

NATURAL DISASTERS EFFECTS' FINANCING THROUGH INSURANCE IN ROMANIA (2010-2015)

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ABSTRACT: *The article analyse the necessity and evolution of the natural disasters effects' financing through insurance in Romania. There are emphasized the legislation changes that affected the compulsory and voluntary insurance mechanisms and the results of the implementation of the compulsory insurance for natural disasters system at the national level, but also at the regional level. On this analysis, the article concludes about the causes of the evolutions highlighted, suggesting that the frequent changes of legislation, the low level of financial education of a large part of population, the un-applying of fines by local authorities for the people not respecting the law are one of the most important causes.*

KEY WORDS: *disasters, risk, insurance, compulsory, voluntary.*

JEL CLASSIFICATIONS: *G22, Q54.*

1. INTRODUCTION

Natural hazards generate disasters that have important effects, such as: persons affected or killed, the infrastructure or the assets destroyed or damaged, the interruption of businesses, important public institutions affected, agricultural losses, etc. The macroeconomic indicators of the countries hit by disasters are also affected. All of these have financial impact on government, homeowners and SMEs, farmers and the poorest people (see World Bank, 2014a, p. 17). Literature (Cummings and Mahul, 2009, p. 14) finds also that the most important impact of the natural disasters on the economy is registered for developing countries, where the loss as percentage of GDP is the highest one and the resources to finance interventions to repair the damages caused by the natural disasters are not enough.

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The involvement of the international institutions (World Bank, United Nations, etc.) in the problems related to natural disasters generated new solutions. The instruments used for financing risk effects differ on costs, part of the necessary funds that could be assured and the time when the funds are available (see Ghesquiere and Mahul, 2010, p. 9). On these reasons, the countries adopted different natural disaster risk management solutions. Our paper highlights the evolution of the Romanian catastrophe risk program financing through the insurance pool, program adopted as an alternative to the public financing of disasters' effects on residential property.

2. METHODOLOGY AND DATA

The article performs a literature review about insurance as financing tool for natural disasters, followed by an analysis of the evolution of the primary legislation on compulsory insurance for catastrophic risks in Romania (abbreviation - PAD) to understand legal aspects that influence the evolution of this kind of insurance. It is also performed a quantitative analysis regarding voluntary and compulsory insurance for dwellings. Indicators used are, especially, the main financial indicators of the insurances analyzed. We also performed a regional distribution analysis of the contracts number and of the coverage degree, to identify or confirm some findings of other authors about some causes of the evolutions highlighted.

The data used come from annual reports regarding the insurance market and activity developed issued by Insurance Supervision Commission(ISC), the report of the financial non-banking market 2015, issued by Financial Supervision Authority (FSA), the statistics section of the website of the Romanian Pool of Insurances against Disasters (PAID) and the National Institute of Statistics of Romania.

3. SHORT LITERATURE REVIEW REGARDING INSURANCE FOR CATASTROPHIC RISKS

A line of the literature concerns the legislation and practices of various countries or regions in using insurance as a method of risk transfer and financing natural disasters effects. Studying legislation and practice of private insurance for natural disasters in a number of European countries, Van Schoubroeck (1997) identified the variety of solutions adopted and raised the question about the necessity of regulation of the disaster insurance. Linnerooth-Bayer and Mechler (2007) studied the role of the government and of the private sector in assuring ex-ante and ex-post financing for disasters and suggest, based on examples, that extending the public-private partnerships by including new entities could be a better solution for developing countries to finance the disaster's effects before its strike, highlighting that each situation has some challenges. Linnerooth-Bayer and Mechler (2009) studied the insurance strategies against catastrophic events used in different developing countries and highlight that relying on innovative insurance programmes could be preferable than relying on post-disaster donor aid (Linnerooth-Bayer and Mechler, 2009, p. 29-30). Klein (2009) analyzes the regulatory framework for property insurance in 6 coastal states in United States and highlights their different results on practice. Perrels

et. al. (2014) studied the coverage of natural damages hazards in the EU countries and concludes that for some countries there will be a tough recovery after important hazards because of their lack of resources and weak insurance coverage. A lot of papers developed under the patronage of World Bank analyze the insurance for catastrophic reasons in different countries or regions, such as: Carribean countries (Pollner, 2001), Turkey (Gurenko et. al., 2006), Carribean and Central American countries (World Bank, 2014b), Central European countries (Gurenko and Dumitru, 2009; Pollner, 2012), ASEAN countries (Mahul and Jha (coord.), 2012), Japan (Mahul and White, 2012), China (Wang, 2010), Bulgaria (Shah et. al., 2014).

