http://www.pzu.pl/ http://www.pzuzycie.pl/ the websites are integrated, so they can be analysed together		
<p>The website of PZU S. A. includes CSR information including developed information concerning social responsibility of PZU S.A., including among others:</p> <ul style="list-style-type: none"> ▪ “Good practices of PZU” – basic collection of ethical standards in force ▪ PZU SA and PZU Życie SA., ▪ “Principles of Insurance Good Practice” by Polish Insurance Association, ▪ Charter of PZU S.A., ▪ Information on adopting and following Corporate Governance Principles for supervised institutions, specified by KNF – Polish Financial Supervision Authority, ▪ Programs and projects, ▪ Ethical corporation, ▪ Multimedia, ▪ Possibility to submit prevention/ sponsoring application, ▪ Social responsibility reports from 2010 	<p>Declared values: among others following the best interest of stakeholders, ensuring tranquillity and the feeling of security for the clients, responsibility, honesty, sincerity, respect, trust, information, protection of personal data, security, protection of information and intellectual property, respecting the rules of fair competition and consumer protection, respecting trademarks, avoiding the conflict of interests</p> <p>Specified stakeholders: among others clients, employees, co-workers, shareholders, the entire society, contractors (including their employees and representatives), users of PZU websites, competitors</p>	<p>PZU S.A. manages two websites dedicated to insurance which include materials with educational character: “JakieUbezpieczenie.pl” “ZycieNa100procent.pl”</p> <p>Permanent prevention activity of the insurance company includes among others the cooperation with Tatra Volunteer Search and Rescue (TOPR), Mountain Volunteer Search and Rescue (GOPR) and Water Volunteer Search and Rescue (WOPR), the Association “Teddy Bears Rescue the Children” (therapeutic and psychological aid for children injured in accidents). PZU is the member of the Forum of Polish Donors</p> <p>Recognized activities of PZU include among others: sponsorship of the Royal Castle in Warsaw, PZU zone during the Long Night of Museums at the Royal Castle in Warsaw, patronage over the Łazienki Królewskie park in Warsaw, close cooperation with the Nowe Sukiennice Department of the National Museum in Cracow, sponsorship of the Grand Theatre in Warsaw, patronage over the Decjusz villa in Cracow; sponsorship of the Capital Market Leaders Academy, sponsorship of the competition “the Way to Harvard”</p> <p>PZU programs addressed to students: Academic Advisors and PZU Ambassadors, competition “Students’ Project of the Year”, business workshops, Business Open Days in PZU, competition “written by the knowledge”, Bridging Scholarships Program, patron of the Scholarship of Choice etc. Promoting the interests of employees – exhibition “People with passion” Information on the PZU Foundation</p>

1.	2.	3.
Towarzystwo Ubezpieczeń i Reasekuracji WARTA S.A. Towarzystwo Ubezpieczeń na Życie WARTA S.A. Website: http://www.warta.pl/		
<p>Website of the insurance company includes:</p> <ul style="list-style-type: none"> ▪ Key information concerning the agreement between Warta and UOKiK as of 19.12.2016 concerning the reduction of fees connected with earlier termination by the clients of contracts with insurance capital fund, ▪ Information on the launched „fast indemnification paths” after the hurricane ▪ Introducing convenience solutions for clients concerning among others submitting damage report via Facebook Messenger (the insurance company claims that they were the first in Poland to have introduced this solution) as well as “Warta mobile”, the first mobile loss indemnification assistant in Poland. 	<p>Declared values: no information</p> <p>Specified stakeholders: clients</p>	<p>Examples of CSR activities: action: „More than you can think as these are Warta’s standards” include short videos containing prevention and advertising content addressed to consumers.</p>
Sopockie Towarzystwo Ubezpieczeń ERGO HESTIA S.A. Sopockie Towarzystwo Ubezpieczeń na Życie ERGO HESTIA S.A. Website: http://www.hestia.pl/		
<p>Website of the insurance company includes a lot of information and documents connected with corporate social responsibility, among others:</p> <ul style="list-style-type: none"> ▪ Sustainable development – CSR Initiatives ▪ Corporate social responsibility reports of the Responsible Business Forum ▪ Corporate Governance Principles – including the information on their adoption and compliance ▪ Client’s Ombudsman – possibility to have an online chat with the ombudsman ▪ Knowledge centre – educational function ▪ Possibility of service in sign language. 	<p>Declared values: social involvement and the development of local community, work-related practices, consumer issues, corporate governance principles, honest operational practices.</p> <p>Specified stakeholders: environment, clients, local communities</p>	<p>Foundation Hestia’s Artistic Journey was established „in order to support the development of young Polish artists and promote their achievements”</p> <p>Integralia Foundation was established in order to promote professional integration of people with disabilities.</p> <p>Sponsorship (for 16 years) of the ERGO Hestia Sopot Sailing Club.</p> <p>Priest Józef Tischner’s literary award for outstanding intellectuals, journalists and social activists promotes in Poland the style of thinking and attitudes combining intellectual reliability, courage and sensitivity to other people – the values represented by its patron.</p> <p>ERGO Hestia Little Academy of Insurance.</p>

Source: Author’s own elaboration based on websites of selected insurance companies.

