

Eleonora RATOWSKA-DZIOBIAK

INSURANCE AWARENESS IN THE FIELD OF WEATHER RISKS

Eleonora **Ratowska-Dziobiak**, PhD (ORCID 0000-0002-1391-873X) – *University of Lodz*

Correspondence address:

Faculty of Economics and Sociology, University of Lodz

Rewolucji 1905 Street 41/43, 90-214, Łódź, Poland

email: eleonora.ratowska@uni.lodz.pl

ABSTRACT: The aim of the article is to assess the changes in the insurance awareness of entities in the field of weather risks. Studies that were carried out recently indicate that from the point of view of the client, the attractive price combined with the comprehensive service plays an important role. The interviewees emphasized that the inclusion of new threats and matching the offer with the needs of the buyer may significantly affect the demand for insurance services. Consumer interest in products in the area of weather risks depends on the scope of protection, the amount of insurance premium and innovative solutions in the process of distribution (including the mutual insurance system).

KEY WORDS: insurance awareness, insurance market, insurance services, weather risk

Introduction

Different types of risks are inscribed in our everyday functioning and business activities. Commonly the term risk is used in the case of unfortunate accidents, unforeseen events, the possibility of incurring losses or the possibility of obtaining a different result than expected (Sokołowska, 2008, p. 1; Michalski, 2004, p. 46). The insurance provides protection against the negative effects of random events and compensation of their impact under the conditions specified by the insurer.

The consequences of being not insured can be very severe. It may disturb the functioning of individual persons and business entities. In many cases, it causes great difficulties to states and their governments. Payment of benefits and compensation to persons who, for various reasons, have not decided to protect their life, health or property constitute a significant burden on the state budget.

Accidents can't be excluded. However, proper caution, appropriate preventive measures may minimize the potential risks that accompany each venture. Insurance companies aim to limit the possibility of random events. As financial intermediaries, they transmit risk, spreading the financial losses into many entities. Compensation and benefits paid by the insurance companies increase consumption as they are used for restitution and purchase of durable goods. Insurances play the role of quasi-automatic stabilizers and can be considered as a factor that strongly stimulates economic and social change.

The shaping of insurance awareness, undertaking actions that may lead to its growth, can significantly affect the increase of the demand for insurance products providing protection against the adverse effects of violent weather events. According to various estimates, around 70% of the world economic activity is exposed to the variability of weather conditions (Burnecki, Kukla, 2001, p. 26). The weather directly or indirectly affects the size of the business, the revenues and costs of three out of four companies (Michalak, 2011, p. 41), representing various industries (e.g. energy, construction, agriculture, forestry or tourism). That's why the weather risk management and implementation of some new solutions are very important from the perspective of individual entities as well as the entire economy.

The growing number of natural disasters makes handling catastrophic insurance difficult for insurers and reinsurers, which usually bear financial responsibility. The solution promoted in highly developed countries is a comprehensive system of cooperation between the state, citizens and insurers (Michalak, 2015, p. 42).

An overview of the literature

The author was interested in the aspects of transformation taking place on the insurance market in Poland and undertook an attempt to identify the factors determining the insurance awareness of entities in the field of weather risks and the innovation processes in this area. Insurance companies introduce new products, modify their offer or apply the alternative distribution channels. In this way, they try to attract new buyers and increase the loyalty of existing customers.

The analysis of the insurance awareness was based on publications of such authors as: Wieteska (2010a, p. 233), Grzebieniak (2008, p. 276), Szumlicz (2006, p. 21), Pazio and Formanowska (2002). The mentioned researchers dealt with the term – insurance awareness or awareness in general. They explained this issue by giving its definition and outlining the factors influencing its size. The main attributes of this concept presented by the author of this article were shown in a more detailed way in the books listed above.

Research on the weather risks was referred to articles and books prepared by Burchard-Dziubińska (2016, p. 46-56), Czekaj (2016, p. 217-228), Michalak (2011, p. 41-47; 2015, p. 41-55), Preś (2007), Pawłowski (2014).

