The prudential regulation in the risk management of insurers and its effectiveness

Alouache Sara

Laboratory of research on creativity and change of organizations and institutions RICOI /PhD student/Blida 2 University (Algeria) alouache.sara5@gmail.com

Fekarcha Sofiane¹

Laboratory of contracting, human resource management and sustainable development/Lecturer A/ Blida 2 University (Algeria) s.fekarcha@univ-blida2.dz

Received date : 12-09-2020 / Accepted date :27-04-201

Abstract:

We aim through this study mainly to measure the effectiveness of the prudential regulation in the risk management of insurers. our study has been conducted on a sample of Four Algerian insurance companies, depending on survey method and discipline to collect and analyse the data by a set of statistical indicators such Cronbach's Alpha and descriptive statistics such (Mean, Std. Deviation) and One Sample T-test with confidence level of 95% for testing the hypotheses. The main result of this study is that there is a positive- medium relationship between prudential regulations and managing risks of insurers.

Keywords: Insurers, prudential regulations, risk management, solvency 2.

Jel Classification Codes: G22, G28.

Introduction:

Insurance companies play a key role in the economy, allowing businesses and individuals to exchange the risk of an uncertain and costly financial outcome for a fixed cost or premium. The failure of a large insurance company could disrupt the broader provision of financial services, causing stress to spread throughout the financial system and real economy. Therefore, insurance companies need to be sufficiently well capitalised and prudently managed so that they can withstand shocks.

The regulation of financial services has increased in the last decade. Since the financial crisis in 2007–2008, a large supervisory and regulatory reform has been put forward in the European Union (EU).

European legislation for the prudential regulation of insurance companies has existed since the 1970s. There have been several limited reforms to this legislation but the latest, Solvency II, represents a fundamental modernisation of European insurance regulation.

¹ Corresponding Author: Fekarcha Sofiane.E-Mail : Riadreda@yahoo.fr

The main purpose of Solvency II is to enhance the level of policyholder protection across Europe. The new regime should also improve the resilience of the insurance sector to shock and so reduce the probability of insurers failing.

Objectives of the research: Generally, the objective of the study is to review the prospects and challenges of insurance regulations. However, the specific objectives of the study are:

- To characterize the insurance prudential regulations;
- To assess the prospects and potentials of insurance sector in Algeria;
- To evaluate the key challenges of the prudential regulation in Algeria according to the solvency framework.

To expand in the aspects of this research, we formulate the study problematic as follows:

Is there a significant relationship between the prudential regulation and risk management of insurers?

Research importance: The importance of this study is to determinate the effect of the prudential regulations and their role in achieving a strong financial system, as well as to study the state of Algerian insurance companies and to identify the most important factors of success and failure.

Research purpose: Through our research, we aim at the following points:

- Identify insurance regulation concepts and risk management;
- Finding the extent of impact of the prudential regulation on the practices of managing risks that the insurance companies are exposed to.

Methodology of the research: For the collection of data, and to achieve the objectives of the study, a questionnaire was prepared and randomly distributed among internal auditors, external auditors, managers, accountants for the Algerian insurance companies under study. We applied the descriptive and the inferential statistical techniques to describe and analyse collected data and test the study's hypotheses.

Research plan: Firstly, this paper will start with some definitions and overview of our subject. Then, in order to increase our knowledge on this issue, this paper will be continued by analysing the case of the Algerian insurance sector. Lastly, this research will be ended with some results and recommendations.

Previous studies: There are not many research papers on prudential regulation in insurance industry and most of the papers on solvency directives are focused on banks and listed companies. Most of the studies on the solvency in insurance industry are recent, being performed after 2002. The solvency ratio of a company is an important tool used by supervisors in the process of decision-making on underwriting and investment activities of any insurance company.

A study conducted by KPMG in 2011 in an international level has identified the major reasons of providing a solvency prudential regulation, namely:

- Alignment of economic and regulatory capital including giving appropriate recognition to diversification benefits within companies and between subsidiaries.
- Freedom for companies to choose their own risk profile and match it with an appropriate level of capital.
- An early warning system for deterioration in solvency by active capital management.

