Full Length Research Paper

Compulsory insurance for dwellings in Romania between mitigating the impacts of natural disasters and giving rise to social inequities

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Over the time, the whole Europe was affected by disasters, to a greater or lesser extent; therefore, each country tried to mitigate the impact of disasters adopting different protection systems. Most parts of the European countries faced difficulties adapting to climate change. Nevertheless, Romania is the only country in Europe which has recently adopted a compulsory insurance for dwellings against natural disasters, after many years of legal or political objections. Can it be presumed that Romania is more affected by the earthquakes, floods or landslides than other European countries? The purpose of this study is in threefold: to examine the usefulness of the compulsory insurance for dwellings in Romania; to make a comparative analysis with other European countries which took into consideration similar insurance arrangements against different natural hazards; and last but not the least, to investigate the social inequities that came with this compulsory law. Economic and social reasons explain the choice of this law; however, they engender social inequities for the elderly with low incomes.

Key words: Catastrophe losses, compulsory insurance of dwellings, social inequity, regional analysis, Romania.

INTRODUCTION

Romanian compulsory insurance law for dwellings provides legal and institutional environment for household insurance against landslides, earthquake and floods. These natural disasters have been recorded in many European countries, making, over time, property damages of billions of euros. However, Romania is the only country in the European Union which implemented a compulsory insurance law for dwellings against natural disasters. The aim of this paper was to make a diagnosis of this regulation based on multiple aspects: The geographical arguments motivating its implementation, a comparison with other insurance systems in the European Union with similar exposure to natural hazards,

the social features in Romania in the European context, and a social equity investigation in order to explain how the compulsory insurance law for dwellings met one of its main objectives, namely the social one.

The study is structured as follows: introduction of the geographical and social reasons for a compulsory law of dwellings; the natural disaster insurance systems in seven European Union countries, very similar with Romania are presented. Comparative analysis between compulsory and voluntary insurance for dwellings in Romania was realised, using numerical results; presentation of a regional analysis for Romania to highlight its (different) exposure to risks related to natural hazards; social perspective on the compulsory insurance of dwellings in Romania, together with arguments regarding the social inequities arising from this law. Analysis of the compulsory insurance law for dwellings based on the

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equity principles was developed, based on a logit model for explaining social inequities for individuals; conclusion of the study.

GEOGRAPHICAL AND SOCIAL REASONS FOR A COMPULSORY INSURANCE LAW FOR DWELLINGS

The theory of noosphere created by Vladimir Vernadsky (1944), in the middle of the last century, states that the Homo sapiens with his mind and activities has begun to strongly influence the natural development of the environment or biosphere. In 1996, the United Nations formulated this concept in the following way: "System coordination of economic, ecological and human development must be realised in such a way that, from one generation to other, the quality and safety of life should not decrease, the environmental conditions should not worsen and the social progress should meet the needs of every person". Another Russian scientist Nikita Moiseyev, the creator of the computer program for global climate simulation "nuclear winter" noted: "If the mankind is not going to radically change its behavior on the Planetary scale, then in the middle of 21st century there may appear conditions under which people cannot exist" (Moiseyev, 2000).

In his global simulation of quality and security of human life, Zgurovsky (2009) considers that the next global threat is the vulnerability of the countries to the natural disasters (especially earthquakes, droughts, cyclones and floods). In Europe, landslides are caused, in most cases, by floods or deforestation and the resulting damages are evaluated together with that produced by the floods. The map of Europe, in terms of the landslide, made by ESPON (European spatial planning observation network), showed that most areas of Europe have a high risk of landslides. The United Kingdom, Spain, France, Italy, Austria, Hungary, Bulgaria and Slovakia have nearly all the country's regions with high risk of landslides. In Romania, more than 60% of the geographic areas have a significant exposure to this type of risk. In a landslide hazard classification, on a scale between 1 (very low hazard) and 5 (very high hazard), these areas from the Romanian territory are on the highest level.

Floods are the most common type of natural disasters in Europe. According to the data from the international database on disasters, EM-DAT, between 1990 and 2010 there were many cases of flooding. In Europe, around 130 serious floods caused, only in the Eastern Europe, over 700 deaths during the period 2000 to 2009 and economic losses of at least 8 billion U.S. dollars. Between 1990 and 2010, the number of people killed was more than double and the level of total damages in this region was around 21 billions U.S. dollars. In Western Europe, the number of people killed in the same period was significantly lower, around 130 persons, but the value of total damages was higher than in the Eastern

Europe, around 27 billions U.S. dollars. The floods affected an estimated area of one million square kilometres and approximately 1.5% of the European population. The map of Europe in terms of potential damages caused by floods reveals that the financial side of the damage is more than 140 million of euros, in the United Kingdom, Belgium, Hungary and Netherlands. According to joint research centre (JRC) Report (1997), flooding caused extensive damage of 5.2 billion of euros in Poland and in Czech Republic. In 2000, Italy, France and Sweden have recorded losses of 9.2 billion of euros. In 2002, in Germany, Czech Republic and Austria, floods caused damage of 17.4 billion of euros. In summer 2007, the United Kingdom estimated the flood damage to 4.3 billion of euros. The average annual value for the flood damage is 4 billion euros (Barredo, 2007). According to the European Spatial Planning Observation Network, countries with a high risk of flooding are: France, Czech Republic, Germany, Italy, Romania, United Kingdom, Poland and southern Spain. In Romania, the floods determined damages of more than 3.5 billions U.S. dollars, during the period 1990 to 2010.

According to the annual report of the United Nations, about 100,000 people worldwide are victims of the earthquakes. The World Conference for Disaster Reduction (April 7, 2009) of the United Nations, concluded that the countries with a significant exposure to major earthquakes were Italy, Romania, Turkey and Greece. The earthquake from Turkey (Marmara) in 1999, produced damages around 10 billion U.S. dollars, equivalent to 3% of gross national income of Turkey at that time. In Italy, on April 6, 2009, took place the strongest earthquake in the last decade, with damages estimated at 12 billion euros. Worldwide, according to International Disasters Database EM-DAT, during the period 1900 to 2010, the number of people killed by earthquakes was around 2.5 millions, with almost 170 millions affected persons, causing total damages of nearly 500 billions of U.S. dollars. In Romania, the earthquakes are on the first place in top 10 natural disasters and on the second place regarding the population affected, with over 2500 persons killed and damages of 2 billions U.S. dollars.

Moreover, for the European Union, both theory and practice recognized that discrepancies between regions and nations will never disappear. The concepts of core and periphery provide an explanation of regional disparities in many instances. The idea is that areas distant from the core of an activity in a region fail to develop equally with areas closer to the core (Krugman and Venables, 1990). In this classification, Romania can be considered at the "periphery" of Europe, which contains regions placed outside the main strands of European development and which in many instances remain locked in the rural life styles of other ages (Giannias et al., 2000). According to Romanian Statistical Yearbook (2008, 2009), from 8.3 millions of dwellings, 4.5

millions were in urban areas and 3.8 millions in rural ones. Despite the decrease of rural population from 79 to 47% in 2002 emphasised in the last Romanian census, international statistics from Eurostat and Joint Research Centre (European Commission) proved that the share of population from rural area is 1.8 times higher than the average value for EU-27 (48.3% against 27.1%). These figures were determined at the regional level, according to nomenclature of territorial units for statistics 2 (NUTS 2). The same indicator analysed for other European countries with significant exposure to natural hazards underlined the last position for Romania in this comparative analysis. Thus, the lower values for the share of population from rural area were registered in Belgium (8.7%), Netherlands (6.8%) and the United Kingdom (12.2%). Somewhat higher values had Spain (26.9%), France (29%), Czech Republic (30%) and Greece (38.6%). The closest values, still below those registered for Romania, belonged to Poland (40.3%), Austria (41.4%) and Hungary (43.3%).

European Commission proposed a new typology of predominantly rural, intermediate and predominantly urban regions based on a variation of the OECD methodology. Consequently, the aforementioned figures were re-analysed in order to find if some significant differences have to be mentioned. For Romania and other similar countries, the new methodology did not change the conclusions and Romania kept its first place for the share of population and land area in rural Local Administrative Units level 2.

In a more detailed analysis, for the same indicator, but for small regions, officially named NUTS 3, Romania kept the first position in a comparative analysis with similar European countries. According to OECD methodology, the predominantly rural share of population in Romania was 52.3% and the average value for EU-27 was of 20.1%. The new urban-rural methodology made some changes, but the ratio for Romania remained significant, around 46%, compared to the average value of 24% for the EU-27. These figures underlined that the indicator for Romania exceeded 2.6 times the average value for the European Union (according to OECD methodology for NUTS 3), respectively 1.9 times according to the other methodology and positioned this country on the first place in this comparative analysis. Similar countries can be considered Poland, Austria, Hungary and Greece, with values between 1.8 and 2.3 times higher than the average value of EU-27. The other countries, such as Belgium, Czech Republic, Spain, France, Netherlands and United Kingdom were far from Romania, with ratios varying between 0.8 and 0.1. The new urban-rural typology for NUTS 3 regions revealed that Romania had only 1 predominantly urban region, 15 intermediate regions and the rest of them were predominantly rural regions, from a total of 45 small regions.