While conducting the study, researchers concentrated on the types of values which a financial organization should satisfy while answering stakeholders' expectations and which were catalogued in the study. These values belong to all four types differentiated according to basic classification [Falencikowski 2012, p. 37]: economic values (attractive price, product availability, quality, convenience of payment terms or delivery time), technical values (usefulness, efficiency, simplicity and durability of solutions, e.g. while using the tools of loss indemnification, access to the account, etc.), emotional values (particularly important in the aspect of insurance protection, saving, which are connected with such individual feelings as the feeling of security, love, youth, health etc.) as well as social and ethical (influence on the quality of life, influence on the environment, responsibility for the product or/and service, transparency of activities, etc.). Analysis of the examples of CSR provisions on the websites of insurance companies, with 15 websites of insurance companies selected at random.

The majority of the analysed websites include CSR provisions, some of them in their structures include prepared documents, the other have the information dispersed in different sections of the website. It is here worth noticing that those insurance companies that have the most developed CSR programs at the same time appear on the top of the ranking of "The most desired employers 2016" – the survey conducted annually by Antal [2017]. In the report, 3303 experts and managers from all over Poland, representing various businesses, indicated the following as the most important strong point of the employers:

- size and prestige of the company (59% indications);
- management style and organizational structure (52% indications);
- innovativeness (42% indications);
- remuneration (40% indications);
- employment stability together with training opportunities (34% indications respectively).

Interestingly enough, the prestige of the company, management style or organizational culture – which are particularly connected with CSR (or with TRM) – are placed by the managers higher than remuneration amount. PZU turned out to be the most desired among insurance companies, which are distinguished not only by their size and prestige, but according to the analysis of the website also represent great involvement in the realization of programs for students, employees, charity programs together with big social involvement (cf. Table 2).

Table 2. The most searched for employers in the insurance sector in view of opinion polls

The most desired employers among insurance companies	PZU	Warta	Aviva	Ergo Hestia
% of indications among Polish experts and managers	21%	10%	8%	7%

Source: Authors' own elaboration based on [Antal 2017].

The question arises here to what extent the declarations included in program documents and on websites comply with practical activities of insurance companies. One of the indicators which can be used for measuring the level of respecting CSR principles by insurance companies is the number of complaints filed in the last years to the Financial Ombudsman against the insurance companies as well as the number of agreements made by UOKiK with insurance companies. In the studied period (1995-2016), an increasing trend was initially noticed, in order to reach its culmination point in the year 2013 and begin the decreasing trend in the number of complaints filed to the Financial Ombudsman⁶. It may result both from the growing insurance awareness of the Poles as well as from the efficiency of activities undertaken by the Financial Ombudsman and UOKiK. The biggest number of complaints used to concern vehicle insurances and for years, the biggest number of complaints have been recorded with reference to compulsory liability insurance (due to the fact that it is the most frequently concluded type of insurance contract). The following activities were among others indicated within the scope of vehicle insurance [Financial Ombudsman 2015]:

- complete refusal to accept the claim for compensation or benefit;
- refusal to accept part of the claim;
- dilatory conducting of indemnification proceedings, which resulted in untimely satisfaction of claims;
- difficulties in making damage documents available;
- insufficient information on documents required in connection with indemnification;
- lack of comprehensive explanations for the positions taken by the insurance company, both when they concerned the refusal to accept the claim or the amount of awarded compensation or benefit.

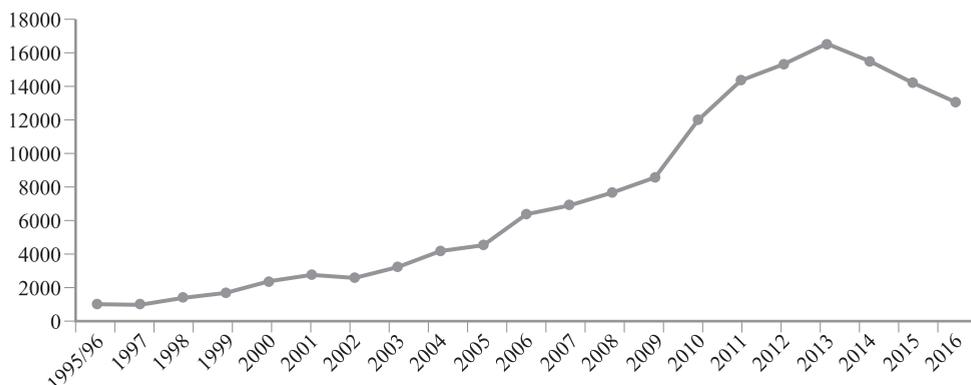
An increasing number of complaints concerning extended warranty due to the developing market of the insurance of electronic appliances [Financial Ombudsman 2016]. When some disputes are solved, other arise. For this reason, constant supervision over insurance activity and constant care for high CSR standards are very important.

Analysing the history and amount of penalties imposed by Polish Financial Supervision Authority (KNF) only from 01.01.2018 to 22.05.2018, 12 penalties were imposed on insurance companies:

- Generali Towarzystwo Ubezpieczeń SA (4 penalties in total);
- Gothaer Towarzystwo Ubezpieczeń SA (3);
- Powszechny Zakład Ubezpieczeń SA (2);
- InterRisk Towarzystwo Ubezpieczeń SA Vienna Insurance Group (1);
- Towarzystwo Ubezpieczeń i Reasekuracji “Warta” SA (1);
- Towarzystwo Ubezpieczeń Wzajemnych Polski Zakład Ubezpieczeń Wzajemnych (1).

