

**REINSURANCE IN MANAGING CATASTROPHE  
AND FINANCIAL RISK IN THE POLISH MARKET  
DURING THE YEARS 2010-2014**

***Andrzej Grzebieniak***

Department of Social Policy and Insurance  
University of Warmia and Mazury in Olsztyn

**Key words:** reinsurance, financial insurance, catastrophe insurance.

**A b s t r a c t**

Reinsurance plays an important role in managing the risk in an insurance company. Its crucial importance is especially visible in the situation when there is a growth of catastrophic and financial risks on the market. Such a situation has occurred in the Polish market since 2010. In order to achieve financial stabilisation, insurance companies apply reinsurance more frequently so they cede the risk on the reinsurer together with an appropriate part of the premium for the given risk. Catastrophic risk includes, among others, the following groups of insurance: class II- 5, 8, 9, 11 and financial risk in groups 14 and 15. In those insurance groups, the range of reinsurance applied (measured with a percentage of premium given to reinsurers by insurance companies and the percentage of damages received from them in relation to total paid out compensations) was the highest in the analyzed period of time. Research confirmed the hypothesis that together with the growth of catastrophic and financial threats in the Polish economy the range of reinsurance applied in insuring those risks also increases.

**REASEKURACJA W ZARZĄDZANIU RYZYKIEM KATASTROFICZNYM I FINANSOWYM  
NA RYNKU POLSKIM W LATACH 2010–2014**

***Andrzej Grzebieniak***

Katedra Polityki Społecznej i Ubezpieczeń  
Uniwersytet Warmińsko-Mazurski w Olsztynie

**Słowa kluczowe:** reasekuracja, ubezpieczenia finansowe, ubezpieczenia katastroficzne.

**A b s t r a k t**

Reasekuracja odgrywa ważną rolę w zarządzaniu ryzykiem w zakładzie ubezpieczeń. Szczególne jej znaczenie uwidacznia się w sytuacji, gdy na rynku występuje wzrost m.in. ryzyka katastroficznego i finansowego. Taka sytuacja występuje na rynku polskim już od 2010 roku. Zakłady ubezpieczeń

w celu m.in. stabilizacji swoich wyników finansowych stosują w takim przypadku w coraz szerszym zakresie reasekurację, czyli proces cedowania ryzyka do reasekuratora wraz z odpowiednią częścią składki pozyskanej za dane ryzyko. Ryzyko katastroficzne obejmują m.in. następujące grupy ubezpieczeń działu II – 5, 8, 9, 11, natomiast ryzyko finansowe – grupy 14 i 15. Właśnie w tych grupach ubezpieczeń zakres stosowanej reasekuracji (mierzony wielkością procentową składki przekazanej przez zakłady ubezpieczeń reasekuratorom oraz wielkością otrzymanych od nich odszkodowań w stosunku do całości wypłaconych odszkodowań) w analizowanym okresie był największy. Badania potwierdziły przyjętą hipotezę, że wraz ze wzrostem zagrożeń katastroficznych i finansowych w gospodarce polskiej rośnie też zakres stosowanej reasekuracji w ubezpieczeniach tych ryzyk.

## Introduction

The business slowdown that began in 2009 has been observed in many countries including Poland. This has been the result of the world financial crisis which started in the USA in 2008, and has had a direct influence on all the business entities in the market, including the insurance companies. In such a situation, the risk of doing business grows substantially which leads to the growth of a loss ratio of financial influence, for example credit insurance and insurance bonding. What is more, due to the fact that insurance companies being in a difficult situation on the market have not been able to achieve satisfactory results with their own investments and have been forced to cede the risk onto other entities, namely reinsurers. In previous years, when it was possible to get high rates of return on investment, insurance companies often decided to resign from reinsurance and leave the risk as a sum deductible. Apart from the fact that the probability of financial risks increased, catastrophic events which directly influenced the profitability of the technical activity of insurance companies also escalated. Catastrophy is defined as „an event which happens suddenly and brings tragic effects” (KOPALIŃSKI 2000). Catastrophic risk appears when „two factors appear simultaneously – threat and vulnerability to dangers” (HOFFMAN 2002). In practice, catastrophic risk is referred to as an unexpected and sudden event of massive proportions caused by natural factors which endanger human lives and their activities (PAJEWSKA-KWAŚNY, TOMASZEWSKA 2002). Basic terms connected with catastrophic risk are defined in the state of emergency act (*State of Emergency Act... 2002*). In Poland between 1997–2011 floods were of a catastrophic character. They resulted in losses estimated at up to 12 million PLN (year 1997 and 2010)<sup>1</sup>. These losses were financed mainly by the emergency relief system and insurance scheme. Especially in the year of 2010, the losses turned out to be burdensome for insurance companies as the amount of damage reported was