Geographical and social reasons seem to require a compulsory insurance law for dwellings, but none of these European countries have such a regulation, even if they have a similar exposure to natural hazards. Regarding the "social perspective" of this insurance, it must be mentioned that, according to Eurostat, the average values for at-risk-of-poverty rate (after social transfers) for EU 27 varied between 16.3 and 16.7% during the period 2006 to 2009. For the same period, from seven European countries included in this comparative analysis, the greatest values for this ratio were registered for Romania, with a maximum value of 25% (2007). Greece, Spain, Poland and United Kingdom (in this descending order) exceeded the average values for EU-27, but still remained under the corresponding values for Romania.

To examine the inequalities between populations from different geographical areas together with the (significant) differences between their disposable incomes represents the background to justify the utility of the compulsory law of insurance for dwellings. From this perspective, the inequality of income distribution (the ratio of total income received by the 20% of the population with the highest income to that received by the 20% of the population with the lowest income) should be analysed, too. Again, Romania significantly exceeded the average values for EU-27, with ratios varying between 7 and 8 compared with 4 to 5 (EU-27), for the period 2007 to 2009. The same four above mentioned European countries for their exposure to the risk of poverty registered values up to the average values for EU-27 for the inequality of income distribution, but lower with 1 p.p. or even more, compared with Romania.

According to Romanian Insurance Supervision Commission, only 24% from dwellings were insured through voluntary insurance policies. From this perspective, a compulsory insurance for dwellings can be considered very useful, taking into account the degree of exposure to different natural hazards. The most important issue in this case is how this law is drawn up and after that, implemented. The Romanian law ignored many principles applied in the case of voluntary insurance for dwellings; the only criterion applied is the material used for house construction. However, through a combination between the contractual provisions for a non-compulsory insurance and the attribute of social law, the present regulation can avoid, at least in part, these social inequities.

NATURAL DISASTERS INSURANCE SYSTEMS IN EUROPE. A COMPARATIVE ANALYSIS

The vulnerability of the European countries to the natural disasters and the experience in the past, as well as the scientific opinions regarding them as the next global threat can be considered as rational explanations for the need of insurance schemes to protect against different natural hazards. In this section, some relevant examples

of protection against these natural hazards were presented, for the previously mentioned European countries, together with certain social problems, in order to be as close as possible to the Romanian case. Since it is projected that global warming will increase the frequency and severity of extreme weather events (IPCC, 2007), the catastrophe losses are likely to rise as a result of climate change. Climate change and the insurance sector are interrelated. First, the insurance industry can offer specific products to protect against geo-atmospheric damages. Second, the insurance industry must include those types of risks in their strategies of risk management, to avoid significant losses due to an inaccurate estimation of the exposure to natural hazards (Mills et al., 2005).

The EU Commission acknowledges the need for European reform in this area, proposing a unified insurance system across Europe, due to climate change demands. The reform of natural hazard insurance is becoming a cornerstone of the EU's strategy for adapting to climate change (Schwarye et al., 2011). In practice, EU is still "confronted with a confusing variety of products and prices. Some countries (Spain, France, Switzerland) have state or quasi-state monopoly insurance while other countries (Germany, Italy, UK) have commercially structured "free market solutions," which are systematically coupled with state-funded ad-hoc relief. Other countries (Austria, Denmark) have public disaster funds financed by tax-payers' money and still others have various mixed solutions of private insurance providers supplemented by public disaster funds (Belgium, Holland, Norway)". (Schwarye et al., 2011)

The variety and the combination between the natural hazards covered by insurance policies made more noticeable the differences between the European countries. In some cases, common natural hazards were combined with regionally specific hazards (for example landslides in the Alps) or even with social and political risks (for example civil war and terrorism, in Spain). The United Kingdom included extra-risk insurance for homes in case of fire or pipe bursts. Moreover, in some countries, the insurance policies ignored risks of natural hazards such as storms or even earthquakes. Schwarye et al. (2011) identified five models for insurance against natural hazards, depending on the state involvement and the specific regulations: (M1) - Public monopoly insurer of natural hazards; (M2) - Compulsory insurance for all natural hazards; (M3) - Compulsory inclusion of (all) natural catastrophes into general house owner insurance („coupling of contracts"); (M4) - Free-market natural hazard insurance with ad hoc-governmental relief programs; (M5) - Tax-financed governmental relief fund for natural disasters.

From 1952 until now, Romania experienced three different models of insurance for dwellings against natural hazards – from a state monopoly, but without including those risks in the insurance policies to the fourth model

and, in the last three years, adopted the second model (M2), according to the above mentioned classification. Thus, between 1952 and 1990, Romania experienced a state monopoly in insurance sector through the administration of state insurance (ADAS), with 100% Romanian capital. "the compulsory classes of insurance (by the order of the law) sold by ADAS were the property insurance (for the goods of agricultural and production cooperatives, inter cooperatives associations and individuals), accident and health insurance and third party liability for motor insurance" (National Association of Insurance and Reinsurance Companies from Romania, http://www.unsar.ro). The natural hazards were a public monopoly neither in that time nor in the next 18 years.

During the period 1990 to 2008, Romania experienced the fourth model of insurance for dwellings (M4), if the year of law adoption was considered, or until 2010, if the year of implementation for this compulsory law was taken into account. The frequencies of appearance for these natural disasters, together with the state difficulties to cover these losses with ad-hoc governmental relief programs and the social problems of the population, especially in the rural areas, can be judged as arguments for the compulsory insurance for dwellings against all natural hazards (M2). It must not lose sight of the fact that, in Model 4, the population was no longer engaged in actions of risk management because the state aid was granted. Regarding the similarities between Romania and other European countries, with a significant exposure to risks from natural hazards, Spain and France seem to have the most similar system of insurance protection against these types of risks. There is a legal obligation to insure the dwellings against damages caused by natural hazards, but none of these systems is identical with the one implemented in Romania.

Spain has a compulsory insurance for natural hazards, but also for different political and social risks, with a combination between the models of insurance M2 and M3. This insurance is provided by the Consorcio de Compensacion de Seguros (Consorcio), which is a state monopoly insurer. Consorcio has unlimited state guarantee. The Spanish insurance system survived to the rules imposed by the 3rd EU Directive on Indemnity Insurance, Consorcio being called a "government institution funded by taxpayers fees collected for natural disasters" (and not a monopoly insurer) (Schwarye et al., 2011). These fees are collected through the private insurers, as a percentage (varied in terms of type of insurance contract) or as a fixed sum additional premium in the case of car insurance and passed on to the Consorcio. The private insurance against natural hazards is possible, but practically insignificant, because the insurance would became more expensive, together with the additional premium for the Consorcio. In Romania, the compulsory insurance policy is independent of other type of risks beside the natural hazards and the management of these contracts has no state support,

being realised through Natural Disaster Insurance Pool. This company is constituted as an association of private insurance companies authorized to sign compulsory insurance policies for dwellings.

In France, since 1982, all the private insurers are obliged by law to provide insurance protection against natural hazards (a similar combination between M2 and M3 models of insurance for dwellings against natural hazards). As a specific feature for this country must be mentioned the separation of these types of risks in two categories: Market insurable risks as storms or hail (covered by the private insurance undertakers) and market uninsurable natural disasters (covered by the French government). If countries like Spain and Romania have clear definitions of the natural hazards in the law/insurance contract, in France a governmental commission decides on case by case basis if a specific geo-atmospheric damage can be covered by the state. The subjectivism of this natural hazards analysis, together with the operating mechanism of "Caisse Centrale de Reassurance" (CCR) are the most criticized aspects of this type of insurance. A very clear and synthetic presentation of these issues is made by Schwarye et al. (2011): "The CCR is a state reinsurance institution which offers private insurers the opportunity to buy insurance against natural hazards under special subsidized conditions. For this, the French government gives the CCR an unlimited government bond and special tax exemptions for the treatment of surpluses in insurance business. Formally, primary insurers can also purchase their insurance on the conventional reinsurance market but they would receive far worse conditions and pay more than if they purchased from the CCR". In France, a similar operating system for mandatory insurance against natural hazards can be identified, as in Spain, with a surplus (12%) applied to all property insurance contracts. The existence of the CCR produced more lack of balance for the French government because private insurers were allowed to select the best risks for their portfolio (through the selection of those insurance policies from the regions less exposed to natural hazards) and for the other regions the risks were transferred to the CCR.

The insurance model adopted in Austria is based more on the principles of market economy, with a combination between M4 and M5 models; the state involvement is low, except in large-scale disasters. Citizens may acquire protection against natural disasters such as storms, hail, snow melting or earthquakes through the private insurers. Thus, the degree of the insurance penetration is very low, below 15%.

"Since 1986 Austria has had a government disaster fund under the Finance Ministry financed by taxpayers. Although, victims of damages do not have a legal right to access this fund, it can cover approximately 50% of damages (on average) if the claimant is not privately insured at the same time. This leaves room for 'charity hazard' in the case of private insurance" (Schwarye et al.,

2011).