- By better aligning risk and capital management, encouraging an improvement in the identification of risks and their mitigation.
- According to the EU Commission, the Directive will "also streamline the way that insurance groups are supervised and recognize the economic reality of how groups operate. The new regime will strengthen the powers of the group supervisor, ensuring that group wide risks are not overlooked, and demand greater cooperation between supervisors.

In their paper, V. Peleckienė and K. Peleckis (2013) aim to analyze Solvency II quantitative impact study made under conditions of undergoing legislative changes in the insurance market of European Union, called Solvency II regime. The main contribution of this study was to present the analysis of quantitative and qualitative requirements, which insurers have to meet under the Solvency II regime. Finally the authors conclude that the practice of Solvency II Directive will help to increase the international competitiveness of EU insurance industry as they could reallocate own funds according the results of potential decrease or increase in solvency requirement relative to the standard formula.

Also, another study presented by R. Meda Antala and L.Simionescub (2015) underlined that the subject of solvency is highly relevant in regard to insurance companies who have been subject to increased market demands in a business environment that have become difficult to navigate. Through the study conducted, built on relevant opinions from academic literature, the authors chose as the objective of the research, the identification of the influence variables and the intensity with which they affect the degree of exposure of the Romanian insurance company's solvency. Their analysis led to the identifications of new elements that can optimize the effects of the insolvency law as applied to insurance companies in Romania.

Our study is focused on analising the Algerian solvency ratio. The data has been retrieved from the Insurance Annual Reports and from the web sites of the insurance companies. A sample of all insurance companies over an Eleven years period, 2007-2017, is used in the analysis. The rest of this paper is organized as follows: the second section describes facts, data and methodology used. The third section is results and discussion. The last section summarizes some of our findings.

1. Conceptual framework

Managing risk is an integral part of good management and it is something that many managers do already in one form or another.

Risk management can be viewed as the first line of defense in a company or as a way to prevent the emergence of situations that could imperil the company. Capital supplements risk management, capital is required to support the financial costs to the company of situations where risk management is not a sufficient deterrent.

Risk Management provides a structured way of identifying and analising potential risks, and making and implementing appropriate responses to their impact. These responses generally draw on strategies of risk prevention, risk transfer, impact mitigation or risk acceptance. Within a single projector proposal, each of these strategies may have application for different individual risks. (New South Wales, 2004)

1.1.Insurers risk types

There is no single generally accepted classification system of insurance company risks. Insurance supervisory groups have attempted to develop classification systems for insurance companies in order to describe the risk profiles of insurance companies.

1.1.1. Underwriting risk: The loss occurs due to underwriting activities and is mainly related to the risk assessment process that is presented to and accepted by insurance companies. It also includes those risks that precede the issuance of the insurance policy.

1.1.2. Operational risk: Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk. (Bollar & others, 2015)

1.1.3. Credit Risk: Credit risk is the risk of default and change in the credit quality of issuers of securities in the company's investment portfolio), counter-parties (e.g., on reinsurance contracts, derivative contracts or deposits given) and intermediaries, to whom the company has an exposure. Within this category. (IAA, a global framework for insurer solvency assessment, 2004)

1.1.4. Actuarial risk: The risk arises from raising funds via the issuance of insurance policies and other liabilities. It is the risk that the firm is paying too much for the funds it receives, or alternatively, the risk that the firm has received too little for the risks it has agreed to absorb. If an insurer invests its funds in efficiently traded securities, it should expect to have, on average, a zero net economic profit. If the insurer pays, too much for these funds it cannot expect to earn a satisfactory profit in the end. (Babbel & Santomero, 1996)

1.1.5. Liquidity risk: Liquidity risk can be described as the risk of a funding crisis. While some would include the need to plan for growth, the risk here is more correctly seen as the potential for a funding crisis. Such a situation would inevitably be associated with an unexpected event, such as a large claim or a write-down of assets, a loss of confidence, or a legal crisis. Because insurers operate in markets where they may receive clustered claims due to natural catastrophes, or massive requests for policy withdrawals and surrenders due to changing interest rates, their liabilities can be said to be liquid. Their assets, however, are sometimes less liquid, particularly where they invest in private placements and real estate. Given this situation, it is important for an insurer to maintain sufficient liquidity to handle easily any demands for cash. Otherwise, an insurer that would be solvent without a sudden demand for cash may have to sell off illiquid assets at concessionary prices, leading to large losses, further demands for cash, and potential insolvency. (Babbel & Santomero, 1997)