The main aspect of the conducted analysis is connected with the impression that the range of instruments is wide, but still, some entities can't afford them or think that they can't use this kind of protection due to the high amount of insurance premium. Different institutions from the insurance/financial market may play a significant role in the process of shaping the insurance awareness and broadening the knowledge about useful protective instruments against the weather risk.

Research methods

The conclusions presented in the publication were based on studies of the literature and on the author's own research. Factors determining the insurance awareness of participants of the insurance services market in the area of the weather risks were identified along with the analysis of the relevant legal provisions, statistical data. Unstructured interviews with experts were carried out in 2018 with representatives of the Directorate of the leading (i.e. with a high market share) insurance companies on the Polish market (AXA ŻYCIE TU S.A., AXA UBEZPIECZENIA TUiR S.A., TUŃŻ CARDIF POLSKA S.A., CREDIT AGRICOLE TU S.A., NATIONALE-NEDERLANDEN TUŃŻ S.A., NATIONALE-NEDERLANDEN TU S.A., PZU ŻYCIE S.A., PZU S.A., TUW PZUW, UNIQA TU na Życie S.A., UNIQA TU S.A., TUŃŻ WARTA S.A., TUiR WARTA S.A.).

According to the companies representing the life insurance sector, the protection of life connected with the weather risk is included in the 1st group/class (out of 5). In the case of the non-life sector, the analyzed insurance is offered within 8th, 9th and 16th class (out of 18).

Table 1. Information about interviewed companies

No.	Name	Date of issuing the authorization	Date of selling the first insurance policy	Share in life/ non-life branch premiums (2018)	Capital
1.	AXA ŻYCIE TU S.A.,	23.06.1993	12.07.1994	3,24	Foreign (100%)
2.	AXA UBEZPIECZENIA TUIR S.A.	19.12.2006	13.02.2007	5,1	Foreign (100%)
3.	TUnŻ CARDIF POLSKA S.A.	22.01.1998	01.05.1998	0,95	Foreign (100%)
4.	CREDIT AGRICOLE TU S.A.	07.10.2014	08.12.2014	0,05	Foreign (100%)
5.	NATIONALE-NEDERLANDEN TUnŻ S.A.	02.08.1994	01.01.1995	6,99	Foreign (100%)
6.	NATIONALE – NEDERLANDEN TU S.A.	04.10.2016	04.09.2017	0,02	Domestic (100%)
7.	PZU ŻYCIE S.A.	20.12.1991	20.12.1991	38,66	Domestic (100%)
8.	PZU S.A.	03.01.1947	03.01.1947	32,14	Domestic (100%)
9.	TUW PZUW	03.11.2015	29.02.2016	0,12	Domestic (100%)
10.	UNIQA TU na Życie S.A.	23.03.1994	29.06.1994	0,5	Foreign (99,78%)
11.	UNIQA TU S.A.	12.02.1990	01.09.1990	1,96	Foreign (98,59%)
12.	TUnŻ WARTA S.A.	21.01.1997	10.07.1997	3,73	Domestic (100%)
13.	TUIR WARTA S.A.	01.09.1920	01.09.1920	16,35	Foreign (100%)

Source: author's work based on www.knf.gov.pl [10-02-2020].

The meetings were arranged with directors of a given company or managers of different departments (i.e. Bancassurance Area, Sale, New Products and Innovations, Business Development), mostly located in Warsaw. Only a few of them took place in Łódź. The whole discussion usually lasted about one hour and a half. It was recorded. The interviewed persons fulfilled the questionnaire prepared by the author.

Unstructured interviews with experts were used to obtain professional comments on the determinants of the changes in insurance awareness in the field of weather risks.

The analysis was aimed at finding answers to the following research questions:

- what is the meaning and significance of the insurance awareness and specificity of the weather risks?

- which groups of clients may be interested in this kind of protective instruments?
- whether the available solutions provide the effective protection of entities in the analyzed area?

The problems listed above are discussed in a more detailed way in the following chapters of this article.