A similar model of insurance with Austria has Netherlands (a combination between M4 and M5 models). An extensive analysis can be found in Botzen and van den Bergh (2008) together with a comparative perspective from other three European countries: the United Kingdom, Germany and France. According to Kok et al. (2002), about 70% of properties in the Netherlands lie below sea level or below river water level. Moreover, van den Hurk et al. (2006) underlined that climate change projections for the Netherlands also indicate an increased frequency and severity of weather extremes. Since 1953, the private insurance sector qualified as uninsurable risk the flood damage (Heerkens, 2003). After the floods in 1993 and 1995, with damages around 115 million euros and 63.5 million euros, respectively (Kok and Barendregt, 2004), the government aimed to extend private insurance coverage to freshwater floods, but this proposal was rejected by the Dutch insurance sector (de Vries, 1998).

As in the French case, the government support for the disaster losses is given through a special public entity, the Calamities and Compensation Act (WTS) with the same conjecture of subjectivism. The political and public pressure seems to act in this country, as other studies prove (Downton and Pielke, 2001, for the US case). Botzen and van den Bergh (2008) provided a series of arguments for private insurance industry to be actively involved in flood insurance coverage, the most important argument being "the ability of insurance arrangements to spread and segregate risks, reduce damage by providing loss-reducing incentives, and monitor and control policyholders". The government role must remain active at least to invest in risk prevention, to settle strict rules for buildings and land use and to stimulate an appropriate coverage for natural hazards.   Poland has a type of insurance against the natural hazards according to the fourth model (M4), as a combination between private insurance and ad-hoc state intervention in case of huge damages. As in Romania (before the compulsory insurance law to be adopted) significant part of victims are not insured and not all damages are covered by the state intervention. Due to the fact that no European country has a compulsory insurance against natural hazards except Romania, in most cases the alternative solution is that natural disasters to "be covered in either multi-risk insurance contracts covering damage to goods, or only in a fire insurance contract, but generally as an extension of the fire coverage. In many countries, the extension is compulsory". (Van Schoubroeck, 1997) Regarding the relationship between the basic insurance and coverage for flood, earthquake and landslide, four systems were identified for the European countries: Automatic coverage, statutory compulsory extension of the scope of the coverage, de facto compulsory extension of the scope of the coverage and package insurance. Greece is another similar country with Romania, having a significant exposure especially to

earthquakes and comparable values for financial indicators such as at-risk-poverty rate or the inequality of income distribution. This country, together with Portugal, Italy and the United Kingdom has de facto compulsory extension for natural disasters (floods and earthquakes) to the fire coverage.

Germany had a pure market-based insurance system against some natural hazards, according to the fourth model (M4), with ad-hoc relief provided for emergency and reconstruction. As in the French case, the private coverage is available, but the premium differentiation is allowed. Through the public reinsurance system, the private insurance market is still functioning and the significant correlated risks can be administrated. Romania is, by some means, between these two countries; before the adoption of this compulsory law for households a private insurance market was available, but with a small market penetration of insurance against natural hazards (as in Germany). The new regulation does not stipulate any premium differentiation (as in France). In Germany not all types of natural hazards can be insurable through a private insurance policy; the most widespread geo-atmospheric insurable risks are storms and hail, (95%) (Schwarye et al., 2011). Market penetration of flood insurance is only about 10% for home contents and 4% for residential buildings in most parts of Germany (Thieken et al., 2006). The damages from flood (as in 2002, with losses around 9.1 billion euros) are covered by the government and through donations. Unfortunately, the premium differentiation had no positive effects in this country and adverse selection was identified on private insurance market. The premium differentiation is a very coherent measure, but without public support, the insurance market reaction was to avoid flood insurance for households in hazard-prone areas or to apply very high premiums if the insurance is nevertheless accepted (Botzen and van den Bergh, 2008).

In this comparative analysis with seven countries exposed to similar risks and related levels for the above mentioned social indicators, Germany must be judged as a special case. In 2002, in this country was drafted a similar compulsory law for dwellings to that adopted in Romania. The public pressure for the government to recognize this problem and to find a proper solution was significant and motivated by the lower penetration rate of the insurance for dwellings in the most exposed areas, together with economic difficulties encountered in these regions. German Ministry of Finance had some objections to this project and the initiative to provide a law regarding the compulsory insurance for dwellings failed. The main reason given by the Office of the Ministry of Finance to refuse the implementation of compulsory insurance was too high state guarantee required by the German insurers. German Insurance Association argued that, in case of a natural disaster with dimensions that would exceed their ability to cover the damages, they need state support. The main legal argument against the

adoption of compulsory insurance is the violation of constitutional law regarding the freedom of action. Compulsory insurance would constitute a violation of individual autonomy. German constitution allows violation of this right only for public interest and if there are no other methods to achieve that objective (Schwarye and Wagner, 2009). A detailed analysis of the German case can be found in the study of Schwarye and Wagner (2009). The political election-related reasons were considered important in the final decision-making process and different relevant examples were given for the period 1962 to 2002.

According to Schwarye and Wagner (2009) and Schwarye et al. (2011) the discussion about a compulsory insurance law for dwellings must take into consideration the consequences if nothing is done to protect against natural hazards and a special understanding for the need to implement such a project. These can be achieved by informing people about the effects of natural hazards on the economy, but also based on the responsibility of the politicians for a period greater than the electoral campaign. Until now, Romania remains the only European country which has adopted and implemented a model based on a compulsory system of insurance against natural hazards, despite the fact that is not the only country which experienced difficulties regarding the significant losses from different geo-atmospheric phenomena in a context with low level of (private) insurance penetration rate for this type of policies. Some countries leave the coverage for the pure private insurance markets; the other ones decided the state to be deeply involved, in some cases both for insurance and reinsurance of the risks related to natural hazards. All the applied systems were criticized for different reasons and even a new regime for natural hazards insurance centralised at European level was proposed and discussed. The ambiguity of risks, adverse selection, moral hazard, and correlated risks were identified as the most important problems for an extensive involvement of the private insurance sector (Botzen and van den Bergh, 2008). The public support was proved to be an imperfect solution and was criticized because the private insurance market involvement was reduced, by developing an unfair competition, or for the violation of the 3rd EU Directive on Indemnity Insurance, or even due to politicians.

Subsequently, the main provisions from the Romanian compulsory law for dwellings are presented, in a comparative analysis with a voluntary insurance policy.

A short comparative analysis between compulsory and voluntary insurance for dwellings in Romania

According to the law, mandatory insurance will cover three basic risks arising for landslides, floods and earthquakes. These natural disasters are common in Romania, but disparities between regions were registered.

The maximum amounts of coverage were established at 10,000 euros (type B dwellings), respectively at 20,000 euros (type A dwellings). For type A dwellings, owners must pay an annual premium of 20 euros and for the type B it must be paid 10 euros, at current exchange rate at the date of payment. Even if the utility of such a regulation is obvious in a country where private insurance for dwellings against natural hazards is not extended and the rural regions are predominant, the implementation of this compulsory insurance caused contradictory reactions among representatives of insurance companies. The insurers considered that this law transfered to them the damages from areas affected by disasters. The gross written premiums of 10 and 20 euros are too small and reduce the companies' profits for this class of insurance. In this context, Romanian insurers required a compulsory excess to discourage policyholders to ask claims for minor damages.

At the end of 2009, optional and voluntary types of insurance for dwellings existed together and the first approach of this law was to partially ignore the existence of the optional insurance, underwritten for the same risks from natural hazards. The first steps in this field could be regarded as confusing and even unfair for certain categories of insured persons. Owners that have optional insurance contracts for risks from natural hazards were required to sign a legal contract for the compulsory insurance no later than 31 December, 2009. Implicitly, if a yearly voluntary insurance contract for dwellings for natural hazards ended, for example, in May, 2010, the owner would have been obliged to sign a new contract for the same risks even if he/she had no need for this (compulsory) protection. Practically, two contracts could exist together, despite the fact that until May, 2010, the potential losses from natural hazards coould be covered from the voluntary insurance. Only after the expiration date of this contract, a new voluntary insurance policy will be signed for insured amounts exceeding those provided by the compulsory contract and/or for risks not covered by this policy. Nearly two years after the final adoption of this compulsory law this problem was solved and the final term of 31 December, 2009 was replaced with a more general legal provision: The compulsory insurance contracts must be signed after the expiration date of the voluntary ones. The insured dwellings are considered different only from the building material perspective. In addition, the insurance gross written premiums do not differ depending on each dwelling characteristics (for example age of structure, depreciation, net area, location, burglar and fire alarms that alert an outside service, etc.) as for the voluntary insurance.

For a comparative analysis between these two types of property insurance, two classes of dwellings were considered, both of them having the lowest level for gross written premiums. For a voluntary insurance policy, the lowest insurance premium would correspond to type A dwellings in an urban area, built after 2000, with low risk exposure to earthquake. In the case of the compulsory insurance, the smallest insurance premium is for the type B household, with external walls of unburned brick or any other material with no thermic or chemical treatment. In many cases, these buildings are more exposed to natural disasters. Such dwellings would have a premium of more than 0.4% in case of a voluntary insurance contract or it can not be insured. However, by law, the authorized insurers are obliged to underwrite insurance policies in these cases with a share premium of 0.1% that is 4 times lower.

