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RESEARCH ON CERTAIN INSURANCES WITH APPLICABILITY IN THE FIELDS OF VETERINARY MEDICINE AND AGRICULTURE

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Abstract

The paper presents a review of several types of insurance applicable to general fields but also specifically for veterinary medicine and agriculture. At the same time, some mathematical calculation formulas for life insurance, single premium and pension insurance are presented. Finally, two reports issued by Financial Supervisory Authority for the years 2022, 2023 are presented regarding the subscriptions related to optional home insurance, respectively the number of contracts in force

***Key words**: insurances, veterinary medicine, agriculture, life, diseases.*

INTRODUCTION

The insurance represents a classic form of risk transfer from the insured to specialized companies, called insurers.
Insurance has been around since ancient times.
Insurance began to appear when people became aware of the risks to which their activity, goods, health or even their lives could be subjected. The main threats in those days were represented by extreme weather phenomena, natural catastrophes or diseases.
The Code of Hammurabi (1750 BC) included the first regulations regarding insurance activity, especially as a result of the development of maritime transport. In that code it was regulated how merchants could be exempted from repaying credits if their goods were stolen during transport. Merchants could pay creditors a certain amount of money. The amount of money they paid then corresponds to the insurance premium today.
The loss of harvests as a result of pests, the death of animals, fire were the main risks to which the Romanian household was subjected till the year of 1744.
The first insurance company in Romania appeared in 1744 in Brașov and was called 'Casa de Incendiu'. In 1906, the Agricola Company was established, which was oriented towards agricultural insurance. The Autonomous Directorate of State Insurance appeared in 1942. This company had a diversified portfolio of all types of insurance. The State Insurance Administration (ADAS) was the only insurance company in the period 1952-1990.
After the Revolution of 1989, the insurance market in Romania diversified, both in terms of number of companies and types of insurance products existing in the companies' portfolios. (Ciurel et al., 2022)

MATERIALS AND METHODS

We have to look at the insurance activity from several perspectives: the legal perspective, the financial perspective and the economic perspective.
Classification criteria and categories of insurance are given by the object and the legal form of realization.
According to the object of the insurance:
- property insurance (buildings and other constructions, household goods, fixed or circulating assets, vehicles, agricultural crops, animals, etc.);
- personal insurance (death, temporary or permanent loss of work capacity, reaching a certain age). Personal insurance can be: life insurance or accident/health insurance;
- third-party liability insurance - the insurer undertakes to compensate material damages or bodily injuries that the insured has caused to third parties. The object of these insurances is

legal and/or professional civil liability.
According to the legal form of realization:
- compulsory insurances (by the effect of the law) - the relations between the insured and the insurer, as well as the rights and obligations of each party, are established by law, for example: car liability insurance, home insurance against natural disasters;
- optional insurances - are the insurances in which the terms of the insurance contract are established based on the agreement of will between the insurer and the insured/contractor.
Insurances are divided into - general insurance and life insurance.
We consider that the following insurance classes are of particular importance in the veterinary medical field:
Class 1. Accidents, including accidents at work and occupational diseases;
Class 2. Health;
Class 3. Land vehicles, excluding railway rolling stock, covering damage or loss related to: motor vehicles, other vehicles;
Class 4. Railway rolling stock covers damages or losses related to it;
Class 5. Aircraft cover damages or losses related to them;
Class 6. Maritime, lake, and river vessels cover damages or losses related to them;
Class 7. Goods in transit, regardless of the mode of transport, which cover damage or losses related to merchandise, luggage, and other goods;
Class 8. Fire and natural calamities, which covers damage or loss to property, other than those mentioned in classes 3-7, caused by: fire, explosion, storm or other natural calamities, nuclear power, subsidence and other landslides;
Class 9: Other damages or losses related to goods other than those mentioned in classes 3-7, caused by: hail, frost, theft, other events not covered by class 8;
Class 10. Motor civil liability, for the use of land motor vehicles, including the liability of the carrier;
Class 11. Civil liability for aircraft insurance, including the liability of the carrier;
Class 12. Civil liability for the insurance of maritime, lake, and river vessels, including the liability of the carrier;
Class 13. General civil liability, exclusively those mentioned in classes 10-12;
Class 14. Credit assurances;
Class 15. Guarantees assurances;
Class 16. Various financial losses related to unemployment, unstable weather conditions, failure to achieve benefits, current expenses, unforeseen commercial expenses, depreciation of market value, rents and other income, other indirect commercial losses, other financial losses;
Class 17. Legal protection: expenses related to judicial procedures and other judicial expenses;
Class 18. Assistance available for people in difficulty during travel or absence from home or usual residence.
Regarding personal insurance, the contract composition theorem can be applied:
If A is a life insurance composed of the partial insurances A_1, A_2....A_n and P_1, P_2....P_n are the premiums corresponding to these partial insurances for the same insured, then the value of the total premium for A is:

$$P = P_1 + P_2 + ... P_n$$

Sum assured in case of survival at the end of the insurance term.
Calculation of the single premium:

$$P = M(X)$$
$$X: \begin{pmatrix} v^n & 0 \\ np^x & nq^x \end{pmatrix}$$

Retirement insurance (Popescu et al., 1999):

$$P_x = Sa_x = S\frac{N_x}{D_X}$$

Insurance class 9: animal insurance, represents a form of insurance through which animals can be insured, belonging to natural and legal persons; animals received for use by legal entities and belonging to other legal entities, as well as animals received for breeding or fattening by natural or legal entities, based on contracts concluded with legal entities.
The following categories of animals can be included in the insurance, grouped according to the criteria of species, quality classes, age, exploitation and destinations: cattle and buffaloes; pigs for breeding; fattening pigs; young pigs; sows with piglets until weaning; draft horses; thoroughbred horses; purebred dogs; bee families/hives; fish from farms and fish farms.
In general, insurance companies grant compensation for damages directly resulting

from the occurrence of the following risks:
Accidents occurring inside the shelter:
- acute flatulence of animals due to feed; dystocia; internal injuries caused by swallowing objects (except reticulitis or traumatic pericarditis injuries); sudden hitting or injury; attack by wild animals, including poisoning from snake bites and venomous insect stings; injury or death caused both directly and as a result of snake bites and venomous insect stings. Injury or death caused both directly and as a result of the destruction (collapse) of the shelter, as a result of natural events or phenomena: fire (including the release of smoke, gas or vapours, as a result of the fire); explosion; lightning; crashes, falling bodies (aircraft parts, meteorites, building construction elements); accidental damage to the installations and/or technical equipment related to shelters; earthquake, flood, storm, hail; extreme natural phenomena (tornado, hurricane); weight of ice and/or snow layer, snow avalanche; landslides and/or landslides.
Accidents occurring outside the shelter:
- sudden hitting or injury; attack by wild animals, including poisoning from snake bites and venomous insect stings; road accidents; the drowning; the effects of temperature factors (sunstroke, frostbite).
Most insurance companies do not cover damage caused, produced or aggravated by, or as a consequence of:
- war, invasion, action of an external enemy; nuclear reaction or radiation or radioactive contamination; pollution, leakage or contamination of any nature; pyrotechnic devices and materials, ammunition, explosive devices and firearms; parasitic diseases for which treatments have not been carried out; diseases already existing at the conclusion of the policy; theft under any conditions and in any form; empirical treatments, unauthorized or carried out by unqualified persons; events occurring during transport; lack of fodder, contraindicated or defective fodder or insufficient in quantity or quality; not notifying the veterinarian/competent authorities in time/ if the symptoms were obvious and/or not carrying out the treatments recommended by the doctor.
Agricultural crop insurance provides coverage for a wide range of risks that can cause material damage related to agricultural crops, vegetable crops, fruit of vines and trees. Agricultural crop insurance can be concluded for any of the following plant categories: cereal crops, vegetable crops in the field, seed crops and hybridization lots, legumes for grains, aromatic and medicinal plants, annual and perennial fodder plants, industrial, oleaginous or textile plants, the fruit of vines, fruit trees and hops, fruit shrubs, rootstocks for orchards and vineyards, established vineyards with grafted vines, protected crops in greenhouses, solariums and nurseries.
In general, crop insurance provides protection against the following insured risks:
- torrential rains, which can lead to: washing the soil around the plants, uprooting the plants, breaking the flower shoots, breaking or trampling the plants (at an advanced stage of vegetation), without further recovery, covering the plants with mud from the slopes, shaking the fruits, seeds;
- storm, gale, hurricane or tornado having the following effects: breaking stems, shoots, flowers, bunches of vines; fruit fall, shaking of seeds, covering of young plants with floods of earth or sand, plant debris, etc.;
- hail that can cause: destroying the vegetative apparatus, breaking the plants, shaking the seeds.
The main exclusions, present in the case of most agricultural insurances, are: pastures and natural hay; grasses sown for fertilization or grazing; decorative plants (flowers, bushes, trees, meadows, etc.); agricultural crops under protective plants; orchards of fruit trees and vines; the species or varieties of cultivated plants considered unsuitable to the area where they are cultivated; agricultural crops not sprouting or with inadequate sprouting due to the quality of seeds or planting material, poor germination, the quality of fertilizers or pesticides used; agricultural crops already affected by climate factors; agricultural crops located at distances less than 500 m from river beds.
General/professional civil liability insurance - for doctors, pharmacists and other persons in the field of medical assistance - Law 95/2006.
Professional liability insurance is a type of mandatory insurance that provides protection for material and financial damages caused by professionals to third parties, beneficiaries of