Recently, more papers deal with the link between insurance schemes and risk reduction. Yao et. al. (2015) argue about the introduction of a new public-private partnership framework for the earthquake risk, involving also retrofitting and insurance. Surminski et al. (2015) analyze flood in a European context and identify four challenges for integration of the insurance in the disaster risk reduction framework: multi-stakeholder cooperation, access to information, the understanding of the roles of governments and private insurers in disaster risk reduction actions, risk-based pricing.

Other studies cover the buying behavior of insurance for catastrophic risks of peoples faced with low probability events that generate large losses. McClelland et. al (1993) argue about the bimodality in the individuals behavior, but the results obtained by Ganderton et. al. (2000), partially unexplained, are consistent, for many findings, with expected utility theory (Ganderton et. al., 2000, p. 287). Laury et. al. (2009) shows that is “no evidence of underinsurance of low probability losses when incentives are real and large” (p. 37), and Ozdemir and Morone (2014) find that the probability of loss is the most important factor in the buying decisions(p.64). Social influence is studied as a factor that could determine the underinsurance in the catastrophe risks, but the results of the studies are not convergent (see Krawczyk et. al., 2016, for a review).

To suggest a mechanism more adequate for governmental reasons, Kleindorfer and Klein (2003) link the demand, supply and regulation of private companies activating on the markets for CAT insurance and concludes that “the volatile mix of demand-side failures, supply-side complexities and regulatory manipulation are likely to make this area an important and difficult one for efficient economic design” (p.1).

The Romanian program of insurance of catastrophic risk was subject of discussion for some authors from different perspectives. Zelinschi (2011) analyze the period of transition between the system of catastrophic risks' financing through voluntary insurance against fire and other natural perils and the system of covering the disaster risks through the compulsory insurance for earthquake, flooding and landslide. The author suggests some measures to improve financing capacity for natural disasters losses. Achim (2012) highlights the importance of the actuarial calculus for property insurances premiums determination, so as the insurers remain profitable without affecting the insureds' needs: covering the damages according to the contracts in force. Mangra et. al (2011) highlight the regulation of the compulsory insurance for catastrophic risks and identified as barriers of the system: lack of confidence of the population in insurance as a tool to finance catastrophic risks, limited population's revenues affected by the economic crisis, the frequent changes of the legislation

regarding the compulsory insurance for catastrophic risks. Ionciță et. al. (2011), by using semi-guided interviews and market survey, determined the perceptions of the potential insured persons and of the specialists from insurance area regarding the compulsory insurance for catastrophic risks. According to data, earthquake is the most feared risk. The introduction of the compulsory insurance for catastrophic risks is considered a necessary measure for more than 80% of the potential insured persons. The level of insurance premium is found normal by most of the people (65%) and the insured sum is considered insufficient by almost 50% of the persons and more than 45% consider it correct. The insurance specialists see an increase of the insurance market because of the compulsory insurance for catastrophic risks, but the main reason is considered to be the fine imposed to the persons violating the law and not the awareness about the necessity of insuring catastrophic risks. Hochrainer-Stigler et. al. (2016) studied the results of the implementation of the compulsory insurance for catastrophic risks in Romania, the perceptions of households and of the employees from insurance market and formulate some policy recommendations regarding EUSF and possible use of it for supporting national insurance systems. Dragotă et. al. (2012) identified social inequities generated by the law in Romania and consider that functioning of the compulsory insurance could be, therefore, inefficient. Florea Ianc and Lăpăduși (2014) realize a quantitative analysis for both compulsory and voluntary dwelling insurance, and Ciumaș and Coca (2015) analyze the factors that influence the demand of the insurance of catastrophic risks, highlighting the major importance of “the psychological and social factors on the consumers’ decision” (p. 77).

