DEVELOPMENT OF STATIC OBSERVATION OF INSURANCE COMPANIES'

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ABSTRACT

This study presents and discusses a concept of static observation instrumentarium built on general actuarial model of insurance operations and which, for the first time, provides sufficient amount of static information for actuarial calculations and actuarial control. The development of the proposed reporting form was based on the analysis of the EU Directive (Solvency II). It is presented in a hierarchic form of static reporting with the focus on automatic data insertion. The structure, its advantages and performance were discussed in details and the assessments showed that this reporting form possesses the required elements needed by the big insurance companies. The new reporting form is totally electronic, which simplifies the processing of information and its further transmission and use. In this regard, this new reporting form has been replacing the actual forms that have been used for static report on the insurance company activities.

Keywords: Actuarial Calculations, Actuarial Basis, Static Report, Solvency II.

INTRODUCTION

The reliability of insurance system as a financial instrument of compensation of unwilling and accidental consequences directly depends on the sufficiency of insurance funds which were made by this system which defines by the quality of forecasting of insurance events and the amount of insurance payments.

Nowadays, when the Capital market reacts to any social, economic and even political events, insurance companies should adopt themselves to up-to-date strategies (Sasan Khorasani, 2014; Sasan & Almasifard, 2017). The most important aspect in price formation of insurance services and bankruptcy prevention of insurance organizations is the provision of static adequacy of insurance bonus (Andrey, 2015).

Static observation over insurance companies' activity is organized almost in each country.

In this regard, "Directive of the European Parliament and of the Council on the taking-up and pursuit of the business of insurance and reinsurance (Solvency II)" (Solvency, 2009), which initiates new obligatory regulations in order to guarantee paying capacity of insurance and reinsurance companies, is implied in the EU countries from 2016.The implication of Directive is realized according to "Supplementing Directive 2009/138/EC of the European Parliament and of

the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)" (Delegated, 2015). To provide their paying capacity insurers have to justify the adequacy of insurance reserves upon the request of insurance supervision body based on static data (article 159 Directives 2009/138/EC). To accomplish this task, EU country-members provide harmonization of actuarial and static methodology (article 53 of Directives preamble 2009/138/EC), unification of form, structure and list of data for static report collection, aggregated static data publication (article 31 of Directive 2009/138/EC). European Central Bank Requirements are implied in EU countries ECB/2014/50 (European, 2016) of 28 November 2014 on statistical reporting requirements for insurance corporations.

Some states of the USA develop their own rules of static reporting on the basis of model rules, developed by National Association of Insurance Commissioners, for instance (Regulation, 2016).

Static data of insurance operations are also collected by OECD (Chatterjee, 2011).

In Russian Federation insurance organizations have to make static reporting according to paragraph 1 article 28 of RF Law "About organization of insurance business in Russian Federation" (Law, 2016). Since 01.01.2016 Russian insurers present static reporting in forms established by Russian Bank Notation from 30.11.2015 № 3860-У (Russia, 2016).

Internal and external statistical data are used for the actuarial calculations. According to paragraph 2.5 of international standard ISAP 1-General Actuarial Practice (Standard, 2016), actuary has to clarify if the adequate and reliable data is available for actuarial services' provision. The data is adequate if they include necessary information for work. Data is considered to be reliable if it is accurate in every essential matter.

Actuary should take measures for analysis of conformity, fullness and adequacy of using data. One of the methods of this analysis is the justification check of the data n comparison with external and independent data.

It is clear that the implementation of the mentioned requirement actuary has to be based on adequate and reliable static information.

The role of fair evaluations at insurance has not just commercial but also social nature. In Russia, in particular, the issue of regional disproportional development is of current interest, which is demonstrated on showing of Siberia (Andrey, 2015; Donskikh, 2013).National policy in general is oriented on weakening and elimination of regional companies and aimed on federal oligopolies formation under the image of fighting for effectiveness and quality. On insurance market there are stricter requirements to the personal capital stock for "maintenance" of financial stability and paying capacity. The result is absolute disappearance of regional insurance companies, reduced number of high-qualified work places (actuaries, underwriters, auditors etc.) in Russian regions, regional investing resources' withdrawal.