⁶ until 2013: Insurance Ombudsman

Figure 1. Number of complaints filed in connection with insurance addressed to the Insurance (Financial) Ombudsman; 1995-2016



Source: Authors' own elaboration based on the data from [Financial Ombudsman 2015; 2017].

The biggest number of penalties was imposed in connection with recording the cases of delay in granting and paying the indemnification or non-compliance with information obligations [KNF 2018a-g].

In addition it is necessary to emphasise the fact that in the last years, the quality of consumer service has significantly improved on the insurance market, among others with the improvement in the duration of indemnification proceedings from vehicle liability insurance, to which usually refer the most of consumers' complaints on the insurance market. Several factors have contributed to this positive phenomenon, among others effective realisation of supervisory competencies of KNF, reports and activities of the Financial Ombudsman and UOKiK, following KNF guidelines by insurance companies, legally standardised appeal/complaint path as well as including the information on the ways to file a complaint on the websites of insurance companies, effective realisation of the statutory task of Polish Insurance Association (PIU) consisting in shaping, making publicly available and supervising the compliance with fair competition rules and the principles of ethics in insurance activity [Celczyńska 2016, p. 236].

What is more, on 19-20.12.2016, the President of UOKiK made the agreements with 16 insurance companies, the subject of which referred to the provisions concerning insurance capital funds [UOKiK 2017, p. 13]. At the same time, the initiator of making the agreements in this field was PIU. The works were realised with the support of the Minister of Development and Finance as well as KNF. UOKiK presents them as the example of a compromise solution which did not require any legislative activities. It is however impossible to ignore the fact that initially, the attitude of both PIU and KNF to the criticism formulated by the Financial Ombudsman and addressed to insurance companies offering policies with insurance capital funds (also including policy-deposits, particularly dangerous for the clients) was negative and changed

only gradually - cf. [Skibińska 2017]. It can thus be assumed that step by step, the insurance market in Poland is adopting self-cleaning mechanisms in relation to activities remaining in contradiction to the idea of CSR, even if there still remains a lot of work to be done in this field.

What should also be positively assessed is the fact that while analysing the resolutions of the Advertisement Council, the authors proved that within the 5 analysed years (from 05.2013 to 05.2018), the Council did not find any of the complaints concerning the advertisement relating to insurance as justified and violating the Code of Advertisement Ethics.

Undoubtedly, based on the conducted research it should be stated that the changes on the insurance market are following the direction which is positive for stakeholders, but the number of complaints filed to the Financial Ombudsman and the number of penalties imposed on insurance companies by KNF show that still a lot can be done in this field. *The development of financial services and growing competition should in the nearest future force parallel progress with reference to the provisions of legal acts, in particular within the operational sphere, where the institutions appointed for this purpose should more effectively than they currently do protect long-term interest of the clients of insurance companies* [Pisarewicz, Kowalczyk-Rólczyńska, Kamiński 2017]

4. Summary

With reference to the deliberations above, the following conclusions can be formulated:

- 1) The conducted studies of source literature as well as the results of research by other authors from Poland and from abroad demonstrate that both concepts (CSR and the concept of TRM strictly connected with it) may be applied in practice, including also the management and operational activity of financial institutions.
- 2) Own studies show that at the level of declared values and adopted corporate governance principles, the majority of insurance companies included in the scope of the research refer to the CSR concept. This is also reflected in the missions and visions as well as the analysis of the content of websites supporting the activity of an insurance company, and thus it becomes part of management strategy. However, in practical activity we can notice numerous violations of CSR principles, in particular in relations with clients. There still remains a lot to be done in this field. Apart from public institutions active around the insurance sector (in particular – Financial Ombudsman, UOKiK), major part is in this field attributed to the institutions active within the insurance sector, including PIU.
- 3) The popularisation of CSR and finally also of TRM in the insurance sector in Poland acts in favour of the interest of insurance companies from the long-term perspective, not only in the dimension of business (a reliable partner for

- enterprises, households, public institutions), but also from the point of view of the attractiveness of insurance companies as employers (the opportunity to obtain valuable employees on the labour market).
- 4) The question which requires further in-depth research is the analysis and assessment of the influence of the implementation of CSR and TRM rules in practice on the choice of management style of the managers of Polish insurance companies (immoral, amoral and moral). There exist many indications that immoral management style, which does not take into account ethical aspects and accepts the activities to the detriment of different stakeholders groups, is limited and eliminated in the Polish insurance sector, which is also important for the interest of the insurance companies themselves. Therefore, the verification of this hypothesis requires further empirical studies.
 - 5) Both potential employees, clients as well as investors follow while making their choices among others CSR activities of an insurance company. Based on the quoted studies and declarations it can be noticed that a trend is emerging among the abovementioned stakeholders groups, according to which a hypothesis can be made that the bigger the trust in an insurance company, the more it influences its market value (requires additional research). CSR activities are thus not only a trend, but also the necessity for insurance companies.

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Abbreviations

CSR – Corporate Social Responsibility; KNF – Polish Financial Supervision Authority (*Komisja Nadzoru Finansowego*); PIU – Polish Insurance Association (*Polska Izba Ubezpieczeń*); TQM – Total Quality Management; TRM – Total Responsibility Management; UOKiK – Office of Competition and Consumer Protection (*Urząd Ochrony Konkurencji i Konsumenta*).