4. REVIEW OF THE PRIMARY LEGISLATION REGARDING COMPULSORY INSURANCE FOR CATASTROPHIC RISKS IN ROMANIA

The compulsory insurance for disasters was introduced in Romania by the Law 260/2008 and the first effect of the law was the establishing of the Insurance Pool for Disasters (in short - PAID) in 2009 and issuing the first insurance policy issued on 15th of July 2010 (<https://www.paidromania.ro/despre-noi>). The law intended to create an ex-ante financing instrument for the catastrophic risks as defined by the law (earthquake, landslides and flooding as natural phenomena) that affect the dwellings of the persons or of the firms. The law regulates just the insurance for dwellings and not for the content, which cannot be insured by a compulsory policy, and indemnities are to be awarded for direct, but also for indirect losses.

The obligation to contract an insurance policy for disasters was instituted just after 90 days on the issuing the application norms of the law (issued and published just in 6 of May 2011) and “for the first year, the owners have to contract an compulsory insurance of buildings in a period of a year from the date when the previous mentioned time limit is come to an end” (law 260/2008, article 35). These regulations generated many controversies about the date since the fine for violating the law could be applied and in the discussions it were advanced three dates: 15 July 2011 (one year after issuing the first PAD insurance), 6 of August 2011 – 90 days from issuing the application norms or 6 of August 2012 – one year after this deadline. These controversies had an important impact on the PAD market.

Also, the law registered important changes through subsequent laws. In our paper, we try to highlight the most important legal aspects from the initial law and the changes made during times, as part of the potential explanations regarding the evolution of this insurance in Romania. The initial law established that for every dwelling, the owner, physical or legal person, was necessary to contract a compulsory insurance policy for disasters. Important changes were made during time about this aspect. The first law amending the law 260/2008 established that the dwellings which, according to the expert examination, are considered of being affected by a high earthquake risk (first class of seismic risk) cannot be covered by the compulsory insurance policy for disasters for any of the catastrophic risks regulated by the law (Law 248/2010). Another important change introduced by the Law 248/2010 was the fact that the owners who have non-compulsory insurance policies covering the three catastrophic risks don't have the obligation to contract an compulsory insurance, an important measure which affected the compulsory insurance for disasters market. This aspect suffered changes again in 2013 by the law 243, which repealed previous law stipulation, generating the necessity to contract a compulsory insurance policy for disasters. The changes induced by the law 243 generating issuing the voluntary insurances with a franchise for the catastrophic risks covered by the compulsory insurance. The law 191/2015 has forbidden the insurers to contract a voluntary insurance for dwelling when the dwelling has no compulsory insurance, as a measure to stimulate the compulsory insurance penetration.

The types of dwellings were established based on the resistance structure or of the outside walls of the buildings. The law decided a differentiated insured sum for the two types of dwellings (20000 euro/A type dwelling, 10000 euro/B type dwelling) and a differentiated insurance premium of 20 or 10 euro. These sums could be modified through the Decision of Government in the first five years and by the order of the president of Insurance Supervision Commission (law 260/2008, article 5(3)), but, after the law 248/2008, just the later remains in force.

The initial law awarded the right to contract compulsory insurance just to the insurance companies which were shareholders of the PAID, but the law 243/2013 awarded this right to all insurers that have the right to contract disaster insurances. Finally, the law 191/2015 awarded also to PAID itself this right. We consider this as a measure aimed to stimulate the compulsory insurance penetration.

Another aspect that suffered changes regards the validity period of the compulsory policy. This period starts at "0 o'clock of the day following the day when premium was paid" (law 260/2008, article 9(1)), "not sooner that 0 o'clock of the day following the day when premium was paid" (law 243/2013, article 9(1)), but the law 191/2015 established two periods of time for the compulsory insurance for disasters enter into force: "0 o'clock of the day following the day when premium was paid and the contract was issued and signed" (for the policies to be renewed) or "0 o'clock of fifth day following the day when premium was paid and the contract was issued and signed" (for the new policies), according to article 9 (1 and 1[^]1) of the law. The law 191/2015 institutes also the possibility of PAID to make a risk inspection in some situations. Both measures have, in our opinion, the purpose to limit the fraud in the compulsory insurance for catastrophic risks.