However, such policy is useless (Oleg, 2007) proposed a method for estimation of investment potential of regional insurance companies and focused on economics and sociology. He showed that the necessary capital stock should be identified through actuarial calculations: even average capital stock the insurance company can be very stable under condition of big insurance portfolio which consists of policies with small insurance sum. Federal insurance companies suffer different issues in this regard: They are not capable of providing appropriate service level, they are not enough flexible to meet the specifics requirements of the regional insurance markets and finally, it takes more time for them to make a decision concerning insurance payments. Therefore, regional insurance companies have their market niche where they can be more effective than federal companies. The collection of adequate and reliable

information and its further static processing would let Russian insurance companies differentiate requirements to personal capital stock, preserve work positions and investing resources of regional insurance companies.

TARGET SETTING

However, modern static reporting does not the appropriate amount of basic data for actuarial calculations, in particular, for confirmation of insurance resources' adequacy according to Directive 2009/138/EC:

1. Static report normally includes data about insurance premium, insurance payments, earned commission and about reinsurance in reserve of insurance types and record groups (European, 2016; Regulation, 2016; Solvency, 2009; Website, 2016). However, actuarial calculations are performed in reserve of exact insurance risk. Insurance payments' data cannot be put together with amount of contracts, nor with insurance sums due to insurance portfolio. Furthermore,, the simple number of actual and effective insurance contracts and their insurance sums do not characterize insurance portfolio as insurance contracts do not have prolongation, frequently it is variant, can be differentiated according to the number of insure items (insurance objects or persons).
2. Static reporting does not consider possible risk division: franchise, underinsurance & reinsurance.
3. In case of actuarial calculations, it is not enough to know the amount of losses and total year sum. It is necessary to collect and analyze data about loss distribution law considering very insurance risk.
4. The evaluation of insurance reserves quality requires information about terms of payment delay (time between loss occurrence and insurance payment) and their division. Static reporting does not contain such information.

Considering all mentioned reasons in non-life insurance sector it is impossible to evaluate and check the chance of insurance event, nor division of possible damage that is valued for underwriting rate calculation. Underwriting rate calculation in life insurance sector does not contain data for actuarial sheets with additional insurance risks information which is not related with death and time left to live of the insured. Moreover, existing static instrumentarium does not effectively control the actuarial performance. Nowadays, insurance actuaries do not have correctly organized static information for science researches and on that base, for development of new methods for actuarial tasks' solution.

Therefore, such situation demands the development of the role model of static reporting which may contain all necessary data for underwriting rate development and control, insurance reserve adequacy confirmation, evaluation of necessary stock capital value.

Model Form of Universal Static Report

Effective static appliance of actuarial reports is possible based on up-graded instrumentarium of static observation over insurance companies' activity. However, today in scientific literature there are no paper works concerning the solution of this problem.

Below-presented form of static report is suggested as the possible solution. This form is based on universal model of insurance operations which can be unique for all types of life insurance, as well as for all types of insurance that differ from life insurance.

As research (Oleg, 2008; Ryzhkov, 2011) has demonstrated, the method of actuarial calculations for all insurance types and branches can be unified be means of model actuarial basis' maintenance which structure is equal for life insurance contracts and general insurance contracts (general actuarial basis). The calculation methodology based on the static probation

method implementation was suggested for flexible calculation of insurance premium considering individual peculiarities of insurance risk (Bobrov, Ryzhkov & Oleg, 2013).

The development of this approach, during calculation, let to consider insurance premium, frequency of insurance events' occurrence (Oleg, 2010), implementation of different risk division methods-non-deductible and deductible franchise, underinsurance, proportional and non-proportional reinsurance (Bobrov, 2012). Therewith, usage of various methods gave the opportunity for reasonable insurance reserves' evaluation (Oleg, 2015) and necessity in personal capital (Oleg, 2014). Finally, a new unique static model of actuarial calculations was formed which allows to obtain interrelated results (Oleg, 2016). Made calculation experiments confirmed the adequacy of evaluations which were gained with implementation of general actuarial basis' models (Bobrov & Ryzhkov, 2014).