Identifying the priority methodology for reinsurer default risk assessment

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Abstract. The summarised methodologies for reinsurer default risk include such type of approaches as assessment of the impact of stress factors, individual models of risk assessment, capital adequacy assessment to cover risk, rating assessment, and evaluation by means of indicators of sustainability. The technology of identifying the priority methodology for reinsurer default risk assessment is improved. It is based on an integrated approach and covers selection criteria: based on public data; no need to involve additional experts for evaluation; simplicity of calculation and interpretation of assessment results; accuracy of calculation; no need to use special software for evaluation. It was determined that the methodology for reinsurer default risk assessment in an insurance company using solvency assessment tools according to EU requirements of Solvency II is a priority. The influence of the reinsurer default risk on the level of solvency of insurance companies (with the example of Ukraine) is determined. It was found that the capital requirement for counterparty default risk (SCR_{def}) has the highest solvency burden, compared to the capital requirement for non-life underwriting risk (SCR_n), the capital requirement for health underwriting risk (SCR_h), the capital requirement for market risk (SCR_{mkt}) and the capital requirement for operational risk (SCR_{op}). The results obtained are of practical value and can be used by insurance companies to monitor the reinsurer default risk.

Keywords: reinsurer default risk, insurance companies, risk assessment.

JEL Codes: F36, G22, G28.

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1. Introduction

The value of reinsurance is shown in the protection mechanism of a particular insurance company and the insurance market as a whole, as it protects a direct insurer against financial losses, which would be incurred by the need for insurance payments and claims on insurance contracts without reinsurance coverage. Often reinsurance goes out of the country and maintains the required balance in the activities of insurers by entities from abroad.

The efficiency of using reinsurance shows an increase in an insurer's capacity, because majority of these are not able to take very large and unexpected risks. Researchers examined the problem of risk and uncertainty that both insurer and reinsurer face. A wide range of issues related to the provision of reinsurance in insurance companies is reflected in the works of such researchers as Abinzano [2014], Balbása [2015], Bojko [2011], Chen [2017], Cheung [2014], Dyachkova [2010], Kuzmenko [2013], Pozdnyakova [2010] and others.

Reinsurance helps insurance companies to take very large and unexpected risks. At the same time, using reinsurance raises the question of reinsurer default risk. This risk is very important for insurance companies to cover unexpected risks [Balbása et al. 2015; Chen et al. 2017; Cheung et al. 2014]. Reinsurer default risk was reflected in scientific work, which in particular examined the effects of operational risk on fair premiums and solvency capital requirements under Solvency II [Gatzert, Kolb 2014].

Canadian researchers assumed that the initial capital or reserve of a reinsurer is regulated by the value-at-risk of its promised indemnity [Abinzano et al. 2014; Cai et al. 2014]. However, insurance regulation needs to use different methods to identify and cover reinsurer default risk. The European risk-based regulatory framework Solvency II is very important for insurance companies. Thus, this raises the question of how to identify the priority of the methodology for reinsurer default risk assessment and proves its relevance. It should be noted that previous research on the subject has not investigated problems concerning reinsurer default risk assessment in insurance companies, which proves the originality of this research and demonstrates its relevance.

This article aims at identifying the priority methodology for reinsurer default risk assessment. The tasks of the article are: (1) to identify the theoretical framework of the assessment methodology; (2) to identify the priority methodology for reinsurer default risk assessment; (3) to assess the effect of the reinsurer default risk on the solvency of the insurance companies (with the example of Ukraine).

The methodological basis of the study is the hierarchy analysis method by Saaty used for identification of the priority methodology for reinsurer default risk assessment. In studying and generalisation of scientific research, the methods of comparison, analysis and synthesis were used. The influence of the reinsurer default risk on the level of solvency of insurance companies (with the example of Ukraine) is determined, using factoring analysis.

2. Theoretical framework of the assessment methodology

The researchers considered the effect of reinsurance on the activity of insurance companies. The research [Hudakova, Adamko 2016] conducted an analysis of insurance regulation, which should provide protection for policyholders and beneficiaries while promoting market stability through valuation and risk efficient capital allocation. An essential pillar in the structure of insurance regulation constitute capital requirements for insurance and reinsurance activities with respect to potential risks.

Reinsurer default risk reflects the possible losses due to unexpected default, or deterioration in the credit position of the reinsurer over the next 12 months [Directive of the European Parliament 2009]. Direct reinsurer default risk – a risk that the insurer does not receive the money, which is owed, because the other party, the reinsurer, announced a default on its obligations [Pukała et al. 2017]. Implementation of reinsurer default risk assessment is advisable in two directions: in predicting future impacts on the assessment of a possible reinsurer insolvency and diagnosis of the financial condition of the reinsurer.

In Ukraine, components have been established of an organizational provision that are presented as regulatory requirements to the reinsurer [The National Commission for State Regulation of Financial Services Market of Ukraine 2013], one of which is to monitor the level (rating) of the financial soundness of reinsurance of non-residents [The Cabinet of Ministers of Ukraine 2004]. Increased requirements for reinsurers, including non-residents, allowed identification of methods of evaluating their level (rating) which include “A.M. Best” (USA), “Moody’s Investors Service” (USA), “Standard & Poor’s” (USA), “Fitch Ratings” (UK), etc.