The claim for compensation has to be addressed to the insurer that issued the compulsory insurance or directly to PAID (in the cases mentioned by the law). The confirmation and valuation of losses and the establishing of the compensation value is to be made by the insurer that issued the policy. In this activity, the insurers have to follow the principles of first risk indemnization. The paying of the compensation was established initially as a task of the insurer, but the law 248/2010 established this task for PAID and, correlated with this, the same law repealed the right of the insurer to decline paying the compensation when the insured persons didn't inform the insurer about the apparition of risk in a term of 60 days. These aspects could affect the efficiency of PAID, but is better for the insured people affected by the disasters.

In order to stimulate the compulsory insurance for disasters and to protect the public budget, the law stipulate that "the persons which don't have PAD insurance will not be entitled to compensations from the state or local budgets for the losses incurred by the dwellings" (law 260/2008, article 23). The local public authorities have the obligation to pay premiums in some social cases specified by the law and for the dwellings that are own property and to see which persons doesn't follow the law and cash the fine for the persons violating the law. This latter obligation of the local authorities is not put in practice by many mayoralities despite the fact that, starting with the law 243/2013, 60% of the fine is retained by the local budget. The punitive aspect of the law, which could generate a better subscription of the compulsory insurance for catastrophic risks, is let aside.

5. QUANTITATIVE ANALYSIS OF THE COMPULSORY INSURANCE FOR CATASTROPHIC RISKS IN ROMANIA

The quantitative analysis regards especially compulsory insurance for catastrophic risks (PAD), but there are emphasized also some aspects regarding the voluntary insurance for dwellings, because in the analyzed period (2010-2015) were moments when the voluntary insurance could replace the compulsory insurance. Table no. 1 shows the evolution of the number of dwellings, the number of PAD contracts and of the voluntary insurances for dwellings and, also, the coverage degree (C_degr) through PAD or voluntary insurances in a comparative way, in order to see the evolutions of these.

According to the data from table no. 1, for 2010-2012 the evolutions of the two kinds of insurances were relatively the same. In the year 2011 the number of the voluntary insurances covered more than 50% of the total number of dwellings and there were also more than 570000 PAD contracts, covering more than 6,5% of the dwellings. 2011 was the year when, according to many opinions from the public space, it becomes mandatory for dwellings' owners to have insurance for catastrophic risks (compulsory or voluntary). In our opinion, the evolution of the voluntary insurances (a number more than double in 2011 than in 2010) is explained, mostly, by the fact that voluntary policies were covering more risks than the compulsory ones and the employees of the insurers (including the shareholders of PAID) wanted to sell especially voluntary insurances. In 2012, the number of the compulsory and voluntary insurances both decreased, one of the main reasons being not applying the fine for the

owners violating the law. For the years 2013-2015, the evolution of insurances diverges: the voluntary insurances are decreasing constantly, but the compulsory insurance is growing.

Table 1. The evolutions of the voluntary and compulsory insurances for dwellings in Romania (2010-2015)

	2010	2011	2012	2013	2014	2015
Number of dwellings	8427941	8722398	8760923	8799832	8840595	8882090
No. of PAD contracts	367287	574229	331131	736318	1491329	1590954
C_degr through PAD	4,36%	6,58%	3,78%	8,37%	16,87%	17,91%
No. of voluntary insurances	2132778	4392647	3324910	2462765	1830996	1786112
C_degr through voluntary insurances	25,31%	50,36%	37,95%	27,99%	20,71%	20,11%

Source: authors' processing after data obtained: insurance data – FSA, Report of the financial non-banking market 2015, p. 82 (for period 2011-2015); ISC, Report regarding the insurance market and activity developed in the year 2011, p. 20-21; For dwellings number data – National Institute of Statistics website/Tempo online data, accessed on 14th of November 2016

In the year 2014, after the introduction of the franchise for the catastrophic risks in the voluntary insurances for dwellings it is registered an important growth of the PAD policies. In 2015, the differences from 2014 data were minor, but it confirms the trends. As result, in 2015 the number of dwellings covered by the compulsory insurance is almost equal with the number of dwellings covered by the voluntary insurances. These evolutions favourable for PAD policies could affect the voluntary insurances for dwellings, in case that more and more owners, with a lack of confidence in the insurance system, a low financial education in insurance area or with lower or unstable revenues, decide to contract just the compulsory insurance. In this case, the private insurers will have to improve the communication about the benefits of the voluntary insurances or to involve in campaigns for better knowledge in the area of insurances of the population.