The static instrumentarium binding to actuarial model allows scientifically exploring the structure of collected indexes, providing their adequacy and fullness.

To provide compactness of data and easement of atomized formation and static reporting processing of insurance company, hierarchical table is used instead of traditional one (European, 2016; Regulation, 2016; Solvency, 2009; Standard, 2016), typical for such cases. Empty elements of hierarchical structure are absent while in traditional table they are preserved. This way, hierarchical structure allows to present data more compactly.

Suggested form of data presenting (description of item type is shown in angle brackets:

1. Type of activity: <from enumeration {Insurance; Risk acceptance in reinsurance}>
2. Branch of insurance: <according to classification>
3. Type of insurance: <according to classification>
4. Insurable risk: <according to classification>
5. Insurance termination group:<according to classification>
6. Type of insure item: <according to classification>
7. Insure item characteristics: <according to classification>1
8. Remain of policy daysна at the beginning of covered period: <number>2
9. Increasing of policy days in reporting period for reasons of:
10. beginning of contract:<number>
11. insurance term prolongation by compact:<number>
12. Policy days reduction in reporting period for reasons of:
13. expiration of insurance:<number>
14. early termination of contracts:<number>
15. term reduction of insurance contract:<number>
16. Remain of policy daysна at the end of reporting period: <number>3
17. actual insurance contract number remain at the beginning of reporting period: <number>4
18. Beginning of insurance contracts in reporting period for reasons of:<number>
19. Actual insurance contract number reduction in reporting period for reasons of:
20. expiration of insurance:<number>
21. early termination of contracts:<number>
22. Actual insurance contract number remain at the end of reporting period: <number>
23. Number remain of insure items at the beginning of reporting period: <number>
24. Increasing of the number of insure items in reporting period for reasons of:
25. beginning of contract:<number>
26. increasing of the number of insure items by compact:<number>
27. Reduction of the number of insures items in reporting period for reasons of:
28. expiration of insurance:<number>
29. early termination of contracts:<number>
30. reduction of the number of insure items by compact:<number>
31. Number remain of insure items at the end of reporting period: <число>
32. Remain of total insurance sum at the beginning of reporting period:<number>

33. Increasing of total insurance sum in reporting period for reasons of:
34. beginning of contract:<number sequence>5
35. increasing of insurance on one insurance event for one insure item on compact without insure items' number change:<number sequence>6
36. increasing of insure items' number on compact without insurance change for one insure item:<number>
37. Reduction of total insurance sum in reporting period for reasons of:
38. expiration of insurance:<number>
39. early termination of contracts:<number>
40. reduction of insurance sum on one insurance event for one insure item on compact without insure items' number change:<number sequence>
41. increasing of insure items' number on compact without insurance change for one insure item:<number>
42. Remain of total insurance sum at the end of reporting period: <number>
43. Insurance sum, transferred to reinsurance: <number>
44. Gross insurance premium on effective insurance contracts: <number>
45. Load in gross insurance premium: <number>
46. Charged reward to agents for insurance contracting: <number>
47. Percent of reinsurance agents in Gross insurance premium: <number>
48. Reinsurance contracts' commission: <number>
49. Number of reported but not fixed insurance events at the beginning of reporting period: <number>
50. Number of reported insurance events in reporting period: <number>
51. Identified as non-insurance events: <number>
52. Number of fixed insurance events: <number>
53. Number of reported but not fixed insurance events at the end of reporting period: <number>
54. Territory <according to classification>7
55. Sum of reported insurance events losses in the reporting period:<числоваяпоследовательность>8
56. Sum of fixed insurance events losses in the reporting period:<number sequence>
57. Reduction of fixed insurance events losses in reporting period on franchise sum: <number>
58. Reduction of fixed insurance events losses in reporting period due to increasing of insurance sum: <number>
59. Percent of reinsurance agents in fixed insurance events losses in reporting period: <number>
60. Sum of made insurance payments: <number>
61. Term of insurance payments' delay:<number sequence>9
62. The End of the Report