An analysis of the insurance sum reveals, once more, the inequities of the new compulsory insurance law for housing in Romania. Thus, for voluntary insurance policies, if we consider a minimum insurance sum of 150 euros per sqm, referring to a farm house built from weak construction material, with a non-complex structure resistance, to have a total insured amount of 10,000 euros (the minimum insurance sum for a compulsory insurance for dwellings) means about 67 square meters with 150 euros/sqm (the minimum insured sum/sqm, for this type of dwelling, according to internal documents of some Romanian insurance companies). The Romanian National Census (2002) revealed that the average living area for a dwelling in rural area is 37.4 sqm. Therefore, a simple multiplication of 37.4 sqm with 150 euros/sqm rises to 5,610 euros. This simple calculation reveals that, in the event of natural disasters, it will remain for the owner around 4,400 euros. As a result, this type of insurance is beneficial to rural citizens who have such a dwelling.

For a dwelling situated in Bucharest with a similar living area, of 37.4 sqm and a value of 1200 euros/sqm, the insured sum in a voluntary insurance contract would be 44,880 euros (37.4 sqm * 1,200 euros/sqm). In the case of a disaster that would totally damage the apartment, the policyholder would receive from the insurer only 20,000 euros, based on a compulsory insurance policy, respectively 55% less than the property is worth. Concluding, in the case of total damage, a policyholder who has a dwelling from type B could obtain up to 4000 euros above the real value of this dwelling and the owner of housing from type A could loose around 25000 euros. The following regional analysis of the Romanian counties revealed that this law had other inaccurate aspects, which, in the end, would create social inequities.

A REGIONAL ANALYSIS OF THE EXPOSURE TO NATURAL HAZARDS FOR ROMANIA

Regional disparities between Romanian counties were proved by different national or even international studies. The survey conducted by the Romanian Academy of Agricultural Sciences and Forestry set Valcea county on the first place in terms of risk of landslides. This study proved that "landslides in Valcea are much likely to occur

in comparison with that in neighbouring counties, by 380% compared to Dolj, to Olt by 345%, to Gorj by 149% and by 109% compared with Arges". Another county affected by landslides is Botosani, where 68 rural localities, 2 municipalities and 2 cities are actively affected by landslides. For 70% of the total county area the erosion risk phenomenon is still active, which may cause additional occurrence of landslides and 15 to 20% of this area suffered serious damages caused by landslides (Operational Centre of the County Inspectorate for Emergencies "Nicolae Iorga" Botosani, 2008).

In Romania, floods occur frequently because of overflowing rivers, abundant rainfall and rapid defrosting snow or of destruction of dams that occur following landslides. According to the Romanian Insurance Pool against Disasters, during the period 2005 to 2010 nearly 62,000 households were affected, of which 15,600 were completely destroyed. The total value of the ad-hoc governmental relief programs exceeded 233 millions of euros, during this period. Between 2000 and 2007, both professional and volunteer services for emergency flood occurred in 11,918 cases. In 2005, for this type of damages, were registered 6,196 requests. In 2006 the number of cases was 1,614, while in 2007 and 2004 the cases of emergency for flood damages were around 1,000. Floods in 2005 affected all counties and 1,734 municipalities encountered losses from this type of natural hazard. 93,980 households were destroyed, with 1,060 economic and social objectives and over 650,000 hectares of farmland seriously affected. The assessment of flood damage made by the Romanian government regarding Moldova region showed a total loss around 1.2 billion euros, almost 1.8% of GDP (5% of the consolidated budget of Romania). In 2006, more than 15,000 people were evacuated from approximately 800 locations. The damage was estimated at around 500 millions of euros.

According to the National Strategy for Flood Risk Management – Environmental Report (prepared by the Romanian Ministry of Environment and Forests), in 2008, rainfall in short periods of time during April to July, caused flooding. Most affected were the northern counties. 414 villages were affected from 17 counties, with 7,100 houses and 1,997 household annexes, 73,730 ha of agricultural land 76 social objectives and an important part of infrastructure destroyed or damaged.

Excess precipitations are present throughout the country. Their duration and frequency increase from plain to mountainous regions, while their intensity decreases with altitude. Most excessive precipitation falls in summer time, particularly in the north and west of the country, but also in Sub-Carpathian depression of Oltenia, on Getic Plateau and in Dobrogea. In addition, due to chaotic human actions in Romania, expanded areas may beaffected by flooding, around 3 million ha, located especially in the Danube meadow and the inland rivers from the Plain Banato-Crisan, the Siret Plain, the Romanian Plain and from Transylvania (Dragotă, 2006).

In 2008, five Romanian counties from the North-East region (Maramures, Suceava, Botosani, Iasi and Neamt) have been affected by severe flooding and landslides' resulting from the significant rain falls. The direct damages exceeded 470 million euros for 241 villages affected. Almost 2,000 km of roads were flooded and 2,000 bridges were damaged. To estimate the degree of exposure to the risk of earthquakes for Romania, INCERC accomplished a study using specific assumptions and algorithms based on national and international data. The scenario of an earthquake, at the national level, is a combination for izoseists from the years 1940 and 1977, with intensity between VI and IX MSK, the event having a return period of 100 years. The study assessed the damages for dwellings as being between 7.45 and 17 billion of U.S. dollars. The second scenario realized by INCERC assumed an earthquake intensity of VII MSK and a return period of 50 years. The total number of dwellings that may suffer damage over the third grade is estimated to 23,000.

According to the number of people lost in earthquakes during the 20th century as well as in a single earthquake (March 4, 1977) during this century, Romania can be ranked the 3rd country in Europe, after Italy and Turkey. Romania is followed by the former Yugoslavia and by Greece (Bolt, 1995; Coburn and Spence, 1992). The World Bank loss estimation after the 1977 earthquake indicated a total loss of 2.05 billion of U.S. dolllars. According to Georgescu and Pomonis (2008), "many international analysts referred to the 1977 earthquake in studies on East European economies and their first international concern about the 1977 disaster's impact was related to Romania's capacity to pay its debts and secure its economic growth (Jackson, 1977; Burakow, 1980). Some negative impact was immediately visible, while other had a period of "incubation", depending on internal and international situation. Retrospective studies in later years stated clearly that the 1977 earthquake greatly contributed to the serious economic crisis that started in Romania in 1979 and lasted at least until the end of the 1990's (Deletant, 2002; Deletant and Ionescu, 2004)".

Therefore, the insurance law should differentiate between dwellings based on this degree of exposure, not just in terms of the construction material.

A SOCIAL PERSPECTIVE ON THE COMPULSORY INSURANCE OF DWELLINGS IN ROMANIA: NEW SOCIAL INEQUITIES THAT MAY ARISE IN THE FUTURE

The comparative analysis for different European countries provides arguments to implement a compulsory insurance law for dwellings against natural hazards. The high value of poverty rate and the inequalities of income
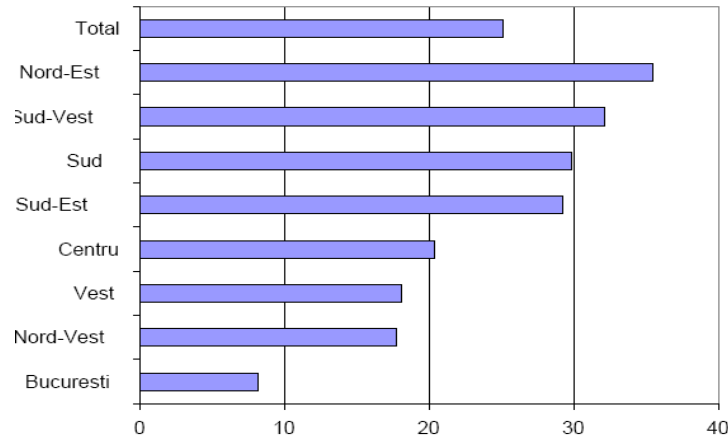
Figure 1. Absolute poverty rate by region in Romania (Poverty Assessment Report, 2007).

distribution could, at least partially, explain the Romanian exception regarding the compulsory character and the premium subvention. This solution would be motivated only if the regional distribution for social indicators such as the index of poverty, monthly average income or monthly average public pension was consistent with the risks from natural hazards. Thus, the objective of avoiding social inequity would be attained.

According to Miron et al. (2009), during the transition process, regional development has not been uniform across all regions, because the well-off regions have been capable of adapting more efficiently to the reform measures and have been catching up with the socio-economic conditions of the EU members, while the least-favoured regions have not. In the case of Romania, Bucharest-Ilfov region has registered in 2007 a gross domestic product (GDP) per capita of 10,869 euros, while in the South-West Oltenia region the same indicator was 4,466 euros (Dumitrescu-Răuţă, 2008). A deep analysis inside the South-West Oltenia region comparing the average wealth of inhabitants in Craiova with that of people from Rovinari reveals mind-boggling discrepancies (Talvescu and Dima, 2008). The reduction in social and economic disparities has become a key issue in the policy debate at EU level since countries with relatively low incomes (for example Spain and Portugal) joined the EU in 1987 (McAleavy and de Rynck, 1997). More recently, a rank order and efficiency evaluation of the EU regions in a social framework (Slavova, 2008) attests the great social divergence between the old European regions and the new ones: the Bulgarian and Romanian regions, where the best position is held by the Bulgarian region of Yugozapaden. All other Bulgarian and Romanian regions lie at the lower end. Overall, the Bulgarian regions do better than the Romanian ones (Miron et al., 2009).

