

Ri Gerencia de Riesgos

y Seguros

ENGLISH APPENDIX

FUNDACIÓN MAPFRE

112

YEAR XXIX

JANUARY/APRIL 2012

Always forward looking

It is not that history repeats itself or we are suffering from *déjà vu*. What happens is that our minds develop patterns and schemata to bring the new into relation with the old. As time passes, however, and our own professional baggage builds up, we forget the new and dwell instead on the experiences we have amassed in the past.

Over two millennia ago Thucydides, an Athenian historian and soldier, developed a theory whereby the mere belief in the inevitability of a confrontation could become one of its main causes. Each band, believing that war will inevitably break out between them, ups its war footing and this very sabre-rattling confirms the worst fears of the other. The stakes are then built up successively on each side until the initial belief that a confrontation was inevitable becomes a self-fulfilling prophecy.

Almost unconsciously we are dragged along by a school of thought very close to the theory of inevitability. The deepening economic recession and the political shillyshallying in dealing with it are today's cynosures. Judging from the UN's «World Economic Situation and Prospects 2012», the worldwide economic crisis is worsening and a double dip seems inevitable. But the moot point here is whether we have learned any lessons from the past and, instead of being drawn into perverse fulfilment of the inevitable conflict, we might look to the new.

In this dire scenario we would like to strike an upbeat note. Nothing is inevitable and there is no doubt that the future will be better. Constant scientific breakthroughs enable us to look forward with confidence. More and more people are cottoning on to the fact that only good things can come from joint endeavours and the innovation capacity. Always forward looking.

In the first of this issue's three studies the authors, in view of the major environmental disasters in the recent past, propose an analysis of the environmental responsibility legislation trend in the United States and the European Union, with special attention on the Iberian Peninsula.

The second study, drawn up by a research team from the Universitat de Barcelona, analyses the advantages of using internal models –working from the development of a business risk quantification model of the insurance company's business incorporating the «contagion effect»– in the policy cancellation decision under Solvency II.

The third and last study of this issue presents the author's opinion about the importance of integral risk analysis for a proactive identification and treatment of said risks. This approach not only discovers threats but also pinpoints improvement opportunities that might help the firm achieve its strategic objectives.

The section is closed by a report containing information on 2010 and a foretaste of the first half of 2011, taken from the tenth report published by FUNDACIÓN MAPFRE, with the aim of giving a general overview of today's insurance market in the countries of Latin America. |

Environmental Liability and *financial guarantees:*

The Portuguese system and the Spanish example for other markets



The consequences of large environmental claims, recent and past, has awoken the need to know who should bear the costs of clean-up for the affected areas and for the repair of the damage. This is particularly relevant in respect of damage to «public» natural resources. The liability regimes, together with the principal of «he who pollutes, pays», appear to be very powerful instruments. In this part of the article, we will analyse the evolution of legislation on Environmental Liability (EL) matters in the USA and with special attention to Spain and Portugal, in the framework of the EU.

PAULA RIOS
MDS

ANA SALGUEIRO
Doctor of Environmental Engineering – Independent consultant



ILLUSTRATION STOCK

as a reference

In recent years, there have been numerous accidents as a result of human activity, following which we have been confronted with serious environmental damage. For example, there was the oil spillage of the *Exxon Valdez* at the end of the eighties, in Alaska; in 1998, there was the escape of toxic sludge in southern Spain caused by the breaking of a dam at a mine close to the Doñana nature reserve, which caused considerable damage to the nearby natural resources; or the shipwreck of the *Erika*, a year later, that polluted the French coast.

DISASTERS IN THE NEW CENTURY

We have also recently witnessed some large environmental disasters such as the crude oil spillage in the Gulf of Mexico by British Petroleum (BP) in 2010 – known as the Deepwater Horizon oil spill. This has

been recorded as the biggest oil spill in history of the industry. The spill lasted more than three months and produced enormous damage to the marine and terrestrial habitats, to the fishing industry and tourism in the Gulf. BP has set up a fund amounting to 20,000 million dollars to compensate the victims of the disaster.

In 2010, also, there was an important incident in Hungary when the wall of a reservoir, holding millions of cubic metres of toxic waste, broke. It was owned by MAL (Magyar Aluminium Termékek), an aluminium producer, and produced a wave of red sludge that caused several deaths and polluted land and rivers over an area of some 40 km². The spillage reached the Danube river. The Hungarian government estimated at the time that the clean-up and decontamination of the zone would take at least a year and the cost of the accident would be around tens of millions of Euros.

Also, in 2011, the biggest nuclear accident, since the 1986 Chernobyl disaster, happened at the Fukushima power station. This tragic event was caused by an earthquake and the subsequent tsunami gave rise to a series of breakdowns of the equipment, nuclear fusion and leakage of radioactive material at the Japanese station. Large quantities of radioactive particles were released into the atmosphere and reached the soil and seawater. It is estimated that there will be a significant number of deaths from cancer due to the exposure to high levels of radiation, especially in the population in the vicinity of the power station. The decontamination and dismantling of the installations will take decades.