1.1.6. Market Risk: Market risk arises from the level or volatility of market prices of assets. Market risk involves the exposure to movements in the level of financial variables such as stock prices, interest rates, exchange rates or commodity prices. It also includes the exposure of options to movements in the underlying asset price. Market risk also involves the exposure to other unanticipated movements in financial variables or to movements in the actual



or implied volatility of asset prices and options. (IAA, Report of Solvency working party, 2002)

EU insurance undertakings (Large companies), 2000 - 2016



The study of the European Insurance and Occupational Pensions Authority (EIOPA, 2018) identifies all signals, which may act as indicators to help identify potential situations of distress in insurers, at an early stage of the crisis. In order to follow, the best risk management system of European insurers.





EU insurance undertakings, 1999 - 2016

Source: EIOPA, Op.cit. P40.

The key signal in early identification of failures and risks in insurance is the deteriorating capital strength and/or low solvency margin. This underpins the importance of capital solvency requirement, which is calibrated in a way that the probability of failure of an insurer is no more than one in every 200 years. Nonetheless, it should be noted that most of the failures recorded in the database occurred before the entrance into force of Solvency system

1.2. Solvency standards

Solvency reflects the company's capacity to meet medium and long-term maturities, particularly from their own resources. Solvency is the main objective of the entrepreneur who wants to preserve financial autonomy and management flexibility, resulting from the balance between cash receipts and cash payments and from a positive net working capital, which implies a better adjustment between the needs for long term funding in tangible and financial assets and permanent financing resources, namely equity and term indebtedness. (Vasiua & Gheorgheb, 2014)

An insurance company is solvent if it is able to fulfil its obligations under all contracts under all reasonably foreseeable circumstances (IAIS, 2002). Nevertheless, in order to come to a practicable definition, it is necessary to make clear under which situation the appropriateness of the assets to cover claims is to be considered.

Insurance regulatory authorities require insurers to maintain assets or surplus capital in excess of liabilities, that is, a solvency margin. (IAIS, 2002)

The purpose of solvency regulation in theory is to limit the degree of insolvency risk in accordance with regulators preference for safety. Regulators may achieve this objective by requiring insurers to maintain a minimum amount of capital and meet other financial requirements. Insurance regulators may also balance various goals in maximizing social welfare. Regulation affects the range of possible values of the risk-return trade off involved with insurance transactions. (Boadi & others, 2017)

A solvency standard may be defined in terms of a wind-up. In this case, the object would be to ensure that the insurer had sufficient funds on hand to pay outstanding claims and unearned premiums and to satisfy all other creditors. This standard might be appropriate for very short-tail types of insurance business. (IAA, Report of Solvency working party, 2002)

1.2.1. Solvency II framework

In 2002, the first Life and General Insurance Directives - Solvency I - was adopted by the European Union, in an attempt of imposing a more flexible legislation for incorporating the developments from the financial services more quickly. However, Solvency I did not established at European level an appropriate harmonized definition of financial requirements, capitals and provisions. Therefore, in many countries, national regulators have set additional rules beyond the Solvency I minimal requirements for considering the advances in risk management. (Dragos, 2013)

The 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) was approved on 25 November 2009 and shortly is called Solvency II. The European Commission believes that Solvency II is an ambitious proposal that will completely overhaul the way of ensuring the financial soundness of insurers and will contribute to the modernization of the European insurance sector and to its competitiveness. (Peleckiene & Peleckis, 2014)

Solvency II is a world-leading standard that requiers insurers to focus on managing all the risks they face and enables them to operate much more efficiently. It is

positive news for consumers, for the insurance industry and for the EU economy as a whole.

Solvency II directives integrate internal risk control and enterprise risk management systems, which must be promoted and regularly challenged and examined. A risk management function is essential to ensure effective internal risk governance of insurance undertakings. Sustainable asset and liability management is an important component of sound risk management in insurance sector. Liquidity management is also stronger as a complement to capital adequacy.