In Romania, the transition period was accompanied by an explosion of poverty. If in 1989, 7% of the population was affected by poverty, in 1994, poverty rates ranged between 22% (World Bank, 1997) and 34%, according to The Reseach Institute for Quality of Life (RIQL) (Zamfir, 1995). After 1997, there was a second wave of impoverishment. In 1999, the poverty rate increased by 60% compared to 1995, reaching 41.2%. In 2000, this indicator reached a value of 44%. In Romania, it can be found two types of poverty: a distributional poverty, caused by the inequity in distribution of resources, but also a re-distributional one, as a result of the deficit in social security (Poverty situation in Romania, the Report of RIQL and UNPD, 2001). Since 2000, the period of rapid economic growth in Romania caused a substantial decline in absolute poverty from 35.9% in 2000 to 13.8% in 2006. In spite of the significant progress in reducing absolute poverty, the benefits of growth have failed to reach all segments of the population. The gap between the rural and urban living, as well as the regional disparities, remained visible. Although rural poverty was clearly diminished since 2000 (48%), it was still quite high in 2006, with a level of 22.3%. The poverty rate in urban areas was around 7% in 2006, with a significant decrease from 26% (Figure 1) (Romania – Poverty Assessment Report, 2007).

As in previous years, the outbreaks of poverty were mostly concentrated in rural areas. Over 70% of the poor population lived in rural areas and the risk of poverty faced by the rural population is 3 times higher than the risk faced by the urban population. The analysis for Romania revealed significant differences in the incidence of poverty by regions. Eastern and southern regions continue to remain the poorest, although according to the 2003 Poverty Map, absolute poverty is not distributed homogeneously between counties and localities within regions (Figure 2) (Romania – Poverty Assessment Report, 2007). According to UNDP's poverty map for
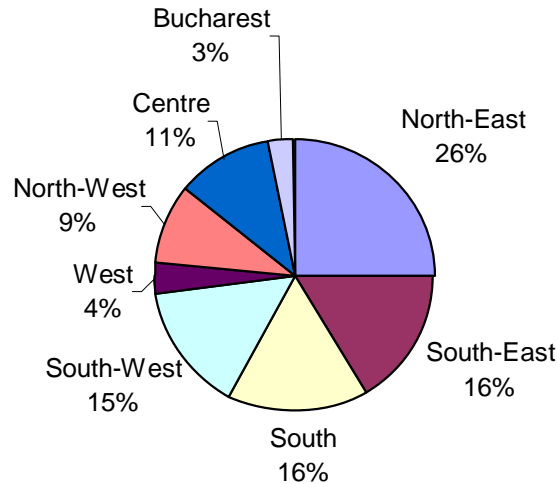
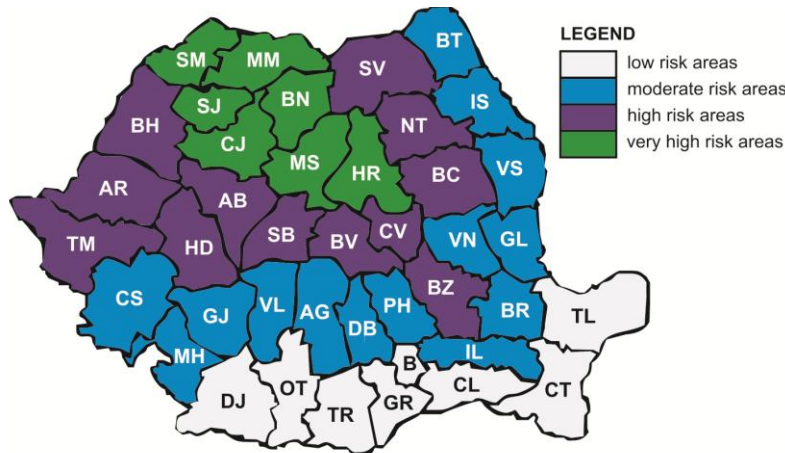**Figure 2.** The regional distribution of poverty in Romania.

Figure 3. Map of Romania with regional flood risk exposure – ESPON.
AR: Arad; AG: Arges BC: Bacau; BH: Bihor; BN: Bistrita-Nasaud; BT: Botosani;
BV: Brasov; BR: Braila; BZ: Buzau; CL: Calarasi; CS: Caras-Severin; CJ: Cluj;
CT: Constanta; CV: Covasna; DB: Dâmbovita; DJ: Dolj; GL: Galati; GR: Giurgiu;
GJ: Gorj; HR: Harghita; HD: Hunedoara; IL: Ialomita; IS: Iasi; IF: Ilfov; MM:
Maramures; MH: Mehedinti; MS: Mures; NT: Neamt; OT: Olt; PH: Prahova; SM:
Satu Mare; SJ: Salaj; SB: Sibiu; SV: Suceava; TR: Teleorman; TM: Timis; TL:
Tulcea; VS: Vaslui; VL: Vâlcea; VN: Vrancea.

Romania, there are regions dominated by generalized rural poverty. In general, it appears as an "arc of poverty". In the north-east of the country, poverty appears to affect the entire rural community territory, while in central regions are found only isolated islands of poor communities. The Moldova Region accumulated the most extensive and deep poverty community with the lowest human capital (Sandu, 1999). Moreover, Moldova has developed an extremely poor infrastructure, poor conditions for living and a low degree of urbanization (45.5% in 2000). At the opposite extreme, is the capital

Bucharest and Transylvania. The poverty community has a peripheral character. In other words, poor communes are grouped mainly along the borders of the country and counties and also poor villages are considered as peripheral part in the townships they belong (Sandu, 2000).

Figure 3 shows a regional analysis for Romania was realized taking into consideration, on the one hand, the risk exposure to floods, earthquakes and landslides and, on the other hand, different social indicators, such as net average salaries and public pensions. All of them were linked to a ruralisation index, to highlight the social
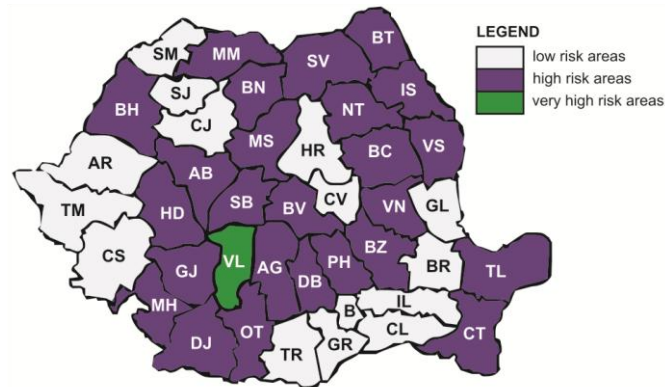
Figure 4. Map of Romania with regional landslides risk exposure – European geological survey.
AR: Arad; AG: Arges BC: Bacau; BH: Bihor; BN: Bistrita-Nasaud; BT: Botosani; BV: Brasov; BR: Braila; BZ: Buzau; CL: Calarasi; CS: Caras-Severin; CJ: Cluj; CT: Constanta; CV: Covasna; DB: Dâmbovita; DJ: Dolj; GL: Galati; GR: Giurgiu; GJ: Gorj; HR: Harghita; HD: Hunedoara; IL: Ialomita; IS: Iasi; IF: Ilfov; MM: Maramures; MH: Mehedinti; MS: Mures; NT: Neamt; OT: Olt; PH: Prahova; SM: Satu Mare; SJ: Salaj; SB: Sibiu; SV: Suceava; TR: Teleorman; TM: Timis; TL: Tulcea; VS: Vaslui; VL: Vâlcea; VN: Vrancea.
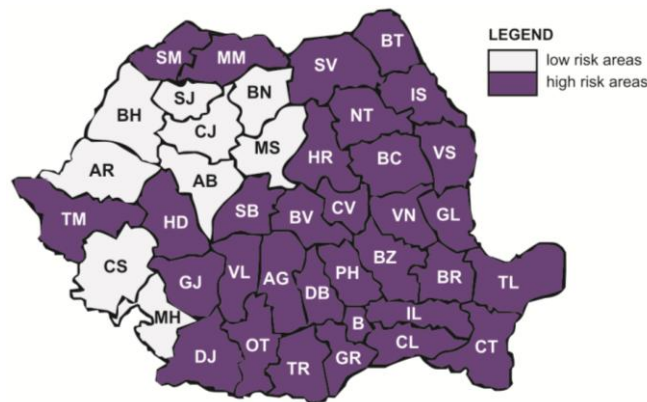

Figure 5. Zoning Romanian territory in terms of peak acceleration of earthquakes with an average recurrence interval of 100 years.
AR: Arad; AG: Arges BC: Bacau; BH: Bihor; BN: Bistrita-Nasaud; BT: Botosani; BV: Brasov; BR: Braila; BZ: Buzau; CL: Calarasi; CS: Caras-Severin; CJ: Cluj; CT: Constanta; CV: Covasna; DB: Dâmbovita; DJ: Dolj; GL: Galati; GR: Giurgiu; GJ: Gorj; HR: Harghita; HD: Hunedoara; IL: Ialomita; IS: Iasi; IF: Ilfov; MM: Maramures; MH: Mehedinti; MS: Mures; NT: Neamt; OT: Olt; PH: Prahova; SM: Satu Mare; SJ: Salaj; SB: Sibiu; SV: Suceava; TR: Teleorman; TM: Timis; TL: Tulcea; VS: Vaslui; VL: Vâlcea; VN: Vrancea.

inequities of this compulsory insurance law. Studying the map for recently occurred floods (Figure 3), as the most frequent natural hazard in Romania, it can be observed that northern and western regions of Romania were the most commonly affected. As it can be observed from the following maps, more than 50% from the Romanian counties have difficulties with the adverse consequences of floods and, at the same time, have limited financial possibilities to cover the losses from their own financial resources.