As regards the financial indicators of the voluntary insurances for dwellings, the gross subscribed premiums (GSP) followed the same evolution as the number of the policies, so, starting with 2014, the gross subscribed premiums became smaller than in 2010. On the other hand, the gross indemnity paid (GIP) have a more uniform evolution of around 6 millions RON, with the exceptions of 2011 and 2012 where this indicator is smaller (in 2011) or higher (in 2012). A deeper analysis show that in the year with many contracts (2011), the premium / contract is the smallest one (145,36 RON, which is about 33 euro/contract), but also the gross indemnity / contract is the smallest (10.70 RON, which is about 2.5 euro / contract).

The highest premium/contract is in 2013 (222.66 RON, about 50 euro/contract). This show that most of the people contracted voluntary insurances instead of compulsory insurances at low premium levels. The evolution of the indemnity/contract is ascending, so that in 2015 the indemnity/contract became 34.02 RON/contract, meaning near 8 euro/contract. As result of this evolution from indemnities and premiums, the ratio between them became in 2015 the highest in the

analyzed period (18.11%). This evolution could be the result of the moral hazard and of the adverse selection.

Table 2. Indicators of the voluntary insurances for dwellings

year	GSP (RON)	GIP (RON)	Number of contracts	GSP (RON) / contract	GIP (RON) / contract	GIP / GSP (%)
2010	376111856	62427424	2132778	176.35	29.27	16.60
2011	638532825	47013398	4392647	145.36	10.70	7.36
2012	565773166	76678178	3324910	170.16	23.06	13.55
2013	548361838	63317820	2462765	222.66	25.71	11.55
2014	348818065	60030452	1830996	190.51	32.79	17.21
2015	335550901	60756302	1786112	187.87	34.02	18.11

Source: authors' processing on data obtained from FSA, Report of the financial non-banking market 2015, p. 82 (for period 2011-2015); ISC, Report regarding the insurance market and activity developed in the year 2011, p. 20-21

Analysis of the same indicators for the compulsory insurances for dwellings, reveal that the gross subscribed premiums, but also the gross indemnity paid (excepting the year 2010) have the same evolution as the number of PAD contracts. The premium/contract varies between 61.49 RON (about 14.50 euro/contract) in 2011 and 84.91 RON/contract (about 19.10 euro/contract) in 2014, this evolution is a result of the structure of the insured dwellings. Gross indemnity/contract is increasing almost all the time, with a small decline in 2013, but remains very low, comparative with the voluntary insurances (no more than 2.44 RON/contract, about 0.55 euro/contract).

Table 3. Indicators of the compulsory insurances for dwellings

year	GSP (RON)	GIP (RON)	Number of contracts	GSP / contract	GIP / contract	GIP / GSP (%)
2010	29557000	10369	367287	80.47	0.03	0.04
2011	35310758	327310	574229	61.49	0.57	0.93
2012	24200893	276689	331131	73.09	0.84	1.14
2013	60253975	473496	736318	81.83	0.64	0.79
2014	126632285	2968224	1491329	84.91	1.99	2.34
2015	134862012	3881833	1590954	84.77	2.44	2.88

Source: authors' processing based on data obtained from FSA, Report of the financial non-banking market 2015, p. 82 (for period 2011-2015); ISC, Report regarding the insurance market and activity developed in the year 2011, p. 20-21

These evolutions of the indemnities could be the result of the fact that, according to the statistics (see table 4), in these years there were reported in the EM-DAT database just 5 catastrophic events, with total damages to property, crops, and livestock of 1122428 US\$ (not all of these are covered by the compulsory insurance for dwellings). But there were also some other events covered by the compulsory insurance, not reported by the EM-DAT database, such as local earthquakes or local

floodings. Because of the fact that the natural hazards were local and of small intensity, the indemnities paid by each case are low. The result of these evolutions, combined with the increased number of contracts that cover more dwellings, is a ratio between 0.04 RON/contract (about 0.01 euro/contract) in 2010 and 2.88 RON / contract (about 0.65 euro/contract) in 2015.