Solvency II sets forth rules on access to the (re)insurance activity, prudential rules of this activity, and rules on the coordination between national authorities about the supervision on the activity above. These rules, while aspiring to reach a discipline of maximum harmonization among Member States. (Marano & Siri, 2017)

1.2.2. Directive with three pillars

Pillar I solvency capital requirements is based on a market-consistent, total balance sheet approach. Based on Pillar I, a number of capital treatments have to be tested for each main risk category/module, the simple one, which is designed for small and medium sized companies and the other one somewhat more risk sensitive, which is designed for large sized companies. Solvency II experts have proposed two capital level requirements: a main target level solvency requirement and a minimum capital. The target capital should reflect the economic capital that a company needs to operate safely and the minimum capital level should serve as a trigger level (safety margin) for severe regulation action. (Pitselis, 2009)

The Solvency II system bases on a more risk-based capital than the current one (Solvency I).Furthermore, solvency requirements focuses on capturing most essential risks to which an insurance undertaking is exposed. Solvency II directives have proposed two capital level requirements: a main target level solvency capital requirement (SCR) and a minimum capital requirement (MCR). The target capital should reflect the economic capital that a company needs to operate safely and the minimum capital level should serve as a trigger level (safety margin) for severe regulation action. (Pitselis, 2009)

The SCR (Solvency capital Requirement) reflects the capital an insurer must have available to cover its risk. It can be calculated using either the European Standard Formula or an internal model,

The result of the Solvency Capital Requirement standard formula calculation SCR is calculated as follows:

 $SCR = BSCR - Adj + SCR_{OP}$

Where:

BSCR = Basic SCR (Basic Solvency Capital Requirement), it is calculated as follows: (Lecreux, 2010)

BSCR= $\sqrt{\sum_{i \times i} CorrSCR i, j \times SCRi \times SCRj}$ + SCR incorporal

 SCR_i , SCR_j = Lines and columns of the correlation matrix according to the SCR calculated for the risk modules.

Adj=Adjustment necessary to consider the risk absorbing, technical compensations and deferred tax

SCR_{op}= Capital reserved for operational risk

The MCR is a part of the SCR and is the absolute minimum of the capital level. If the capital level fell below the MCR an ultimate supervisory action will be triggered, which would lead to closure to new business or withdrawal with authorities.

The second pillar provides principles for the regulatory process as well as for the internal auditing and management of the policyholder's risks. This pillar incorporates the risk-management processes (including the mixed mechanisms), the rules for managing investments, the rules for managing assets and liabilities, etc.

The Pillar III is concerned to regulate the market disclosure in terms of the information' availability as well as in terms of the new accounting standards basing on the fair value assumptions. The purpose is to provide investors, rating agencies and any other stakeholders with comprehensive view over the risks of the insurers.

2– Methods and Materials:

The author of the article in this section explains clearly how to select the sample, determine the variables and how to measure them, how to collect the data and describe how the data are summarized (average, percentage...), Statistical and standard tools used in data analysis, hypothesis testing and statistical significance. Sometimes it may be necessary to mention the programs used in the calculation. When using a method previously used and published by another researcher, must be referred to as marginalization without being re-described, Though There are changes in the method, which must be explained and explainedⁱ.

In this part, we are going to present the Mythology of empirical study through its steps point by point from the objective to hypothesis testing.

2.1. The hypothesis

We try to test the following hypothesis by using different steps with different tools:

 H_0 : There is no significant correlation between the prudential regulation and insurer's risk management through their different dimensions.

 H_1 : There is a significant correlation between the prudential regulation and insurer's risk management through their different dimensions.

2.2. Sample study and procedures

The sample used in this study consists of internal auditors, accountants and managers of some Algerian insurance companies; our sample includes Four (04) Insurance companies: National Insurance Company (SAA), Alliance Insurance, Salama Insurance and Algerian Insurance and Reinsurance Company (CAAR). We chose these companies for two reasons: different types between public and private sector, these companies represent more than 40 percent (40%) of the market share.

2.3. Data Collection Tools

The study used both primary and secondary methods of data collection: Secondary Data; these sources were varied between articles, books, websites, thesis etc., and primary Data; A questionnaire was used for collecting data for this study.