Results of the research

Insurance awareness is treated as: “a specific, but variable in time, intellectual state of individuals and society, which results from the level of knowledge, understanding and rational valuation of facts and events taking place on the insurance market” (Pazio, Formanowska, 2002). According to W. Sułkowska (2000, p. 72), insurance awareness is a social value that is one of the basic determinants of the intellectual level of individuals and social groups.

This term can also be explained as a psychological state in which the consumer is aware of various insurance events occurring on the market and then is able to react appropriately (Grzebieniak, 2008, p. 276).

While examining attributes of consciousness T. Szumlicz (2006, p. 21) defines it as: “knowledge and skills enabling the rational use of insurance protection and in consequence demonstration of the precautionary approach.” In his opinion, insurance awareness is determined by the knowledge of risk, general insurance conditions, principles of insurance protection, the sales process, after-sales service or institutions within the insurance market. Shaping customer awareness requires thus, proper education. Insurance companies, agents and brokers are increasingly engaged in those types of actions. An important role is also played by the activities undertaken in this field by the Polish Insurance Association. It maintains educational websites, develops cooperation with scientific and student organizations, holds patronage over post-graduate studies and conferences, and supports insurance initiatives of scientific associations.

The ongoing process of consumer self-education is also becoming increasingly important (Grzebieniak, 2008, p. 278; “Czy Polacy są odpowiedzialni?”).

Concerning the second aspect of the conducted analysis, the term “weather risk” requires an explanation. It is understood as the negative impact of fluctuating weather conditions on business activities. These factors have always been around us and had an influence on human life. Today, however, they have gained meaning due to their accelerated and strengthened character (Blachowski, 2011, p. 639-640).

Weather risk, due to its impact on the environment, is divided into two groups (Michalak, 2011, p. 42):

- catastrophic risk (a result of earthquake, hurricane, tornado, flood, heavy rain, hail, thunderstorms and snowstorms or extremely high temperatures; it affects enterprises, households),
- non-catastrophic risk (connected with the deviation of weather conditions from their average, normal state; above-average or insufficient rainfall or snow, increased heat or cold, more windy or windless days).

The frequency and intensity of extreme weather events in the world is often associated with climate change. Research centres try to create forecasts for economic development, energy consumption and emission of pollution to assess the impact of climate change on socio-economic development. In this way, they can determine the degree of vulnerability of various regions to changing climatic conditions and thus also the possibilities of dealing with extreme weather events. In economically underdeveloped regions, the adaptability of human systems is usually assessed as low due to a lack of financial and technical resources, poverty, the dependence of agriculture on rainfall, droughts or floods. As a consequence, agricultural yields (mainly cereals) may decrease, what threatens food security, especially in the region of poor countries in Africa, Asia and Latin America. Highly developed areas show significantly lower vulnerability to climate change and higher adaptability to new conditions, which is associated with their financial and technical capabilities (Burchard-Dziubińska, 2016, p. 47). They can implement advanced construction techniques (like in Japan, where the buildings become more resistant to earth surface vibrations) and consider changes of their localization or having branches in different regions. They may also introduce forecast systems and better risk management methods (Pawłowski, 2014, p. 255-256).

In July 1997, southern Poland, the Czech Republic and part of Austria were hit by a flood, (called the flood of the millennium). It took the lives of 114 people. The losses caused by heavy rainfall were estimated at 4.5 billion euro. Over 9,000 enterprises lost their assets (“Derywaty pogodowe...”). The above example shows how great influence the weather can have on business. Each of the companies had plans, commitments and contractors. Flood or drought are able to mess up the company’s budget and lead to its bankruptcy. But sometimes even an unexpectedly low or high temperature or longer than planned rainfall can trigger severe consequences.