---

<sup>1</sup> Estimates presented by The Ministry of Internal Affairs and Administration of that time (website: [www.mswia.gov.pl](http://www.mswia.gov.pl), retrieved: 04.06.2011).

over 270 thousand and the degree of dispersion covered a huge area starting from the basin of the upper source of the Vistula up to the lower course of the Odra and Bogatynia where the loss was especially severe. Insurance companies and reinsurers estimate the total damage caused by the disaster at about 1.7 million PLN<sup>2</sup>. Consequently, the insurance system participation in compensation for damage was only about 14%. Therefore, almost 86% of the property was not covered by the insurance system. The loss was covered by the national government or from local government budgets. Such a structure of funding calamity loss means that all tax-payers finance the loss of people or institutions which have not taken out any insurance. Such a situation seems to be unfair and unacceptable in the long run. From the point of view of insurance companies, such considerable loss is connected with the necessity to reinsure catastrophic risks significantly in order not to lose the capability to cover any loss.

## **Reinsurance**

Reinsurance is one of the basic tools in the process of risk management in insurance companies. It is „an agreement concluded between the insurer and reinsurer on the basis of which there is a division or waiver of risks in such a way that the insurer remains solely responsible directly for the insured” (MONKIEWICZ 2000). There are both outward and inward types of reinsurance (the second type of reinsurance will not be presented in the article due to the very limited scope of application on the market in class II). Outward reinsurance is „an agreement in which an insurance company cedes the whole or part of the insured risk together with the appropriate part of the premium to another insurance company which undertakes to pay this insurance company a certain part of losses and claims paid to the insurer” (GAŚIORKIEWICZ 2014). The scope of outward reinsurance applied in property insurance with reference to the gross premium written as well as gross losses and claims paid is presented in Figure 1. The gross premium in insurance class II for the years 2010–2014 was 124.318 billion PLN and the reinsurance amount of the gross premium was written for 17.522 billion PLN (14.09%), while gross losses and claims paid were 68.33 billion PLN and the reinsurance amount constituted 10.768 billion PLN (15.75%). The reinsurance amount of the gross premium was the highest in the year 2013 – 14,2% and was the lowest in the year 2010 – 12.2%. The reinsurance amount in losses and claims paid was the highest in the year 2013 – 17.9% and was the lowest in the year 2011 – 14.2%.

---

<sup>2</sup> Data presented by Polish Financial Supervision Authority (website: [www.knf.gov.pl](http://www.knf.gov.pl), retrieved: 01.10.2015).

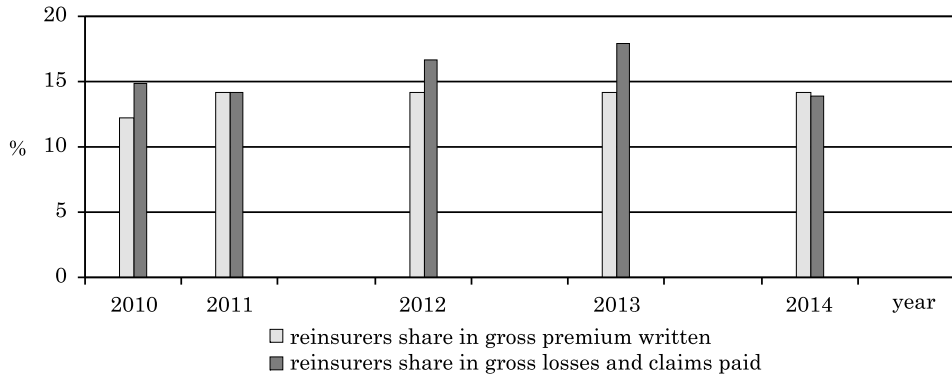


Fig. 1. Outward reinsurance – reinsurers share in the premium and gross losses and claims paid in class II