Table 4. Major disasters from Romania in the years 2010-2015

year	Disaster subtype	Occurrence	Total damage
2010	Riverine flood	1	1111428
2013	Riverine flood	1	11000
2014	Riverine flood	2	-
2015	--	1	-
Total		5	1122428

Source: EM-DAT database, online http://www.emdat.be/advanced_search/index.html, accessed: 15th of November 2016

Based on the available data, we identify the differences between the degree of coverage (C_degr) of the dwellings by compulsory insurance yearly and between the development regions (as established by the law).

Table 5. Number of contracts and coverage degree for compulsory insurance for catastrophic risks, detailed on the development regions level

		2010	2011	2012	2013	2014	2015
TOTAL	Contr.	367287	574229	331131	736318	1491329	1590954
	C_degr	4.36%	6.58%	3.78%	8.37%	16.87%	17.91%
North-West	Contr.	28197	47527	28405	66494	130132	158614
	C_degr	2.62%	4.24%	2.52%	5.87%	11.42%	13.85%
Centre	Contr.	39486	33934	27476	68005	167870	185025
	C_degr	4.00%	3.36%	2.71%	6.68%	16.40%	17.98%
North-East	Contr.	40281	89467	42752	99464	183678	200000
	C_degr	2.96%	6.33%	3.01%	6.97%	12.81%	13.89%
South-East	Contr.	60439	121580	61178	113447	198689	207939
	C_degr	5.67%	11.09%	5.55%	10.25%	17.89%	18.66%
South-Muntenia	Contr.	45456	103455	50405	99128	198630	203574
	C_degr	3.51%	7.75%	3.76%	7.37%	14.74%	15.06%
Bucharest-Ilfov	Contr.	99345	87340	63811	169225	352600	366463
	C_degr	10.78%	8.79%	6.39%	16.81%	34.70%	35.70%
South-West Oltenia	Contr.	20916	41290	24200	50415	93559	100404
	C_degr	2.25%	4.38%	2.56%	5.32%	9.86%	10.56%
West Region	Contr.	33167	49636	32904	70140	166171	168935
	C_degr	4.20%	6.13%	4.04%	8.59%	20.26%	20.50%

Source: authors' processing after data collected from PAID statistics, online <https://www.paidromania.ro/en/monthlystatistics> (insurance data); and for dwellings number data from National Institute of Statistics website/Tempo online data, acceded on 14th of November 2016

As regarding the evolution of the degree of coverage of dwellings by compulsory insurances in 2010-2015 period, the trend is almost the same as the general one, with the exceptions of two regions: Centre region and Bucharest-Ilfov region, where the degree of coverage for 2011 was lower than in 2010 and decreased again in 2012. As regards the differences between the development regions, the highest degree of coverage is found for almost all the period in the Bucharest-Ilfov region (excepting the year 2011, where the indicator has the highest value in South-East region), for these regions, which includes some of the counties that are the most exposed to the earthquake or flooding hazards, the indicator being higher than the national value for all the years. The lowest values of the indicator are found in the South-West Oltenia region, followed by the North-West region and the North-East region, all these regions being under the national value of the indicator for all the years. In the West region the indicator is almost equal with the national value for all the years and starting with 2012 is higher than the national indicator. In South-Muntenia region, the indicator is almost equal with the national value in the years 2010-2012, after that registering a value under the national value. As regards Centre region, in 2010 the indicator was almost equal the national value, but the following three years registered values below the national indicator and in 2014 and 2015 the degree coverage at regional level is almost equal with the national level. These evolutions could suggest that the risk exposure, regional revenues or cultural values are factors that influence contracting the compulsory insurance for dwellings.

6. CONCLUSIONS

In the article we argue that the changes of the legislation about compulsory insurances, but also the lack of explanations about some controversial aspects, had important influences on the evolution of the compulsory insurance, but also on the voluntary insurances. The regional analysis shows that there are differences in the behaviour of the persons from different regions of the country, coming not just from the differences in revenues or in the risk impact. This behaviour could be also explained, in our opinion, as a result of diversification of cultural values over the country or of the differences of the level of the financial education.

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