These are specific rating methods, which allow determination of the credit rating of the reinsurer. It is the insurance companies that use reinsurance which may be users of these methods. It is necessary to determine a general list of techniques for the assessment of reinsurer default risk in the insurance company, the use of which will allow the insurer to investigate the risks of reinsurance and participate in the evaluation process. Thus, in insurers’ practice, there are a number of different and somewhat reasonable methods of evaluation of stability (of risk). However, these methods can test for the assessment of the financial stability or solvency of insurance companies. These methods can be used partially to evaluate the reinsurer default risk, however, given the specificity of reinsurer default risk.

The methodologies of risk assessment of reinsurers in insurance companies include assessment of the impact of stress factors [The National Commission for State Regulation of Financial Services Markets of Ukraine 2014], the individual models of risk assessment [KPMG 2002], capital adequacy assessment to cover the risk [CEIOPS 2012], rating assessment [National Rating 2016; Institute of Risk Analysis 2010; A. M. Best 2014; Fitch ratings 2014; Moody’s Investors Service 2016; S&P 2016], and methodologies for evaluation by means of indicators of sustainability [The State Commission for Regulation of Financial Services Markets of Ukraine 2005]. Each of these methodologies of reinsurer risk assessment has the priority

of practical use. Thus, stress-testing is a promising method of risk assessment for the factors exerting the risk of an adverse character [The National Commission for State Regulation of Financial Services Markets of Ukraine 2014].

The individual models of risk assessment may rely on stress-testing instruments, and the need for detailed risk analysis in the modern practice of default risk assessment leads to more widespread use of internal models of risk by insurers.

The capital adequacy to cover the risks of an insurance company is calculated by the regulator within defined formulas: for each component of the overall index of solvency capital requirements a defined standard measure of vulnerability to risk, which consists of the necessary capital for individual risks and / or type of insurance in the overall index. This approach makes it possible to determine the solvency of the insurance company for the worst conditions – a reinsurer in default.

Credit rating (probability of insolvency, vulnerability to risk, and currency risk assessment) is evaluated by methodologies of rating assessment on a time horizon of the selected level of confidence. It should be noted that important when evaluating a forecast horizon is that the longer the term of forecasting, the harder it is to provide an objective assessment. Therefore, there is the problem of determining the optimal term evaluation.

Credit ratings may be short-term (describing the credit risk in the current term – one year) and long term (describing the credit risk in the long term – more than one year). In turn, the short-term and long-term ratings are divided into two groups of levels – investment and speculative.

Use of methods that are based on warning tests or evaluation methods using indicators of sustainability allow diagnosis of conduct aimed at early informing of existing weaknesses of a reinsurer based on retrospective analysis. Analytical methods, built on this approach, are aimed at early detection of functioning problems through the use of performance-indicators and their respective limits. Deviation of an indicator exceeding the threshold value indicates a possible threat to growth trends and other risks.

The process of assessing reinsurer default risk based on the rating methods domestic and international rating agencies is of particular urgency. Some rating methods, including analysis of indicators and criteria for methods of the IG “Expert Ukraine” assessment scoring center [Expert Ukraine 2006] and the “Institute of Risk Analysis” [Institute of Risk Analysis 2010], etc., are based on a common approach to assessment, including evaluation of:

- the current or retrospective financial condition of the reinsurer in the following areas: financial performance, business activity, insurance portfolio, the level of consumer confidence, the level of technology, quality of assets, distribution channels, internal risks and the relationship between them, etc.;
- the environment (changes in the economy and related industries, external risks, the effectiveness of state regulation, etc.) and market position;
- the reinsurance capacity to withstand internal and external risks (quality control, the amount of capital efficiency activities).

Thus, the groups of methods were identified for which using retrospective performance of reinsurance and prospective evaluation of adverse stress factors on reinsurance can be an alternative method to estimate the capital adequacy of the insurance company in case of reinsurer default risk (the failure to fulfill obligations to the insurer).

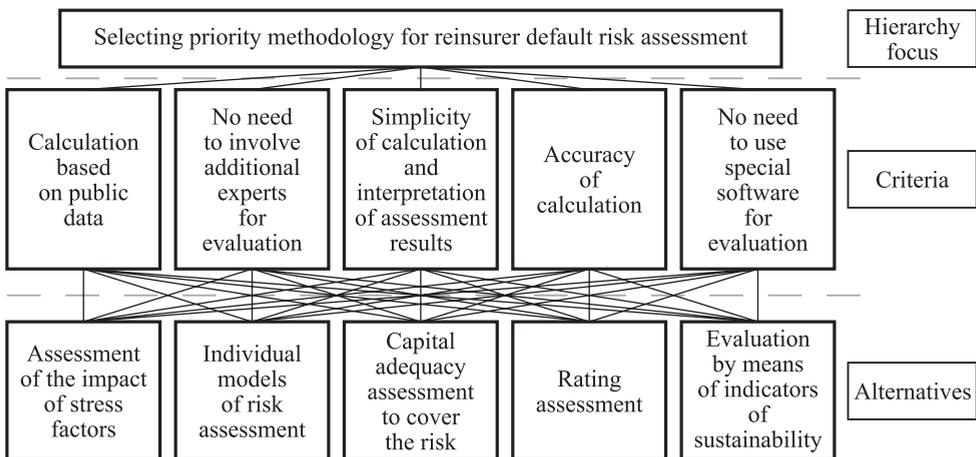
3. Selecting the priority methodology for reinsurer default risk assessment

The hierarchy analysis method by Saaty was chosen to define the priority methodology for assessing reinsurer default risk. The hierarchy analysis method by Saaty built on a gradual process of setting priorities and is systemic. The intensity of the interaction of the components of the hierarchy is estimated on the scale by Saaty [Liamiec, Teviashev 2004].