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek\\_ubezpieczen](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

From the class II groups, the highest level of outward reinsurance was observed during the years 2010–2014 and it appeared in groups 4, 5, 7, 8, 9, 11, 12, 14, 15 (Fig. 2), especially in the case of aircraft insurance, both aircraft liability (group 11 – 72.9% in year 2011, 68.3% in year 2013, 67.2% in year 2014), and aircraft hull insurance (group 5 – 70.7% in year 2014, 61.9% in year 2013). The lowest level of reinsurance was in financial insurance; when compared to the remaining groups of class II, it was considerably higher. In group 14 (credit insurance), during the year 2014 outward reinsurance (the reinsurance amount for the gross premium written) amounted to about 48.3% and in the year 2012 44.1%. In group 15 (eligible cover), 47.9% in the year 2013 and 47.8% in the year 2011.

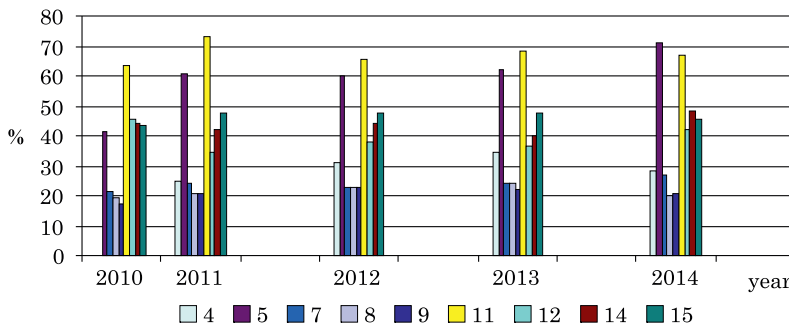


Fig. 2. Groups of class II with the highest reinsurers share in gross premium for the years 2010–2014  
Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynekubezpieczen](http://www.knf.gov.pl/opracowania/rynekubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

The particular involvement of reinsurers during the years 2010–2014 in group 5 (aircraft hull insurance, insurance covering damage in aircraft) and in group 11 (general liability insurance, aircraft liability, together with carrier insurance) is presented in Figure 3, which illustrates the reinsurer share of the gross premium written. This share is constantly growing. This is most likely due to the fact that every day over 25000 aircraft operate in European airspace and the number is rising. Such growth obviously influences the probability of accidents occurring (*White Paper...* 2001).

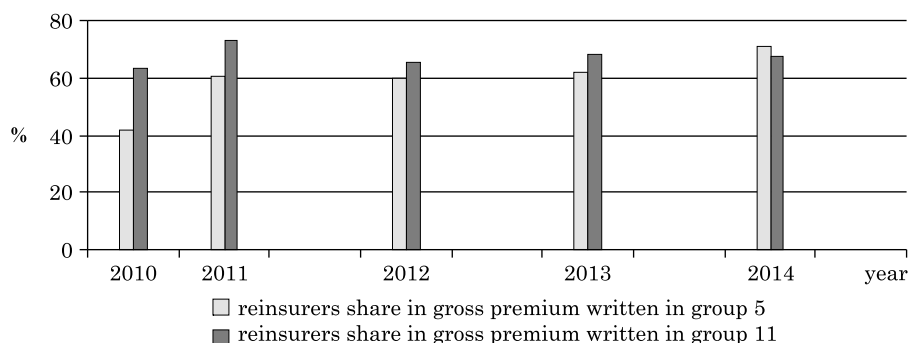


Fig. 3. Outward reinsurance – reinsurers share in the gross premium written for groups 5 and 11  
Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpiezen)> (access: 1.10.2015), PFSA, Warsaw.