As for the questionnaire of this study, the table (01) explains all details as follows:

Number of questionnaires	Distribute d	Rec	ceive Valid for analysis	Not valid for analysis
Total	68	57	50	07
Percentage (%)	100 %	83.82 %	6 87.72 %	12.28 %

Table 01. Number of questionnaires

Source: prepared by the researchers

The valid questionnaires for analysis are represented as follows: Table 2. Representation of valid questionnaires

The company	Number	Percentage (%)				
SAA	24	48 %				
CAAR	12	24 %				
Alliance	04	08 %				
Salama	10	20 %				
Total	50	100 %				
Sources proported by the research are						

Source: prepared by the researchers

The questionnaire included items that were divided into three axes; as follows:

- Axis 01: general data of the respondents: age, education, profession and total experience.

- Axis 02: prudential regulation: it has included the items from 01 to 12.

- Axis 03: level of risk management: it has included the items from 13 to 20.

In this study, the responses and information collected from the various statistical methods have been used to analyse the data that we collected from the 50 respondents. The Statistical Package for the Social Sciences (SPSS, version 22.0) software has been used.

2.4. Test of Reliability

To measure the stability of the questionnaire, Cronbach's Alpha coefficient was calculated using the SPSS, and the results were as shown in the table below.

Table 3. Reliability Statistics				
Cronbach's Alpha	Number of items			
,629	20			

Source: Calculated by SPSS.

We note from the table above that the stability coefficient for all variables of the study is acceptable, and it is largest from the standard percentage (0.60), where reaching a reliability coefficient for all the items of questionnaire to 0.629.

3- Results and discussion :

3.1. Study Variables Analysis

At this stage, we are going to describe all the dimensions of variables by the main statistical indicators: the mean and the Standard deviation. It was previously mentioned that 20 items were used in the study questionnaire. Table (04) shows the descriptive statistics prudential regulation variable. In addition to the one measure of central tendency, and one measure of variation, the selected measure of central tendency is the mean, whereas, the used measure for variation is the standard deviation, which is available in the table, for each item.

The table below shows that the highest mean equals 2.84, with a standard deviation of 0,548, and belongs to item number 1, which states, "**The prudential regulations contribute to identifying and correcting weaknesses in the financial performance of insurance companies**". Whereas, the lowest one (Mean) equals 2.22, with a standard deviation of 0,764, and attributed to item number 06 which states that "**Technical provisions are considered one of the most important methods used by the insurance company to enhance its financial strength**".

Most of the approval's degree of all items are "High", this result refers that the respondents have the enough acceptance about the importance of the prudential regulations.

	Statement	Mean	Standard deviation	Degree of approval		
1	The prudential regulations contribute to identifying and correcting weaknesses in the financial performance of insurance companies	2.84	.548	High		
2	The The prudential regulations contributes to disclosure Manipulation and activation of the financial performance of insurance companies	2.46	.813	High		
3	Employees have sufficient knowledge of the prudential requirements	2.24	.870	Medium		
4	The prudential regulations consider as a guideline tool using by your company to achieve the objectives	2.42	.859	High		
5	The company practices the prudential rules according to the international standards	2.64	.693	High		
6	Technical provisions are considered one of the most important methods used by the insurance company to enhance its financial strength	2.22	.764	Medium		
7	The company seeks to raise its technical allocations annually	2.44	.837	High		
8	The company relies on solvency margin to enhance its confidence with the insured	2.62	.725	High		
9	The company sets aside sufficient technical provisions to pay for claims.	2.62	.725	High		
10	Auditors are in place to evaluate the efficiency of the solvency margin of the company.	2.44	.812	High		
11	Financial statement analysis enhances the solvency identification	2.42	.835	High		
12	Establishing prudential standards enhances risk management of the company	2.74	.600	High		

Table 4. Descriptive statistics of the independent variable

Source: By the researchers depending on SPSS V22 results

As previously mentioned, 08 items were used in the study questionnaire to measure the dependent variable; table (05) shows all items of this axis.