As shown in Figure 4, the most part of the Romanian counties are at high risk of landslides, with one county – Valcea – with very high exposure to this natural hazard and 15 counties at low risk. An important part of
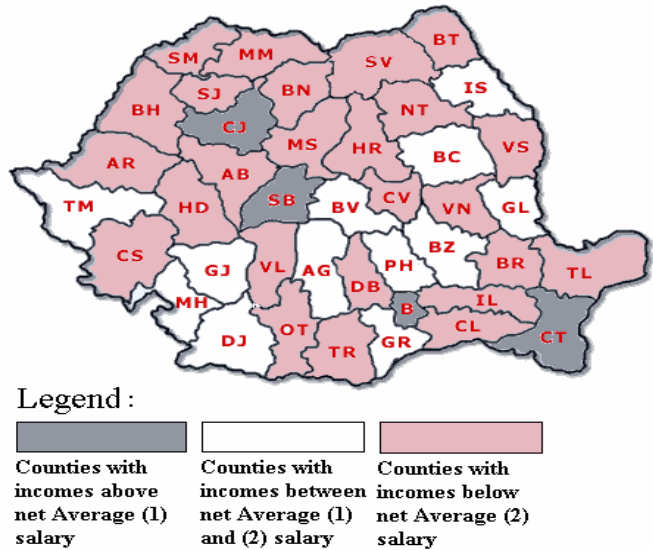
Figure 6. The geographical distribution of net average salaries for the Romanian Counties (2008).

20-30%   30-40%   40-50%   50-60%   60-70%
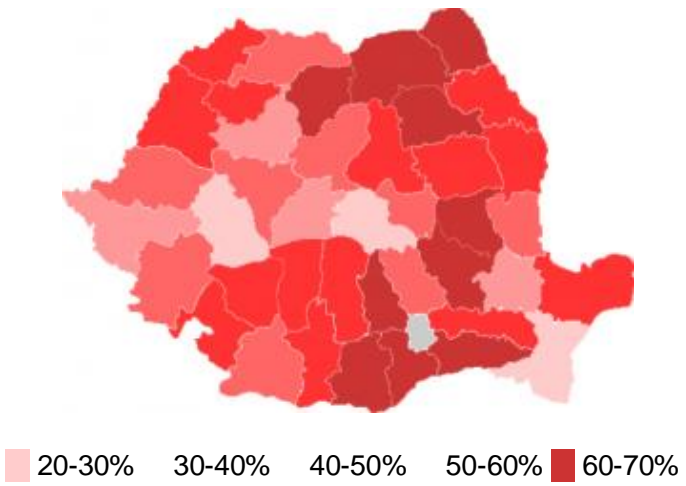
Figure 7. The geographical distribution of the degree of ruralization for the Romanian counties.

Romania's territory has a significant exposure to earth-quakes. Romania, together with Turkey, Greece and Italy are the most exposed European countries to earth-quakes. According to the map from Figure 5, only the western part of Romania is somewhat less exposed. A regional analysis based on monthly average levels for net salaries and public pensions was performed for Romania using official data from National Institute of Statistics with a distribution of these values on two maps for the Romanian counties was made (Figures 6 and 7). According to the National Institute of Statistics, at the end of 2008, 37 of 42 Romanian counties had net salaries below the national average (1,361 RON). Counties with incomes above average net salary (noted by average 1 in Figure 6) were Bucharest (1,803 RON), Ilfov (1,668 RON), Sibiu (1,410 RON), Cluj (1,443 RON) and Constanta (1,381 RON). However, counties with the lowest salaries were in northern and central Romania, such as: Vrancea (1,080 RON), Neamt (1,061 RON), Covasna (1,057 RON), Vaslui (1,113 RON), Teleorman (1,010 RON), Maramures (1,009 RON) and Harghita (901 RON). Analyzing only this variable, the most affected by flooding in the recent years had the lowest monthly incomes. Additionally to the weighted average net monthly salary by counties, a new indicator was added in the analysis, which is the simple arithmetic average of

monthly net salary calculated on counties (noted by average 2 in Figure 6 and having a value of 1,203 RON). It can be found some improvements in the financial situation in several counties in Romania, but the previous conclusion remains: With few exceptions, the most exposed counties to different natural hazards had the level of net salary below the net monthly average salary (average 2). Counties from moderate flood risk areas had, in the best case, a middle position with a net monthly income between the two average values previously mentioned. Other counties from these areas have monthly net salaries below the lowest average salary used in this analysis.

Generally, in a household, the insurance premium would be paid from monthly salaries, whether it is a compulsory insurance or an optional one. For a more detailed analysis of the financial impact of this law, the paper highlighted the counties with the lowest incomes and expenditures per household, in order to find the amount remaining after these expenses are covered. According to the data provided by the Romanian Institute of Statistics, in the year 2008, the counties Bacau, Botosani, Iasi, Neamt, Suceava and Vaslui recorded the lowest incomes per household. The regional analysis revealed the differences between monthly revenues and expenditures with the following levels (RON): North-East: 138.11; South–East: 192.6; South (Muntenia region): 226.23; South–West (Oltenia region): 248.35; West: 156.93; North–West: 234.14; Centre: 242.61; Bucharest and Ilfov: 398.35.

The smallest difference between revenue and expenditure is recorded in the counties from the North-East region, with moderate and high flood risk. A monthly insurance premium for the compulsory insurance of 7 and 3.5 RON, respectively (for dwellings type A, and respectively, type B) for the North-Eastern region of Romania represents 5 and 2.5%, respectively from the net monthly average saving. For the voluntary insurance, the lowest voluntary insurance premium represents 15.22% of the remaining amount of revenues. However, in Bucharest and Ilfov Counties, the proportion of the compulsory insurance premium in monthly net saving could represent 3.5% and 1.75%, respectively, while the voluntary insurance premium can reach a proportion of 5.28%. Household Income and expenses depend, also on the position of each county – in urban or in rural areas.

In the rural areas, average household income across counties in the last quarter of 2008 was 1,919.6 RON and the expenditure per household was 1,776 RON, the difference between revenues and expenditures being of 143.6 RON. In urban areas, average household income was 2,315.3 RON and the expenditure was 1,776 RON, the difference being of 309 RON, double than in rural areas. Generally, the dwellings from type B are located in rural areas and the others are located in urban areas.

In Figure 7 a regional analysis for Romania regarding the degree of ruralization was presented. The highest values for this indicator are registered by Dâmbovita (with 69.96% from its population living in the rural areas), Giurgiu (69.15%), Teleorman (66.73%), Suceava (66.38%), Bistriţa-Năsăud (63.88%), etc. The most urbanized counties are: Hunedoara (with only 23.04% rural population), Brasov (25.45%), Constanţa (29.10%), Sibiu (33.46%), Cluj (33.80%), Braila (34.68%), Timis (39.27%), etc. Figure 8 highlights the conclusion that most counties from very high and high risk areas have also registered, with some known exceptions, lower levels for monthly public pension either below the simple arithmetic average of monthly pension (Average 2 pension: 500 RON), or between this values and the weighted average monthly pension by counties (Average 1 pension: 565 RON). Consequently, another conclusion to the previous one must be added: in terms of public pensions, it can be observed a greater heterogeneity between the counties with high exposure to natural hazards and those from areas with moderate or low risk of floods.

Miron et al. (2009) determined a special index for each Romanian region, named the population rejuvenation index (PRI), with the following values: SW: 0.004; NE: -0.94; SE: -0.12; SM: 0.16; W: -0.39; NW: -0.89; C: -0.07; B-I: 2.25. One of the most important conclusions of this study is that, for all regions, except for Bucharest-Ilfov, the population is aged, with little rejuvenation. If the population is increasingly ageing and is formed by already pensioners or soon becoming pensioners, the insurance premiums are/will be paid from the public pension, with a negative influence of these compulsory payments for the insurance of dwellings on each household budget.