The hierarchical model of selecting priority methodology for reinsurer default risk assessment is based on a comprehensive approach that includes focus on hierarchy – the choice of methods for assessing reinsurer default risk, which is placed on top. Intermediate criteria of the selection of alternatives are calculation based on public data, no need to involve additional experts for evaluation, simplicity of calculation and interpretation of assessment results, accuracy of calculation, and no need to use special software for evaluation.

The methodological basis of the research is the hierarchy analysis method by Saaty, which is used to determine the priority of the methodology for assessing the risk of default by a reinsurer. The theoretical framework is based on the rating methods of domestic and international rating agencies, and also on Ukrainian regulations for insurance companies.

Diagram 1. Selecting the priority methodology for reinsurer default risk assessment



Source: Authors' own elaboration.

Alternatives for the assessment of the reinsurer default risk include the following methodologies: assessment of the impact of stress factors, individual models of risk assessment, capital adequacy assessment to cover the risk, rating assessment, and evaluation by means of indicators of sustainability (Diagram 1).

When selecting a methodology for assessing the reinsurer default risk (Figure 1), the experts chosen were scientists, managers and employees of insurance companies, as well as representatives of state authorities in Ukraine. In the analysis, the authors used points for the scale method by Saaty [Liamiec, Teviashev 2004] determined by odd numbers from 1 to 9 inclusively. For evaluation other integer values can also be used, as specified in the Table 1.

Table 1. The scale of assessment of methodology by Saaty

Mark	Value
1	Settings equivalent
3	The first parameter has slight strength
5	The first option prevails
7	The first parameter has significant strength
9	The first option has obvious strength
2,4,6	Interim evaluation measure benefits between neighbouring values

Source: [Liamiec, Teviashev 2004, p. 448].

Priority for selection criteria methodology for assessing the reinsurer default risk (Table 2) was defined based on the experts' assessment on a scale that is presented in Table 1 and pairwise comparison of different levels using the analytical hierarchy of selection criteria.

Table 2. Priority for selection criteria for identifying the methodology for assessing the reinsurer default risk

Alternative	I	II	III	IV	V	Priority of the weight ratio
I	1.00	3.00	0.33	0.20	3.00	0.125
II	0.33	1.00	0.33	0.33	0.50	0.039
III	3.00	3.00	1.00	2.00	0.50	0.307
IV	5.00	3.00	0.50	1.00	3.00	0.415
V	0.33	2.00	2.00	0.33	1.00	0.114

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.1.

Based on the results of Table 3, the authors argue that the most significant criterion to justify the selection of priority methodology for assessing the default risk reinsurance in an insurance company is that of „Accuracy of calculation” (ratio weight 0.415), second place is ranked by the criterion “Simplicity of calculation and interpretation of assessment results” - 0.307 - the third criterion “Calculation based on public data” - 0.125, the fourth criterion “No need to use special software for evaluation” - 0.114 and the fifth criterion “No need to involve additional experts for evaluation” - 0.039.

The vector of priorities and coordination matrix selection criterion “Calculation based on public data” are given in Table 3. The results suggest that the greatest significance for the selection criterion “Calculation based on public data” belongs to the methodology for capital adequacy assessment to cover the risk that is first in rank (its priority is 0.561).

Table 3. Vector of priorities and consistency of matrix by selection criterion “Calculation based on public data”

Alternative	I	II	III	IV	V	Priority of the weight ratio	Rank
I	1.00	0.33	0.33	0.20	7.00	0.071	5
II	3.00	1.00	0.33	3.00	0.50	0.150	3
III	3.00	3.00	1.00	3.00	3.00	0.561	1
IV	5.00	0.33	0.33	1.00	5.00	0.183	2
V	0.14	2.00	0.33	0.20	1.00	0.035	4

Source: Authors’ own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.024.

Evaluation outcomes for the second priority selection criteria methodology for assessing the reinsurer default risk are shown in Table 4. The results show that the greatest significance for the selection criterion “No need to involve additional experts for evaluation” is also a method of estimating capital adequacy with the level of risk that is first in rank (its priority is 0.611).

Table 4. Vector of priorities and consistency of matrix by selection criterion “No need to involve additional experts for evaluation”

Alternative	I	II	III	IV	V	Priority of the weight ratio	Rank
I	1.00	0.50	0.33	0.14	7.00	0.066	5
II	2.00	1.00	0.20	3.00	0.50	0.102	3
III	3.00	5.00	1.00	3.00	3.00	0.611	1
IV	7.00	0.33	0.33	1.00	5.00	0.188	2
V	0.14	2.00	0.33	0.20	1.00	0.032	4

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.007.

Evaluation outcomes for the third priority selection criteria methodology for assessing the reinsurer default risk are shown in Table 5. The results show that the greatest significance for the selection criterion „Simplicity of calculation and interpretation of assessment results” is also a method of estimating capital adequacy with the level of risk that is first in rank (its priority is 0.417).