The table (05) shows that the highest mean equals 2.84, with a standard deviation of 0.548, and belongs to item number 17, which states "**The company has advanced information systems for managing risks**", whereas the lowest one (Mean) equals 1.84, with a standard deviation of 0.866, and attributed to item number 20 which states that "**Managing the solvency risks increases the company's activity and expands its business**". It means that this level is very low. This indicates that the insurance companies under study are more interested in studying and analyzing investment and underwriting risks than solvency risks.

	Statement	Mean	Standard deviation	Degree of approval
13	The insurance company is exposed to risks affecting its financial position	2.74	.600	High
14	Risk management efforts are supported by senior management of the company.	2.82	.482	High
15	The financial risk is considered one of the biggest risks facing the company	2.62	.725	High
16	The company develops a clear strategy for managing investment risks according to the degree and type of risk they are exposed to.	2.66	.688	High
17	The company has advanced information systems for managing risks	2.84	.548	High
18	The company has an independent department that specializes in risk management	2.80	.571	High
19	A review of structured risk management policies is conducted according to conditions in the business environment	2.24	.797	Medium
20	Managing the solvency risks increases the company's activity and expands its business	1.84	.866	Low

Source: By the researchers depending on SPSS V22 results

3.2. Test of the study hypothesis:

In order to test the study hypothesis, the One Sample T-test with confidence level of 95% was applied as following:

Table 6. Results of the analysis of regression for testing the hypothesis

	Regression	coefficient	Tes	t (T)	Test (F)		Coofficient of
	Coefficient B	Standard error	Т	Significance (Sig)	F	Significance (Sig)	determination R2
Prudential regulation and risk management	0,537	0,148	3,623	0,001	13,126	0,001	0,215

Source: By the researchers depending on SPSS V22 results

Through the table (06), we observe that the results of this model are statistically acceptable at a value hitting F = (13.126), the largest of its value at the indexed

level of significance ($\alpha \le 0.05$), and the level of significance (0.001) is less than the approved level of significance (0.05). It is clear from the statistical results showed in Table (06) there is a statistically significant effect at the level of significance ($\alpha \le 0.05$) for the independent variable (Prudential regulation) on the dependent variable (Risk management) in the studied insurance companies, Reaching The value of (t) calculated (3.623), the largest of its value indexed at the level of significance ($\alpha \le 0.05$), and the level of significance (0.001) less than the significance level adopted (0.05), and indicate the value of coefficient (B) that the change in the value of the independent variable (Prudential regulation) as one unit, corresponding to a change in the dependent variable 0.537 (Risk management).

Through Table (06), we also note that the coefficient of determination (\mathbb{R}^2) of this model has reached (21.5%) which means that the independent variable (Prudential regulation) explains what amount of 21.5% of the variance in the dependent variable (Risk management); or in other way, we can say that 21.5% of the changes on the level of the dependent variable (Risk management) caused by changes at the level of the independent variable (Prudential regulation). This result means that there is a weak effectiveness of the prudential regulation on enhancing the level risk management of insurers under study.

The results of the linear regression analysis indicated on the table (06) shows that the significant value of α (Sig=0.001) was less than the significance level authorized ($\alpha \le 0.05$). This requires refusing the null hypothesis (\mathbf{H}_0) and accepting the alternative one (\mathbf{H}_1) which states that there is a significant correlation between the prudential regulation and insurer's risk management through their deferent dimensions

Conclusion:

Through this study, we have reached the following results:

- 1. The study of financial solvency, which expresses the ability of insurance companies to meet their obligations, has become necessary to protect the interests of the various beneficiaries of the insurance activity (insurers, insured, shareholders, regulatory systems);
- 2. The solvency margin is considered as a supplementary reserve for technical provisions, which enables insurance companies to remain and continue their activities in case of unexpected losses ;
- 3. Limited insurance companies under study in the use of components and elements of solvency margin, this is due to lack of efficiency in the management of assets and liabilities as well as the lack of optimal use of available resources to ensure the highest returns ;
- 4. The high solvency of all the Algerian insurance companies did not contribute effectively to the development of the insurance industry in Algeria;
- 5. Despite the regulatory reforms introduced by the Algerian legislator, the reality of these reforms is narrower than the implementation of the EU solvency decisions of quantitative requirements (asset and liability valuation, investment, solvency margin, and funds). Moreover, other qualitative (oversight, internal audit, corporate governance, risk management, actuarial function), as well as advertising and transparency requirements.