EQUITY ISSUES RELATED TO THE COMPULSORY INSURANCE FOR DWELLINGS IN ROMANIA

Different social indicators presented into a regional analysis across Europe and then only for Romania, had already pointed out the social imbalances which could occur with the current form of the law. In order to bring together the political measure with the social equity criteria, the particular conditions of its application were investigated and its expected consequences revealed. The analysis of the equity features of the compulsory insurance law for dwellings grounded on several aspects. First, the opportunity of the law from the political, economical and institutional point of view was discussed. Secondly, some insights on the effects of the regulation on the insurance market were presented. Third, based on an econometric model, the equity generated by the compulsory insurance for individuals through distributive and redistributive mechanisms was analysed.

The social equity is a very complex concept, combining economic, financial and social aspects. It is closely
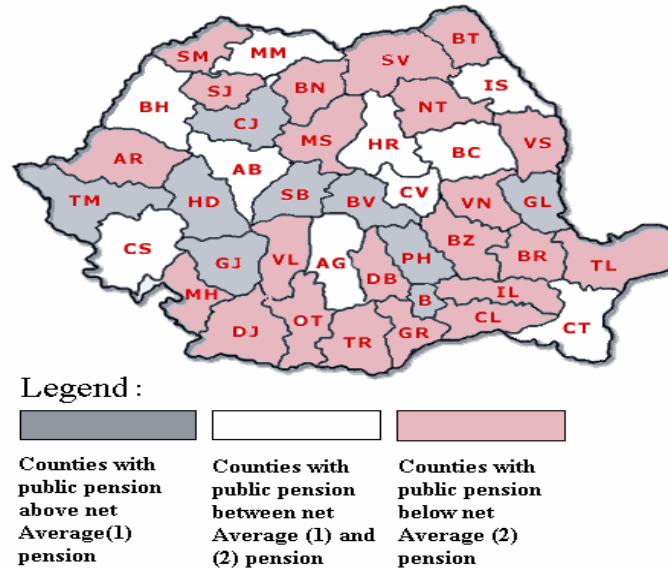
Figure 8. The geographical distribution of average public pension for the Romanian counties (2008).

related to the Pareto optimum theory regarding the efficiency of the social choice. In a few words, it states that a certain allocation solution is Pareto optimal if there is no other allocation that can be put in place without disadvantaging at least one person (Văcărel et al., 2003). Consequently, two main branches of the social equity theory emerged, respectively the utilitarism and the egalitarism. The main difference between the two currents resides in the coefficient of inequality aversion assumed to be characteristic to the society (0 in the case of the utilitarian approach and tending to infinite in the case of the egalitarian one) (Fleurbaey, 1996). The utilitarian view focuses on the maximization of the total utility seen as an aggregation of the individual utilities (the Bergson-Samuelson social utility function), whereas the egalitarian approach is concerned on the welfare of the most disadvantaged (Rawlsian social utility function).

The analysis from the perspective of the social equity and particularly that of the egalitarian approach is usually provided in the case of fiscal measures where the characteristics of horizontal and vertical equity are considered. The horizontal equity refers to equal treatment addressed to all persons finding in similar situations. The vertical equity states that the most advantaged people must contribute more, in order to experience the lower aggregate utility loss at the society level. Regarding the impact of an administrative measure in terms of social equity, two different approaches can be considered, respectively the distributional equity – concerning the degree of equality induced by the income distribution and the redistributive equity – related to the efficiency of the income redistribution realized by the public authority. The

social equity issues related to the compulsory insurance for dwellings in Romania are presented below.

Regarding the motivation of this law, the main issue intended to be solved by imposing this measure is to lower the pressure on the public budget if one or more natural hazards occurred. Searching deeper into the motivation of such a measure several questions arise. First of all, should the public authorities intervene in order to limit the effects of this risk raised from a natural hazard? The particular indicators already presented in this paper concluded that the Romanian authorities have limited finacial means to mitigate these effects. The theory of the social equity on these issues relies on two principles. According to the principle of the utilitarism in act, every allocation which will increase the utility and equalize the utility among members can be considered desirable. In this context, the public intervention in order to mitigate the effects of an earthquake, landslide or flood can be considered appropriate. But, the state intervention may not be adequate due to the increase of the moral hazard that it may generate. In a more general view, the institutional utilitarism considers sustainable only the actions that are in accord to the institutions of the society (in this case the institutions are to be perceived as cultural and traditional norms).The analysis of the compulsory insurance for dwellings from this point of view is very complex and cannot be achieved in this work. However, a few insights may be: The restrained liberty of action, resulting from the fact that the state imposes a certain behaviour hence restraining the consumers' options, the repartition of the costs and the participation to losses, which should be analysed from

the point of view of the equity in the context of the general fiscal and parafiscal system, the technical and administrative issues related to the monitoring systems etc.

The present measure takes the form of a general compulsory insurance with subvention on premiums. According to Wiemer and Vining (1999), the compulsory insurance, as well as that with administrative subvention on premiums are instruments by which the public administration can solve different problems observed on the market: the existence of incomplete insurance markets, the negative externalities arising from the risk occurrence, a low level of culture or education in the insurance field. The paper explained how this measure effectively contributes to solving existent problems in the context of the Romanian economic reality. A first issue identified by the aforementioned authors is the income-plete insurance markets and in the context of asymmetric information, the insured persons will be usually those with a higher exposure to the insured risks. In order to bring the aggregate risk to an acceptable level, the compulsory insurance can be a solution. On the other hand, the experience of the floods and landslides in the last years showed that the adverse selection cannot be considered as a major issue on this market. Hence, it can not be considered as a practical reason for a compulsory insurance for dwellings to be implemented. Moreover, the present form of the low introduces the adverse selection due to an insufficient appraisal of risks in establishing the insurance premium.

Wiemer and Vining (1999) consider also appropriate the intervention of the government by requiring compul-sory insurance when the occurrence of the risks affects other persons than the beneficiary and he could not pay the damages otherwise, as in the case of car accidents or malpraxis. In the case of the dwellings insurance against natural disasters, this argument cannot be considered a viable motivation of this measure, due to quasi-absence of the external effects. The only sustainable reason for this law is the paternalist behaviour of the public authorities which may have detected a lack of culture or education in the case of dwellings insurance or a myopia regarding the risks insured and used this measure in order to correct the problem. In its current form, this law may increase informational asymmetry on this market through the moral hazard. The law imposes equal premiums (10 and 20 euros, respectively according to the type of dwelling) and equal compensation in case of risk producing (10,000 and 20,000 euros, respectively), without taking into account the specific level of risk, which varies significantly among counties as proved in previous chapters or the market value of the property, also demonstrated to have a large range. Moreover, in a previous section, we demonstrated that in some cases the compensation may largely exceed the market value of the dwelling. Corroborating these facts with the level of corruption perceived in Romania (one of the highest in

the European Union), we can reasonably conclude that there are premises for moral hazard behaviours.

Another important issue is related to the allowance of an optional insurance policy in addition to a compulsory one. Until now, the compulsory law remained inconsistent because, even if the compensation provided by the compulsory insurance is often insignificant compared to the market value of the property, the technical problems regarding the compensation received from both sources remained insufficiently regulated. A further modification of the law admitted the optional insurance as a complement, but not as a substitute for the compulsory insurance policy. The measure can be motivated by the objective of the government of creating a complete insurance market. On the other side, considering the nature of the insurance and the market competition requirements, as well as the need to provide the beneficiary with the free choice for the most appropriate insurance company, in the context of the compulsory insurance provided by a pool of insurers including only a part of the insurers on the market, this measure can have mitigated short term effects on the competition among insurers.

Another legal provision is to introduce the insurance with premium subvention. Wiemer and Vining (1999) considered that the premium subvention can be associated with the asymmetric information, the equality of access, the consumers' myopia or an incorrect risk assessing. The problem of the asymmetric information was discussed earlier. Interesting considerations can be introduced regarding equality of access. In theory it is often explained by the lack of incentives for those individuals with lower level of incomes to agree the insurance policies due to the high level of the insurance premiums (the case of Romania was proved in the previous section of the study). Moreover, the law allows to be insured those properties which otherwise would be considered non-insurable in an optional insurance policy, which may correspond to an egalitarian and paternalist approach, but increases the aggregate risk. This measure can also solve the problem of the consumers' myopia. The premiums imposed for the compulsory insurance policies are lower than those corresponding to the facultative ones and the subvention makes the insurance contract more attractive for a large mass of homeowners. On the other hand, the considerations regarding the moral hazard exposed above stand, being even empowered due to the premium subvention.

The solution adopted by the Romanian authorities was to impose the subvention to the insurance companies on a voluntary basis. Hence, the premium is established by the state and imposed to the insurance companies, but the insurers may choose to enter in the insurance pool and hence provide the compulsory insurance or not to enter and in this case, to provide only facultative dwellings insurance. From the insurance companies' point of view, the solution may seem equitable. Hence, a distinction has been made between the insurers

according to the profit margin from the optional class of insurance for dwellings. However, generally, an indirect reduction of the profit margin of the insurance companies not having joined the pool is expected. It could be generated directly by the cross-selling opportunity of the insurers included in the pool for voluntary insurance policies together with the compulsory ones, but also indirectly by a better image on the market which creates advantages in terms of market share. Another direction regarding the study of the social equity issues related to the compulsory insurance for dwellings in Romania can be focused on the beneficiaries' individual utility and contribution. From this point of view the accomplishment of the principles of vertical and horizontal equity were tested. Prior to any attempt of analysis, a statement has to be formulated regarding the private or public character of this type of insurance. The existence of the compulsory law for dwellings proved that the Romanian public authorities considered the insurance paid claims in case of earthquakes, landslides or floods as public goods and the analysis of the equity issues becomes relevant.