What is more, in such situations the number of casualties is relatively high (not to mention the damage caused to property) and the total number of insurance indemnities and claims paid by the insurers amounts to between several million and tens of millions of dollars per each event. Taking into consideration the fact that over the past two years about 2.3 billion people per year worldwide travel (the trend remaining upward), there can be assurance that the number of victims of car accidents will rise, although when translated into the number of flights the figure is declining (*Press Release IATA...* 2011). Gross losses and claims paid in group 5 between 2010–2015 amounted to a total of 154.566 million (Fig. 4), an on sum deductible of 33.320 million PLN (21.56%), and a reinsurers share of 121.246 million PLN (78.44%). The highest reinsurers share was in the year 2012 – 21.225 million PLN (94.83%) and the lowest was in the year 2013 – 3.119 million PLN (89.75%). Gross losses and claims in group 11 between 2011–2014 were on a much lower level and amounted to 30.049 million PLN (Fig. 5), an on sum deductible of 9.571 million PLN (31.8%) and a reinsurers share of 20.478 million PLN (68.2%). The highest reinsurers share was in the year 2014 – 79.2% and the lowest was in 2012 – 26.5%. Groups 8 and 9 class II include risks which according to

insurance companies cause catastrophic events. Within group 8, these include hurricanes, heavy rainfall, earthquakes, floods (and other elements), storms, explosions and fires; and within group 9 these include hail or frost as well as a „different causes” definition that includes spring ground frosts and the negative effects of overwintering and droughts. In about 94% of insurance policies these constitute main types of insurance risks<sup>3</sup>.

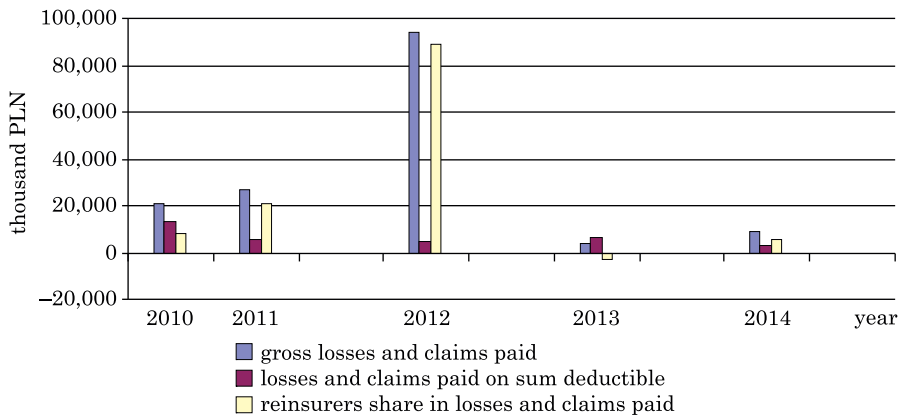


Fig. 4. Losses and claims paid in group 5

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpiezen)> (access: 1.10.2015), PFSA, Warsaw.

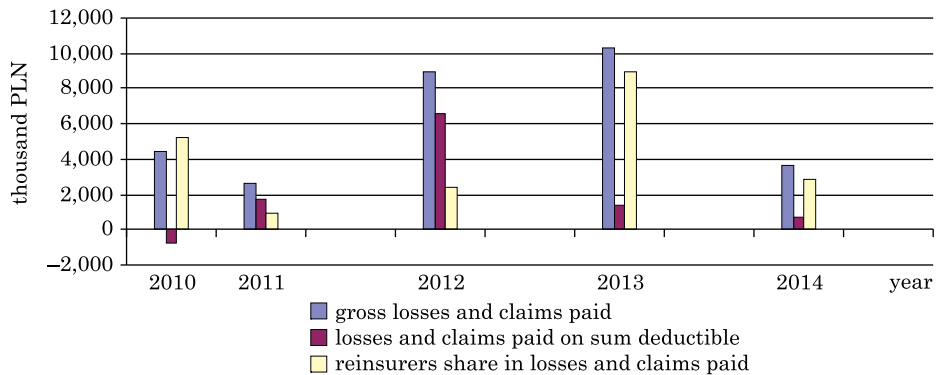


Fig. 5. Losses and claims paid in group 11

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpiezen)> (access: 1.10.2015), PFSA, Warsaw.