Table 5. Vector of priorities and consistency of matrix by selection criterion “Simplicity of calculation and interpretation of assessment results”

Alternative	I	II	III	IV	V	Priority of the weight ratio	Rank
I	1.00	0.33	0.20	0.14	4.00	0.049	5
II	3.00	1.00	0.50	3.00	0.50	0.188	3
III	5.00	2.00	1.00	0.50	5.00	0.417	1
IV	3.00	0.33	2.00	1.00	5.00	0.307	2
V	0.25	2.00	0.20	0.20	1.00	0.040	4

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.096.

Evaluation outcomes for the fourth priority selection criteria methodology for assessing the reinsurer default risk are provided in Table 6. The results show that the greatest significance for the selection criterion „Accuracy of calculation” which is the top priority when choosing method also has the methodology for Capital adequacy assessment to cover the risk that is first in rank (its priority is 0.653).

Table 6. Vector of priorities and consistency of matrix by selection criterion “Accuracy of calculation”

Alternative	I	II	III	IV	V	Priority of the weight ratio	Rank
I	1.00	0.33	0.20	0.14	5.00	0.045	5
II	3.00	1.00	0.20	3.00	0.33	0.105	2
III	5.00	5.00	1.00	2.00	3.00	0.653	1
IV	7.00	0.33	0.50	1.00	0.33	0.091	3
V	0.20	3.00	0.33	3.00	1.00	0.105	4

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.014

Evaluation outcomes for the fifth priority selection criteria are shown in Table 7. The results show that the greatest significance for the selection criterion „No need to use special software for evaluation” is also a method of estimating capital adequacy with the level of risk that is first in rank (its priority is 0.429), because it does not require it be used. For this test, too, the priority is given to individual models of risk assessment methodologies and rating assessment; their priorities are 0.216 and 0.195 respectively.

Table 7. Calculation of the vector of priorities and consistency of matrix by selection criterion “No need to use special software for evaluation”

Alternative	I	II	III	IV	V	Priority of the weight ratio	Rank
I	1.00	0.33	0.33	0.20	3.00	0.056	5
II	3.00	1.00	0.33	3.00	0.50	0.158	3
III	3.00	3.00	1.00	2.00	3.00	0.516	1
IV	5.00	0.33	0.50	1.00	5.00	0.221	2
V	0.33	2.00	0.33	0.20	1.00	0.049	4

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability. Ratio of consistency: 0.014.

Identifying the priority methodology for reinsurer default risk assessment is shown in Table 8. According to the determined priority for assessing reinsurer default risk,

it is appropriate to apply the methodology for assessing capital adequacy with the level of risk, which includes determining the required capital to cover this risk and the adequacy of insurance to cover the risk of reinsurer's default.

Table 8. Identifying the priority methodology for reinsurer default risk assessment

Alternative	Criteria for selection of methodology for assessing the reinsurer default risk and their priority of the weight ratio					Priority of the weight ratio	Rank
	Calculation based on public data	No need to involve additional experts for evaluation	Simplicity of calculation and interpretation of assessment results	Accuracy of calculation	No need to use special software for evaluation		
	0.125	0.039	0.307	0.415	0.114		
I	0.071	0.066	0.049	0.045	0.056	0.052	5
II	0.150	0.102	0.188	0.105	0.158	0.142	3
III	0.561	0.611	0.417	0.653	0.516	0.552	1
IV	0.183	0.188	0.307	0.091	0.221	0.187	2
V	0.035	0.032	0.04	0.105	0.049	0.067	4

Source: Authors' own calculations.

Note: Alternatives: I – Assessment of the impact of stress factors, II – The individual models of risk assessment, III – Capital adequacy assessment to cover the risk, IV – Rating assessment, V – Evaluation by means of indicators of sustainability.

The criterion of the consistency judgments of experts is the consistency ratio, calculated as the ratio of the index value of the random consistency and the consistency depending on the dimension of the matrix. Expert opinions were in agreement, because the ratio of consistency is at least 10%. Thus, it was determined that for assessing reinsurer default risk it is appropriate to apply the methodology for assessing capital adequacy with the level of risk, which includes determining the required capital to cover this risk and the adequacy of insurance to cover the risk of reinsurer default risk. This is appropriate for such criteria as the possibility of payments for public data, no need to raise additional experts to assess, ease of calculation and interpretation of assessment results, the accuracy of calculations by the method, no need for special software for evaluation. Under the proposed choice criteria, this methodology has the highest priority. So, urgent questions arose regarding testing the methodology for assessment of the capital adequacy to cover the reinsurer default risk on the solvency of insurance companies (with the example of Ukraine).