The vertical equity principle states that the contribution must be established according to the financial power of the contributors. On a more general basis, it tries to equalize the aggregate utilities of the consumers, hence allowing the low-income consumers to obtain a higher utility with a lower contribution on behalf of the high income contributors. However, in order to be equitable, an administrative measure must not create the opportunity for a consumer to obtain abnormal gains. In order to verify this hypothesis, considering the lack of individual data, due to the short period since the law operates in Romania, we analyzed the data aggregated at the county level. Considering the utility of the compulsory insurance proportional to the aggregated risk of earthquake, landslides and floods, an econometric test was conducted, verifying the relationship between the utility of the compulsory insurance, the average income and the degree of ruralisation of each county. The utility of the dwellings' insurance can be considered proportional to the aggregated risk of earthquakes, landslides and floods. Therefore, an index of the aggregated risk was built upon the following methodology.

This index took into consideration each insurable risk (from the compulsory insurance law for dwellings point of view) and included each county in one of the ordinal classes according to the probability of an event occurring. The classes were established according to the data included in Section 6 of the study. Hence, we chose to form two classes scale for earthquake (the low probability of risk producing is associated to 0, otherwise 1), a three-classes scale for landslides (the low probability of risk producing is associated to 0, a high probability to 2) and a four-classes scale for floods (the low probability of risk producing is associated to 0, a high probability to 3). In the hypothesis that the risks assessed presented in Section 5 are independent, the aggregated risk index was

obtained by adding the three indexes minus 1. This form of aggregation is needed in order to maintain the ordinal character of the variable. In order to make additional robustness tests, a second index named risk 2 was computed as a binary variable taking the value 0 for low aggregated risk (when the first index was 0 or 1) and 1 for high aggregated risk (when the risk index was higher than 1). The degree of ruralisation is also built on a six-class scale, where 0 represents a low level of ruralisation and 5 correspond to a high level of ruralisation.

In order to realize a more detailed profile of each county, two other indicators were used; respectively, the unemployment rate provided by the National Institute of Statistics (2010) and the index of disparities proposed by Goschin et al. (2008) and computed using the data provided by the National Institute of Statistics in its 2010 report. The index is computed as follows:

$$D_i = \sqrt[3]{\frac{GDP_i}{GDP} \times \frac{AE_i}{AE} \times \frac{UR_i}{UR}}$$

where:
Di is the composite index of disparities (the multi-criteria distance to the national average for the territorial unit i); GDP_i, AE_i and UR_i stand for GDP per inhabitant, average monthly earnings and unemployment rate in the county i; GDP, AE and UR are the national averages for GDP per inhabitant, average monthly earnings and unemployment rate. The index is interpreted compared to 1, showing developed counties for values higher than 1 and less developed ones for values below 1.

Regarding the average income, two tests have been made, respectively taking into account the average wage and the average monthly pension. A negative correlation of this indicator with the utility would be a proof of the law respecting the vertical equity principle. The results of the regressions were summarized in the Table 1. Due to the negative coefficient associated to monthly income per household in the first equation and third equation, it can be concluded that the vertical equity principle is fulfilled for the category of workers, suggesting that for the low-income counties, the utility of the insurance is higher, being in line with the egalitariste approach.

In the second and forth equations, the correlations with the utility of the compulsory insurance reveals interesting insights. The positive coefficient of the average pension proves that on the segment of old inhabitants the vertical equity principle is not respected. The pensioners with lower pension obtain a lower utility as effect of the compulsory insurance, the pensioners in riskier counties having a higher pension. The degree of ruralisation is positively correlated to the utility of the insurance, showing that the utility of the insurance is higher for more ruralised counties, when average pension is tested. The relation is verified controlling for unemployment rate as indirect factor of income distribution, showing that the

Table 1. Correlation of the natural risk with social variables.

Equation	Monthly salary	Public pension	Ruralisation index	Index of disparities	Unemployment rate	Pseudo R-squared	Probability (LR-stat)
(1) Risk index	-0.041 (0.03)	-	-	-	-	0.042	0.025
(2) Risk index	-	0.04 (0.00)	0.67 (0.1)	-11.6 (0.00)	-0.45 (0.02)	0.123	0.00
(3) Risk 2 index	-0.01 (0.05)	-	-	6.42 (0.12)	-	0.09	0.09
(4) Risk 2 index	-	0.03(0.00)	0.91(0.02)	-5.26 (0.04)	-0.27(0.08)	0.21	0.02

Results for the ordered logit [(1) and (2)] and logit models [(3) and (4)]. P-values in brackets.

utility is higher in counties with low unemployment rates and rejecting once more the vertical equity principle in the case of elderly. By extension, this finding may put into question the respect of the vertical equity principle also for another disadvantaged category, namely the unemployed persons. The negative correlation between utility and the index of disparities may be a proof that on a macroeconomic level, the compulsory insurance for dwellings may reduce disparities at regional level, providing higher utility in less developed counties.

On the other hand, the irrelevance of the ruralisation index in both Equations 1 and 3 made questionable the vertical equity principle, knowing that the average income is significantly lower in rural areas than in urban ones. There might be an argument for the hypothesis that the law does not respect the horizontal equity principles, too. The inhabitants in rural areas of the counties with low aggregated risk contribute with the same resources as those from the counties with high risk exposure, obtaining a significantly lower utility. Thus, it was proved that the compulsory law for dwellings does not respect the horizontal equity principle, but also the vertical equity one, considering that more fragile social categories partially contribute to the utility created for the persons with high incomes, especially in the case of unemployed and retired people.

Another argument sustaining the hypothesis that this measure does not respect the vertical equity principle is related to the possibility of obtaining abnormal gains, especially for the persons in rural areas having a high aggregated risk. The fixed compensation of 10,000 euros might significantly exceed the market value of the dwelling, hence allowing the owners to obtain an undue compensation.

Aaberge (2011) studies the equity of opportunities allocation. They formulate the equity of opportunity principle implying the existence of the equality of opportunities for all citizens. In terms of equity in outcome, the equality of opportunities translates into two principles: The compensation principle, stating that the outcome resulting from opportunities without effort is not allowed and the remuneration principle encouraging the marginal outcome resulting from a supplementary effort. A possible solution would be to limit the compensation at the level of the market value of the property, in order to

eliminate the incentive for moral hazard behaviour.

An additional discussion can be made on the society's degree of acceptance of this measure. From the redistributive equity point of view, Krawczyk (2010) shows that the redistribution of income is accepted by the society if it results from the fate (bad luck) and less accepted if it is generated by an inequality of efforts. Therefore, the present measure has the premises for a high level of acceptance, if the compensation principle stands. To conclude, the compulsory insurance for dwellings law in Romania although has premises for complying with the equity principles, creates opportunities for abnormal gains and for horizontal inequalities and, moreover, inequalities between age categories, placing an undue burden on the retired and unemployed people, which are more fragile categories from the social risk point of view.

CONCLUSIONS

Over time, most European countries were affected by natural disasters. Therefore, why only in Romania was issued a compulsory insurance law for dwellings? The low penetration rate of the voluntary insurance for dwellings, along with the social situation placing Romania on the last rank in the European Union, as well as the limited financial resources that can be mobilised by the public authorities in case of natural disasters are arguments for the solution of a compulsory insurance. It is obvious that discrepancies between regions and nations will never disappear, since developed regions possess resources needed to increase their prosperity, while less favoured regions lack the means to alleviate poverty and this amplifies their backwardness. These differences are the result of long-term historical and political evolutions and diminishing their effects is a thorny and costly process (Volkery et al., 2006). Consequently, Romania should use this regulation in order to achieve social objectives, too.

As submitted, the compulsory insurance made only one difference between housings, related to the construction materials. However, for the voluntary insurance, the differentiation is based on building material, the construction age, the location (urban or rural), the category of housing and the seismic zone. If for the voluntary

insurance policies, the insurance premium decreases as the risk is lower and the house is safer, for the compulsory insurance things are just the opposite. In other words, the system can be regarded as a form of social transfer of funds, required by the state. In our opinion, the compulsory insurance law for dwellings is beneficial for Romania because it was proved over time that the natural disasters caused damages far exceeding the financial potential of the Romanian state. However, although this law was prepared over 10 years, we believe that it can be improved, for example by increasing the insurance premium for homes from areas with very high/high exposure to natural disasters and by correlating the sum insured with the real value of the dwellings.

On the other hand, analysing the efficiency of the redistribution in alleviating disparities, a simple econometric model provides evidence that the vertical equity principle applies for workers, but not for retirees, creating a pression on most fragile categories of population in term of income adjustments – the elderly with low income and unemployed people. Thus, the social objective of this law is compromised. A possible solution can be to adjust the premium according to the monthly income of the beneficiary, at least for the retired and unemployed people.

ACKNOWLEDGEMENTS

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