<sup>3</sup> Data presented by The Ministry of Agriculture and Rural Development (website: [www.min-rol.gov.pl/Ministerstwo](http://www.min-rol.gov.pl/Ministerstwo), access: 01.10.2015).

The risk of traffic accidents is also included into catastrophic risks by insurance companies. According to statistical annual and quarterly reports on the insurance market which are posted on the internet by the Polish Financial Supervision Authority, the exact amount of total direct damage caused by disasters in individual years cannot be directly read. However, sometimes the PFSA includes such information as additional data. Accordingly, the gross amount of claims from catastrophic events in the year 2013 was estimated in class II at 478.85 million PLN which constitutes 3.1% of all gross losses and claims paid in 2013. Calamity losses to insurance companies, net of reinsurance, amounted to 67.5% in the year 2013 and on the reinsurers share – 32.5%. In the year 2012, gross losses from catastrophic events reached 1.07 billion PLN (with 56.1% net of reinsurance and with 44.9% being the reinsurers share) out of which the negative effects of overwintering and spring ground frosts caused damage totaling 589.94 million PLN. In the year 2011, the damage amounted to 681.69 million PLN (with the net of reinsurance being 60.2% and 39.8% being the reinsurers share)<sup>4</sup>. The situation is somewhat different when it comes to the reinsurers share in premiums and losses and claims paid in all the insurance from groups 8 and 9 class II in which premiums and calamity loss constitute only a certain part. Figure 6 shows data concerning the reinsurers share in gross premium written in groups 8 and 9. A small increase of the reinsurance level both in group 8 and 9 is visible.

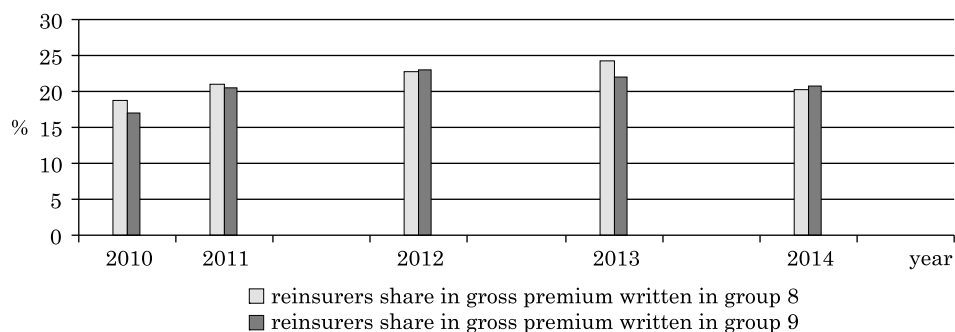


Fig. 6. Outward reinsurance – reinsurers share in gross premium written in groups 8 and 9  
Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

In group 8, the reinsurers share of the gross premium written in the analyzed period of time was the highest in 2013 and amounted to 24.2%. In comparison to the year 2010, which was the last year when large-scale flooding

<sup>4</sup> Data presented by Polish Financial Supervision Authority (website: [www.knf.gov.pl](http://www.knf.gov.pl), access: 01.10.2015).

occurred in Poland, outward reinsurance increased by almost 30%. The situation is slightly different in class 9 where the reinsurers share in the gross premium written, which was the highest in the year 2012 and amounted to 22.9%. In comparison to the year 2010, it increased by almost 40%. In both groups 8 and 9, a small but constant growth of the reinsurers share in gross premium written can be observed. Similarly, reinsurers share in the rising losses and claims paid in groups 8 and 9, which is reflected in the illustrations of Figures 7 and 8.