Notes:

1. Additional characteristics inserting in accordance with the aims of data collecting and bound to type of insure item (for instance, age group)
2. Policy day is universal measure of insurance portfolio, calculating as the sum of days of action of each insurance contract multiplied on number of insure items (objects of insurance, insure persons) calculated from all insurance contracts. At its place can be accurately calculated the intensity index of insurance events' oncoming. Policy days remain at the beginning of the period, as well as others moment indexes in this report, may not be used at the static reporting, as it known from the previous report.
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5. For purposes of actuarial analysis the variation of insurance sums is taken into consideration. On this basis, increasing-ordered sequence of all insurance sums is provided of all insurance sums due to all effective

insurance contracts. Insurance sum is established on the basis of insurance contract on every insurance event for each insure item.

6. The increment of insurance sums due to insurance contracts, executed before the beginning of reporting period is pointed in the form of increasing number sequence.
7. For purposes of territorial analysis of losses
8. For purposes of actuarial analysis, the knowledge of losses' division is necessary. Building on that, the increasing number sequence of all sums of reported insurance events losses in reporting period is held.
9. For purposes of actuarial analysis of insurance reserves, the information about division of terms of insurance payments delay, calculated in case of every insurance event as a number of days from the moment of insurance event occurrence till the moment of actual insurance payment, is necessary.

Here, suggested elemental form of reporting which is oriented on atomized filling and processing in the form of xml-file. This form is being passed to the insurance supervision body in electronic form. When it is necessary it can be easily transformed into different secondary analytic tables for person's examination.

Insurance organization collects in its operative accounting of information, sufficient for report formation and building on that has the possibility of its formation. That is why report formation is possible. For its formation, special program can be made.

All the data specified in the suggested model form is sum up. That is why the formation of reporting is not necessary with increasing result from the beginning of the year, data can be presented for any reporting period, for instance quarter or months and then compose into different bigger periods.

RESULTS AND DISCUSSION

Suggested form allows passing from simple collection of elemental moment and interval data to systematic data collection according to actuarial model. Actuarial model (Oleg, 2016), which was a base for static observation, is completely corresponds to Directive 2009/138/EC (Solvency, 2009). Especially, with the help of data of suggested static report with the model implementation (Oleg, 2015), the adequacy check of insurance reserves of insurance company can be performed. All the more, for instance, simpler models also can be used (Ryzhkov, 2007).

Suggested report allows to collect static data about insurance risks, including to relevant classificatory, to use them further for provision of actuarial services, including check of adequacy of actuarial information. Using actuarial model (Oleg, 2016) supervision bodies can retrospectively check the validity of underwriting rates, evaluate adequacy of insurance reserves and personal capital of one insurer, as well as their union.

The report formation according the suggested form is completely corresponds to principals, provided in the decision of 47th session UNO European Commission (Geneva, 1992), which were accepted by Russia (Andrey, 2010). In particular, requirements to data source according to which static service should choose the source according to its quality, modernity, costs and loading which lay on respondents, are followed. Under the conditions of accounting atomization and maintenance of data explicit basis of insurance operations the loading on the respondents and costs on the collection of information are minimized. Occurrence of actuarial model allows to follow requirements of transparency and to prevent incorrect usage.

Collected static information can be used for forecasting of separate insurance company activity or of a branch as a whole.

Building on the published data, insurance company can evaluate the quality of its own insurance portfolio in comparison with market data; specify underwriting rates on insurance risks, adding them with reasonable experts' evaluations.

Certainly, suggested form of report is a model which can be completed with additional information, necessary for other purposes, such as, for instance, control of insurance frauds.

This way, data collected during the observation due to suggested form is sufficient for actuarial calculations and actuarial control on actuarial model (Oleg, 2016), as well as on other models.

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