4. Assessment of the effect of the reinsurer default risk on the solvency of the insurance companies (with the example of Ukraine)

For the assessment the solvency of insurance companies, a standard methodology for calculating the required solvency capital was developed by the Committee of European Insurance and Occupational Pensions Supervisors (CEIOPS, now - the European Insurance and Occupational Pensions Authority EIOPA) and presented at QIS5 Technical Specifications [CEIOPS 2010]. The methodology provided for widespread use of standard values in calculating the required solvency capital. In particular, the correlation coefficients and the mean square deviations are found in all formulas for calculating the individual components of the SCR. The values of these assets are calculated at the European level and are also provided in QIS5 Technical Specifications. On the one hand, the availability of a large database and methodological support enable the European authorities to make such calculations. But on the other hand, such standard values have taken into account the peculiarities of each country. According to the QIS5 Technical Specifications [CEIOPS 2010]:

- SCR_{nl} – Capital requirement for non-life underwriting risk;
- SCR_h – Capital requirement for health underwriting risk;
- SCR_{mkt} – Capital requirement for market risk;
- SCR_{def} – Capital requirement for counterparty default risk;
- SCR_{op} – Capital requirement for operational risk.

The most essential part SCR_{def} is the risk of default on the reinsurance share in insurance payments. The complexity of its calculation consists in the limited information on counteragents and the nature of collaboration with them to external users.

In EU Directive Solvency II, the solvency ratio helps to assess the capital adequacy of the insurance company. Capital adequacy characterises the solvency of the insurance company and testifies to its ability to cover losses and fulfill obligations towards counteragents and policyholders at its own expense [Pukała et al. 2017]. Using the calculated values of SCR_{nl} , SCR_h , SCR_{def} , SCR_{mkt} , SCR_{op} , a further analysis of the factors' impact on the solvency of 40 non-life insurance companies in 2016 [Insurance TOP 2016] (with the example of Ukraine) was made.

Factor analysis is a statistical method of analysing the influence of individual elements on the performance indicator. So, using factor analysis will help to determine the effect of the risk of default of the reinsurer on the solvency of insurance companies. The feature of factor analysis is that the amount of data for analysis should exceed the number of selected indicators at least three times.

Calculation and processing of indicators is carried out in the STATGRAPHICS Centurion 5.0 software environment. The calculations are carried out in the aggregate for all non-life insurance companies for the investigated period. By means of successive iterations, the indicators with the lowest load (less than 0.65) were removed, and the rest were combined into factors. The feature of factor analysis is that the amount of data for analysis should exceed the number of selected indicators at least three times. The results of the study are presented in Table 9.

Table 9. Assessment the impact of the risks on the solvency of non-life insurance companies in 2016 (factor analysis)

Influence of the factor (share of variation of data, %)	Factor	Indicator load	Indicator included in the factor
36.612	First	-0.2237	SCR _{nl}
		0.6386	SCR _h
		0.0281	SCR _{mkt}
		0.9355	SCR_{def}
		0.4152	SCR _{op}
26.698	Second	0.9351	SCR_{nl}
		-0.2063	SCR _h
		0.0319	SCR _{mkt}
		0.1402	SCR _{def}
		0.8335	SCR_{op}
21.080	Third	-0.0516	SCR _{nl}
		-0.4201	SCR _h
		0.9354	SCR_{mkt}
		0.1753	SCR _{def}
		0.2170	SCR _{op}
84.39	Variations in data are due to the three factors that have been obtained		

Source: Authors' own calculations.

Based on Table 9, it can be concluded that an insurance company's solvency level is more affected by the first factor (SCR_{def}), since it has the highest load for this factor (0.9355). Other indicators have the lowest load (less than 0.65). The first factor received the highest percentage of data variation, namely 36.612%. The second factors include SCR_{nl} and SCR_{op}. Other indicators have the lowest load (less than 0.65). This factor had a percentage variation of 26.698%. The third factor is SCR_{mkt}. The load of this indicator is 0.9354. Other indicators have the lowest load (less than 0.65). The third factor received a percentage variation of 21.080%.

Attention was also paid to the proportion of dispersion due to selected factors, the minimum value of this indicator should be more than 75%, which indicates the statistical significance of the developed model and the results obtained. The greater the values of the variation of data, due to the selected factors, the more qualitative results were obtained. The received model of the influence of factors on the level of solvency of insurance companies explains 84.39% of the variation of data, as evidenced by the quality of the analysis and the statistical significance of the model.

5. Conclusions

Based on the research presented in the article, the following conclusions can be drawn:

1. An overview of methodologies for reinsurer default risk assessment is presented in the article. These methodologies include a methodology for assessment of the impact of stress factors, individual models of risk assessment, capital adequacy assessment to cover the risk, rating assessment, an evaluation by means of indicators of sustainability. According to the authors, priority of the methodology for assessing the capital adequacy to cover the reinsurer default risk should be identified by the following criteria: calculation based on public data, no need to involve additional experts for evaluation, simplicity of calculation and interpretation of assessment results, accuracy of calculation, and no need to use special software for evaluation. These criteria should influence decision making when choosing the methodology for assessment. Furthermore, using this methodology, it became possible to improve the methodology for assessing reinsurer default risk of the insurance company to cover the reinsurer default risk.
2. It was determined that for evaluating reinsurer default risk, it is appropriate to apply the methodology for assessing capital adequacy with the level of risk, which includes determining the required capital to cover this risk and the relevance of insurance to cover the risk of reinsurer default risk.
3. Using the international approaches to solvency assessment, in particular the Solvency II EU requirements, the impact of a reinsurer's default risk on the solvency of insurance companies (with the example of Ukraine) was determined. It was found that SCR_{def} has the most burden on solvency and forms the most significant factor (36.612%) for the aggregate of insurance companies; its load was 0.9355. The results obtained are of practical value and can be used by insurance companies to monitor the reinsurer default risk.

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