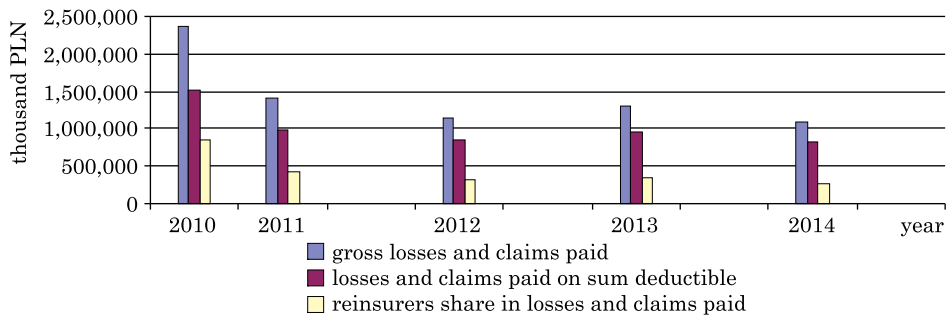


Fig. 7. Losses and claims paid in group 8

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek\\_ubezpieczen](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

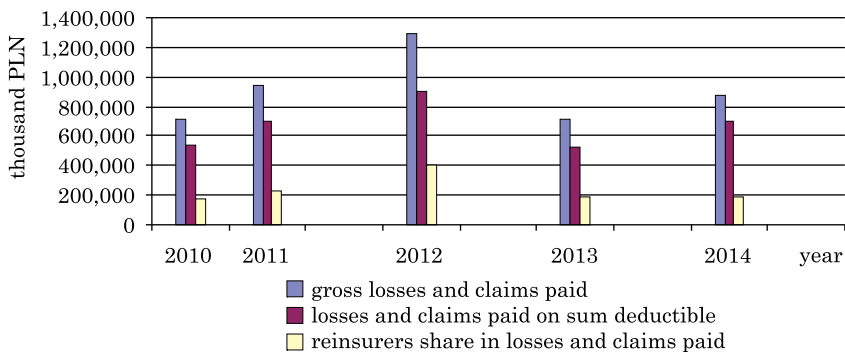


Fig. 8. Losses and claims paid in group 9

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek\\_ubezpieczen](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

The highest reinsurers share in losses and claims paid in group 8 appeared in the year 2010 and amounted to 35.8% (which means that the net of reinsurance was 64.2%) and the lowest in 2014 amounted to 24.4%. In group 9,



the reinsurers share was the highest in the year 2012 (31%) and the lowest in 2014 and amounted to 21.1%. Taking into consideration the entire analyzed period of 2010–2014, it can be stated that there is a relatively stable growth in the reinsurance level in this scope of insurance sector activity.

Financial insurance is placed in group 14 (credit insurance), 15 (insurance guarantee) and 16 (all financial risk insurance). However, only in groups 14 and 15 was there a significant increase of reinsurance in the period considered (Fig. 2). In credit insurance, the insurance company covers property losses on the crediting party side as a result of not receiving from the credited party credit receivables in situations specified in a contract of insurance. Increasing market competition also increases the risks connected with economic activity, and as a result the risks concerning lendings and eligible covers for society grows too. That is why the reinsurer shares in gross premiums written in groups 14 and 15, which is illustrated in Figure 9. In the case of insurance from group 14, the reinsurers share for the year 2014 was the highest – 48,3% and was almost 10% higher than in the year 2010 and 15% higher than in the year 2012. However, in insurance from group 15 reinsurers had the highest share in the year 2013 – 47.9%, and it was comparable to the share during the years 2011 and 2013.

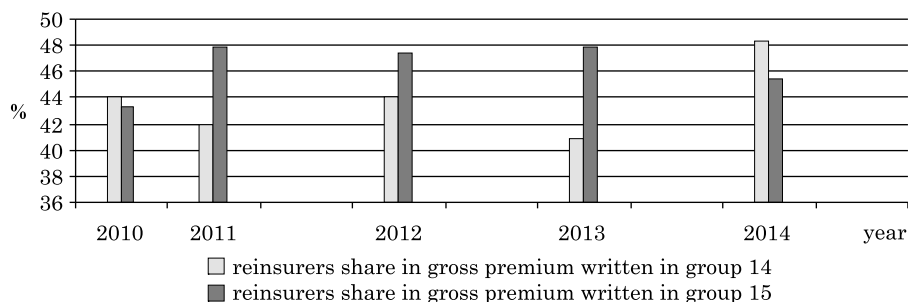


Fig. 9. Outward reinsurance- reinsurers share in gross premium written in groups 14 and 15  
Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek\\_ubezpieczen](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

When it comes to the reinsurers share of losses and claims in insurance from group 14 (Fig. 10), it can be stated that it has grown as in the year 2010 where the share amounted to 58.3%, in the year 2013 – 61.9% and in the year 2014 – 65% (with the exception of the year 2011 in which the share amounted to 49.3% which means that insurance companies financed 50.7% of losses and claims).