For residents, warm winters mean the reduced heating time. They don’t have to heat their flats as intensively as during heavy winter. But in the case of an energy plant, the assumed plan won’t be implemented. The heat and power industry is not the only one for which a plus on the thermometer

means a minus in the profits. The entire tourism sector also closely monitors weather forecasts. If guesthouses and agrotourism farms expect higher interest from the side of the guests, they often invest in their facilities and tourist offer before the season starts. Unfortunately, however, it happens that the winter is too warm and there is not enough snow. This generates a decrease in interest in a given location and a significant reduction in expected revenues. In such cases, not only adequate earnings are taken into account, but often the reimbursement of incurred costs. Temperature affects the volume of sales of cooling drinks. In the case of business operations connected with the snow removal from roofs, the absence of snowfall means that they become pointless.

The owners of the restaurants earn less on so-called “beer gardens” during rainy days. For farmers, prolonged drought means poor harvests. Owners of golf courses during wind or rainfall can’t count on much interest either. Strong wind/heavy rains can even mean the cancellation of the event and as a consequence, huge financial losses.

However, material losses caused by weather conditions can’t be ignored. The company’s assets may be destroyed (e.g. strong winds may cause damage to the roofing, lightning may strike fire in the building), but also the weather can affect the quality of the enterprise’s products (e.g. too high humidity is not conducive to the storage of some products).

In the case of material losses, traditional insurance is used. However, in the case of regions where the probability of occurrence of some random events is very high, it leads to the much higher insurance premium. Not every person or a company can afford this protection even if they are aware of the weather risk and consequences of extreme weather phenomena.

Index insurance is another kind of protective instrument. It can be useful when the weather affects the entity’s revenues. Weather derivatives are based on weather conditions (levels of rainfall or snowfall, higher or lower temperature or wind speed). Those instruments are bilateral futures contracts. They are usually used in non-catastrophic weather risk management. However, they are increasingly implemented for investment purposes as an attractive element of portfolio diversification. The company, which uses weather protection, receives payment when the conditions specified in the contract occur. Depending on whether the company is sensitive to temperature, rainfall, snowfall or wind, an appropriate index is constructed. It can take any form starting from the simplest: average temperature, average rainfall or average wind speed, ending with more advanced: degree day, cumulated wind speed index. It is obvious that indexes simpler in construction are easier to understand and to accept by the customer, but they are characterized by lower efficiency than those more advanced instruments. Based on the

meteorological observations of temperature or rainfall in a given period, a weather index is built. It will reflect changes in the company's revenues or expenses. The next step is to assess how much the company can gain/lose if the index changes by one point. Finally, the collateral period and the type of financial instrument are determined.

Let's assume that the owner of a wind farm is afraid of insufficient electricity production resulting from variable wind speed, and hence the unpredictability of using the installed power capacity. This situation can significantly affect the financial results and cause difficulties related to the repayment of loans to institutions financing the investment. Therefore, the farm owner, by purchasing collateral against non-catastrophic weather risk – in the form of a derivative or insurance – will ensure the expected level of revenues. The wind speeds lower than the specified in the contract is a condition for obtaining payment for the purchased collateral.

As it was mentioned earlier, the amount of insurance premium is an important factor influencing the demand for the insurance products. Interlocutors of the author underline that many entities can't afford this kind of protection. Clients emphasize that the probability of occurrence of some random events is still very low. But they should bear in mind that potential losses are many times higher than the level of insurance premium. Besides, the financial support given by the state in the case of catastrophic events won't cover the size of damages caused by storms, heavy rains or hail.

Mutual insurance system can be a solution to the problem of limited access to insurance products against weather risks. According to the ICMIF (International Cooperative and Mutual Insurance Federation) and AMICE (Association of Mutual Insurers and Insurance Cooperatives in Europe) data, the share of mutual societies in the global insurance market in 2014 was 27% and in the European market – 31%. In Austria, it accounted for 61% and in the Netherlands – 51%. In countries as Sweden, France or Denmark, the share of mutual insurance undertakings was over 45% (Burz, Biel, 2017, p. 20 and 28). Currently, in Finland, they constitute approx. 80% of the market, in the USA approx. 50%, while in Poland – 6% (Olszewski, 2018). Mutual insurance enables the reduction of the policy costs, but also the protection of a much larger scope (in the case of commercial insurance the price will be too high, and a wide range of protection won't be available). Moreover, the damage settlement is done by a professional insurance company. Besides, mutual insurance reduces the risk of fraud. It is difficult to imagine a situation that someone will destroy his/her property to obtain compensation. Another advantage of this insurance model is connected with solidarity and long-term protection. Normally – the Public Procurement Act requires that the insurance contract can be concluded by the local government for a maximum of