6. The prudential regulation in Algeria did not pay attention to the establishment of a unified national information system for the insurance sector.

Based on the findings of this study, the following recommendations may be proposed:

- 1. The necessity of issuing laws concerned with insurance activity and allowing the creation of a competitive environment with more dynamic policies in providing services;
- 2. Enhancing the financial capabilities of the Algerian insurance companies, as well as keeping up with the international standards to meet them in the fields of solvency, technical reserves and financial investments;
- 3. Updating the precautionary rules related to the insurance sector in accordance with the international developments;
- 4. Developing the levels of representation of technical obligations under the values of the State to raise the efficiency of investment in insurance companies;
- 5. The need to prepare legislative frameworks for Takaful insurance companies, especially in the field of calculating the margin of solvency, consistent with the specificity of these companies:
- 6. Strengthening the framework of solvency in line with the reality of risks to which insurance companies (technical and non-technical);
- 7. Developing supervisory and control structures in line with modern international standards to be able to explore weaknesses and deficiencies and take the necessary efficiency.

References:

Bollar, P., & others, (2015). Operational Risk. the Insurance Regulation Committee of the IAA, P03

DECUPERE, S. (2011). Agrégation des risques et allocation de capital sous Solvabilité II. Mémoire d'actuariat. école nationale de la statistique et de l'administration économique, France. **Doff, R.** (2008). A Critical Analysis of the Solvency 2 Proposals. The Geneva papers, 33, p195.

Dragos, S. L. (2013). Regulatory Framework in the Insurance Industry – The Solvency II Project. (H. R. Society, Éd.) International Journal of Academic Research in Business and Social Sciences, Vol 03(N°05), p02.

Dreyfuss, M.-L. (2015). Les grands principes de Solvabilité 2 (éd. 3e édition). France: l'Argus de l'assurance.

EIOPA. (2018). Failures and near misses in insurance.

Frigo, M. L. (2011). What is strategic risk management ? Strategic finance.

IAA. (2002). Report of Solvency working party. Insurance Regulation Committee, P22.

IAA. (2004). a global framework for insurer solvency assessment. International Actuarial Association, P30.

Babbel, D. F., Santomero, A. M. (1997, June). Financial Risk Management by Insurers : An Analysis of the Proces. (t. A. Association, Éd.) The Journal of Risk and Insurance, Vol 64(No2), P240.

Babbel, D., Santomero, A.M. (1996). Risk Management by Insurers: an analysis of the process. Wharton Financial Institutions Center, P11.

Boadi, A. L., & others. (2017). Analysis of Factors Affecting Outstanding Claim Provision of Non-Life Insurance Firms in Ghana. Journal of Economics and Finance IOSR, Vol 08(Issue 4, N°03), p28.

IAIS. (2002). Principles on capital adequacyand solvency. Solvency & Actuarial Issues Subcommittee .

Lecreux, D. (2010, Novembre). Le capital réglementaire issu de la formule standard: étude des derniéres nouveautés Issues du GIS5. 41-43. (OPTIMIND, Éd.) Paris, département Mathématiques, Informatique, Décision, Organisation, France.

New South Wales, T. (2004). Risk management guideline. Sydney, P02.

Peleckienė, V., & Peleckis, K. (2014). Solvency II assumptions for increasing the international competitiveness of EU insurance industry. (E. Ltd, Éd.) Procedia - Social and Behavioral Sciences Journal,, Vol 110, 822.

Pitselis, **G.** (2009). Solvency supervision based on a total balance sheet approach. (E. Ltd, Éd.) Journal of Computational and Applied Mathematics, Vol 233, 85.

Vasiua, D. E., & Gheorgheb, I. (2014). Case Study Regarding Solvency Analysis during 2006-2012 of the Companies having the Business Line in Industry and Construction Listed and Traded on the Bucharest Stock Exchange. 21st International Economic Conference, (p. 259).

Wales, N. S. (2004). Risk management guideline. Sydney.

Marano, P., & Siri, M. (2017). Insurance regulation in the European Union Solvency II and beyond. Italy, Italy: Palgrave Macmillan edition.