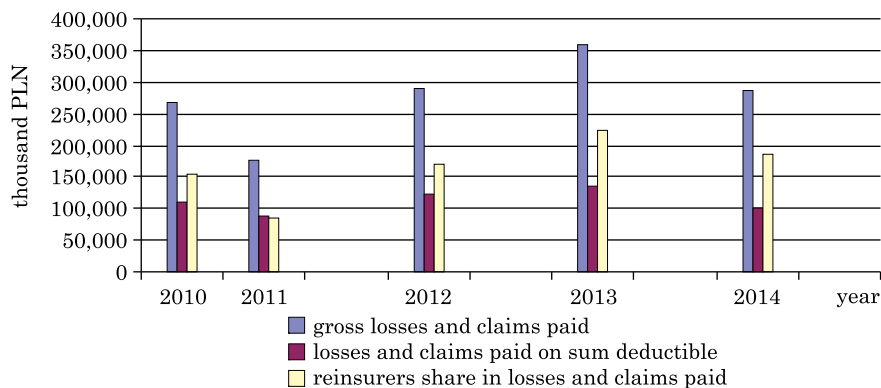


Fig. 10. Losses and claims paid in group 14

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

When it comes to insurance from group 15, the reinsurers share in losses and claims is shown in Figure 11. The share was the highest in the year 2012 – 73.2% and the lowest in the year 2014 – 48%.

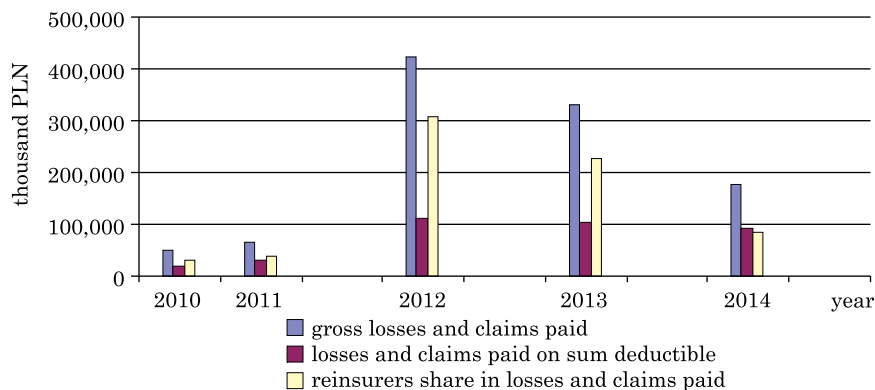


Fig. 11. Losses and claims paid in group 15

Source: own elaboration based on: *Opracowania – rynek ubezpieczeń*, available on the Internet: <[www.knf.gov.pl/opracowania/rynek ubezpieczeń](http://www.knf.gov.pl/opracowania/rynek_ubezpieczen)> (access: 1.10.2015), PFSA, Warsaw.

## Summary

Two basic functions are of primary importance in the above mentioned situations where reinsurance is applied. The first is the technical function connected with protection against an excessive increase in loss ratio in