three years. In the case of mutual insurance companies (in Polish *towarzystwa ubezpieczeń wzajemnych* – T UW), there is no such restriction. The longer this cooperation is, the better is the insurance price. The basis of such cooperation is the trust that is built up over the years.

Polski Zakład Ubezpieczeń Wzajemnych was the first company that prepared an offer for hospitals or local governments (an agreement was signed with the city of Lodz). T UW PZU is a start-up, but at the same time, it is part of the PZU SA group, which helps build credibility on the market. According to the Global 500 report prepared by the ICMIF, T UW PZUW is the second fastest-growing mutual insurance company in the world. In 2017 it gathered a gross written premium of 101,6 million USD with its dynamics at the level of 178%. The leader of that ranking was the German Pensions-Sicherungs-Verein with the result of 840,6%. T UW PZUW was included in that report for the first time („T UW PZUW w światowej...”).

Tadeusz Kowalski, the mayor of Tuchola, which was hit by a gigantic natural disaster in 2017, admits that mutual insurance is a suitable solution for local governments. The unexpected storm destroyed 16,000 hectares of forest, municipal infrastructure, houses, outbuildings and power lines. Energa, which was covered by mutual insurance at the T UW PZUW, quickly obtained funds to repair the most urgent damages. The T UW uses the network of claims adjusters of the largest Polish insurer on a daily basis. Municipalities must protect themselves against risks, including those which they can't foresee. Wojciech Grela, deputy mayor of Raciechowice (Myślenice county, małopolskie voivodeship) admits that thanks to this solution everyone in the commune can feel more confident. “We would like to insure almost everything, but when the premium is as low as possible”. Cyclical floods are the biggest problem, and T UW meets the insurance and protection conditions (Olszewski, 2018). According to ICMIF experts, the development of the mutual and cooperative insurance is possible due to the combination of management openness for the needs of the modern market with a rich tradition of reciprocity dating back to the beginning of the XX century („T UW PZUW w światowej...”).

Conclusions

The knowledge that we have about the insurance market, about conducting business on it, about the institutions and products has a strong impact on our awareness and the need to protect our family, ourselves and our assets. Better knowledge results in higher customer requirements while using financial services. Changes evident in consumers' awareness are not only the manifestation of current development trends in the insurance market. The emer-

gence of new threats generates increased demand for services that can protect against the negative effects of various random events. Entities can decide either for traditional insurance products or weather derivatives. Another way of protection against the effects of weather risk is to change business locations or to have branches in various geographical regions. The importance of the development of construction engineering is also worth mentioning.

Customers' previous experiences or opinions of other buyers are also significant. A satisfied client usually provides an additional customer for the insurance company, but the dissatisfied one gives his bad opinion to usually three times higher number of his/her friends than in the case of positive experiences. Spectacular events, extreme weather events, and random events adversely affecting the situation of our relatives, friends, business partners usually lead to the growth of interest in specific insurance products. Insurance awareness increases especially in the context of various negative events facing people and entities from our environment.

Due to the complexity of the Earth's ecosystem and the multitude of impacts affecting the climate, it is difficult to accurately predict the effects of its changes, as well as the impact on the occurrence of extreme weather events. This creates new challenges for the insurance sector, which must reassess risk and value its own products. The availability of weather risks insurance in some areas becomes increasingly difficult, and the cost may be an economic barrier to its use. An attractive solution may be the support from public funds, especially in the sphere of physical risk control, which may reduce the price of policies. The state should initiate the creation of insurance pools or provide a guarantee of the payment of damages. Actions planned and undertaken by the state should result from a coherent policy, which would create a favourable climate for the further development of the insurance market.

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