their services. According to the legislation, a number of professions require the conclusion of civil liability insurance against clients in case of: error, mistake, omission or negligence, situations resulting from service contracts. Among the professions for which there is a legal obligation to rent such insurance are: doctors and medical personnel; architects, builders; lawyers, notaries, accounting experts, auditors, secondary intermediary persons; software developers, managers or business administrators.

In the case of doctors, errors in the prescription of a treatment, negligence in consultations, unsuccessful surgical interventions are covered.

Liability insurance for dangerous dogs and other obligations imposed on owners

Dangerous dog liability insurance is an essential tool for pet owners that can cover damage caused by them.

By Emergency Ordinance no. 55 of April 30 2002, regarding the possession of dangerous or aggressive dogs, republished, the obligation of the owners of animals belonging to category I of dangerous dogs to conclude a civil liability insurance for animals was established.

In the Ordinance, the following are mentioned in category I of dangerous dogs: fighting and attack dogs, assimilated by their morphological characters to dogs of the Pit Bull, Boerbull, Bandog type and their hybrids (those dogs resulting from the crossbreeding of breeds).

In addition, a series of obligations for the masters are also mentioned, such as: minimum age of 18 years; full exercise capacity; lack of criminal convictions.

The certificate also includes data on the mandatory sterilization of category I dogs, "the performance of anti-rabies vaccination and boosters, proof of civil liability insurance and the identification number of the dog applied by tattoo or microchip".

RESULTS AND DISCUSSIONS

Since the mandatory insurances should be renewed annually and as a result their volume should be approximately constant, nevertheless we note an increase in the number of insurance policies issued and also in their volume.

However, according to the statistics for the year 2023 carried out by ASF Romania (Financial Supervisory Authority), the subscriptions related to optional home insurance, in the year 2023, recorded a higher value by approximately 24% compared to the year 2022, standing at approximately 572 billion RON, while the gross allowances paid increased by about 44% to the value of 145 billion RON. The number of new contracts concluded during the reporting period was around 1.7 billion, up 18.5% compared to 2022 (Table 1).

Table 1. Subscriptions related to optional home insurance*

Period	Number of contracts in force at the end of the reporting period	Number of new contracts, completed in the reporting period	Gross written premiums (lei)	Gross compensations paid (lei)
2023	1.685.094	1.714.246	572.308.044	145.037.335
2022	1.616.633	1.447.078	459.891.122	100.476.331

*Incl. Euroins Romania data in the first quarter of 2023, before the withdrawal of the operating authorization, with the exception of the number of contracts in force (asfromania.ro)

In 2023, the number of health insurances was on 231.108 contracts, in 2022 it was 220.332 contracts and in 2021 were 382.261 contracts (Figure 1).

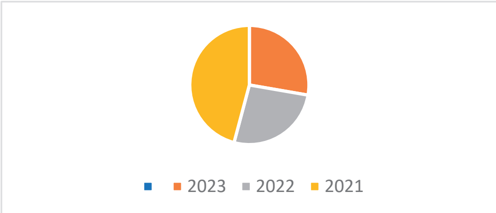

Figure 1. Represents Number of contracts in force at the end of the reporting period (asfromania.ro)

CONCLUSIONS

Insurance represents a classic form of risk transfer from the insured to specialized companies, called insurers.

The first insurance company in Romania appeared in 1744 in Brașov and was called 'Casa de Incendiu'. In 1906, the Agricola Company was established, which was oriented towards agricultural insurance. The Autonomous Directorate of State Insurance appeared in 1942. This company had a diversified portfolio of all types of insurance.

The most important types of impact insurance for agriculture and the veterinary medical field have been listed.

In the two reports issued by Financial Supervisory Authority - ASF Romania, we note an increase in the number of policies issued and the volume of sales in 2023 compared with 2022.

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***Law 381/2002 regarding the granting of compensation in the case of natural calamities in agriculture.

***Law 95/2006 on health reform.

***Law 235/2015 on the authorization and supervision of insurance and reinsurance activity.