a certain period as a consequence of severe damage or accumulation of moderate damage. The second is the financial function connected with strengthening the financial basis of an insurance company and its financial stability (RONKA- CHMIELOWIEC 2010). The technical function is realized by secondary risk sharing, which provides approval of the higher premium income for an insurance company at the static value of own funds and the margin of the solvency (MAŁEK 2011). Next, the financial function is realized by providing the insurance company with part of the reinsurer capital. In this way, it is participating in the costs of the functioning of an insurance company, which in the end leads to the stabilization of financial results for an insurance company (GASTEL 2004). Such participation is connected with the previous sharing with a reinsurer a certain part of the insurance contribution due to transferring part of the risk admitted to insurance by an insurance company and materialisation of the risk. Reinsurance is one of the methods of risk management and is an important part of the insurance industry's economic activity. The role of reinsurance especially increases with the number of catastrophic events or with the risk of economic activity connected with commercial or political risks. Catastrophic events included in class II of insurances, e.g. in classes 5, 8, 9, 11 together with commercial risks in classes 14 and 15 in recent years have been within the highest scope of reinsurers, not only in gross premium but also in claims incurred. The reinsurance cover for insurance companies is mainly realized by proportional reinsurance treaties (70–80% of all) and less frequently non-proportional (18–28%) and supplementing facultative reinsurance (1–2%)<sup>5</sup>. On the basis of proportional treaty, an insurance company and reinsurer share the risk, premium and losses in the same proportion according to a previously agreed index. A non-proportional treaty is one according to which part of the loss which is covered by the reinsurer does not remain in relation to the total damage compared to the reinsurer premium. Facultative agreement is concluded and negotiated individually for each of the risks. According to data analysis concerning the scale of catastrophic and financial risks, the involvement of insurance companies in reinsurance contracts, which is the process of ceding at least part of those risks onto the reinsurer, increases with the growth of the risks. Therefore, according to the data presented, the above stated thesis has been confirmed.

Translated by EMILIA GRZYMAŁA  
Proofreading by MICHAEL THOENE

Accepted for print 30.11.2015

---

<sup>5</sup> Data presented by Polish Reinsurance Company (website: [www.polishre.com](http://www.polishre.com), access: 01.10.2015).

## References

- Aircraft Accident Rate is Lowest in History – Still Room for Improvement, Regional Concerns Remain.* 2011. IATA, Press Release, 10.
- GAŚSIORKIEWICZ L. 2014. *Zarządzanie gospodarką finansową zakładów ubezpieczeń. Ujęcie procesowe.* Poltext, Warszawa.
- GASTEL R. 2004. *Reinsurance. Fundamentals and New Challenges.* Insurance Information Institute, New York.
- Green Paper on the Insurance of Natural and Man-made Disasters.* 2013. Access to European Union law 52013DC0213, COM/2013/0213 final, Luksemburg.
- Katastrophenvorsorge – Arbeitskonzept.* 2002. Ed. B. Hoffmann. Deutsche Gesellschaft für Technische Zusammenarbeit, Eschborn.
- KOPALIŃSKI W. 2000. *Słownik wyrazów obcych i zwrotów obcojęzycznych.* MUZA SA, Warszawa.
- MAŁEK A. 2011. *Reasekuracja. Klasyczne i alternatywne metody transferu ryzyka ubezpieczeniowego.* Poltext, Warszawa.
- PAJEWSKA-KWAŚNY R., TOMASZEWSKA I. 2013. *Prawno-ekonomiczne dylematy wprowadzenia ochrony przed skutkami powodzi na przykładzie ubezpieczeń katastroficznych.* Zarządzanie i Finanse, 2(5).
- PFSA, Polish Financial Supervision Authority, <http://www.knf.gov.pl/index.html> (access: 1.10.2015).
- Podstawy ubezpieczeń.* 2000. Ed. J. Monkiewicz. Tom 1. *Mechanizmy i funkcje.* Poltext, Warszawa.
- Polish Reinsurance Company, <http://www.polishre.com> (access: 1.10.2015).
- RONKA-CHMIELOWIEC W. 2010. *Reasekuracja w działalności przedsiębiorstwa ubezpieczeniowego.* In: *Ubezpieczenia.* Eds. J. Handschke, J. Monkiewicz. Poltext, Warszawa.
- The Ministry of Agriculture and Rural Development, <http://www.minrol.gov.pl/> (access: 1.10.2015).
- The Ministry of Internal Affairs and Administration, <http://www.mswia.gov.pl/> (access: 4.06.2011).
- Ustawa z 18 kwietnia 2002 r. o stanie klęski żywiołowej, DzU z 2002 r., nr 62, poz. 558
- White Paper: European Transport Policy for 2010; time to decide.* 2001. COM 370 final, Luksemburg.