These and other accidents have had consequences that far outweigh the necessary prevention measures; they have posed the question as to who should be responsible for the clean-up / decontamination in the affected zones and for repairing the damage. Should society as a whole pay the bill, i.e. the taxpayer, or should it be the polluters that pays when they can be identified?

This question is of particular relevance when damages are caused to natural resources with no defined property rights –the so-called «public assets»–, that are rarely considered in companies’ financial reports.

The liability systems, together with the «polluter pays principle», are presented as instruments that can potentially correct this situation for those activities with a high risk of producing this kind of damage. They impose the obligation to bear all of the costs of clean-up for contaminated land and to repair the affected natural resources.



EVOLUTION IN THE UNITED STATES

In the U.S., this subject was first dealt with in 1980 under the CERCLA law (Comprehensive Environmental Response, Compensation, and Liability Act), better known as Superfund. It represented a milestone in the application of the «polluter pays» principle as it determined the liability to pay the clean-up costs by those guilty of contaminating land with dangerous waste. After the *Exxon Valdez* accident, in 1989, the OPA (Oil Pollution Act) was created, as an independent body from the CERCLA, with the specific objective of acting in the event of damage caused by hydrocarbon spillages.

The Superfund Environmental Liability System (ELS) established in the United States is more ambitious than that developed in Europe; the definition of liability and the types of damage covered are wider; there is no monetary limit for the liability...

However, experience has shown the need to develop efficient mechanisms that compliment the environmental liability system in order to respond to the costs in the event of insolvency of the liable



THE ENVIRONMENTAL LIABILITY SYSTEM ESTABLISHED IN THE UNITED STATES IS MORE AMBITIOUS THAN THAT DEVELOPED IN EUROPE. EXPERIENCE HAS SHOWN THE NEED TO DEVELOP EFFICIENT MECHANISMS THAT COMPLIMENT IT IN ORDER TO RESPOND TO THE COSTS IN THE EVENT OF INSOLVENCY

companies which has often been called «orphan damage». In this respect, in Europe, operators were obliged to provide a financial tool that enabled them to guarantee their liabilities and the resources necessary to repair the environmental damage in the event of an accident.

DEVELOPMENT IN EUROPE

The development of the legal system in the European Union (EU) was, naturally, based on the U.S. experience. In 1989, at the heart of the European Commission, a «proposal for a civil liability system for damage caused by waste» was published. This document, which was revised in 1991, proposed strict liability for polluters and, moreover, included the notion of ecological damage as a «significant physical, chemical or biological deterioration of the environment». However, the waste sector strongly opposed and the part relevant to liability was not accepted. Finally, in 1999, the Directive on the landfill of waste was approved with the principle of the «polluter pays» but without a defined liability system.



In May 1993, the European Commission presented the «Green paper on remedying environmental damage», which contemplated this principle under the Civil Liability system although there were still several deficiencies such as: the definition of «environmental damage»; the demonstration of a cause-effect link; the calculation of the amount of compensation; and the question of its insurance. There was also a question mark over who should be in charge of seeking compensation for environmental damage when there was no private property involved. It was decided that this role should be played by the NGOs.

In 2000, the «White Paper» was published, and established the following principles for the future Environmental Liability system in the EU:

- Strict liability to be applicable for activities that are potentially dangerous for the environment.
- Definition of liability exclusions.
- The inclusion of traditional damages –to persons and property– and environmental damages – gradual pollution and damage to the biodiversity.
- An obligation for compensation to be effective in the environmental repair.
- The fixing of financial guarantees for the liability.

Following the reactions to the «White Paper», a proposed Directive was published in 2002 with certain «novelties»:

- Strict liability for activities that represent a potential danger to the environment.
- Considerable intervention by public authorities: they can demand clean-up or prevention measures from the operator or take the initiative to put them in place.
- Non-retroactive liability.
- The exclusions include: force majeure, the

development risk, emissions authorized by permit, etc.

- The emphasis on the repair of the environmental damage is confirmed.
- The innovative concept of damage to the biodiversity, natural resources and habitats is specified.
- It is not applicable to traditional damage to persons and property but rather only to «ecological» damage.
- Financial guarantees are not demanded and this decision is left to the member states.

The proposal was discussed by the European Commission with different institutions, including the CEA (European Insurance Committee) and representatives of various business sectors and environmental protection organisations. However, it was difficult to satisfy everyone. Finally, Directive 35/2004, of 30th April, was published and had to be incorporated into their local legislation by the member states within the following three years. The gist of the proposals was maintained in essence and, with regard to financial guarantees, they were not obligatory and it was up to the member states to decide on whether they should, or not, be obligatory.

IMPLEMENTATION IN SPAIN

In Spain, there was a considerable debate amongst the different sectors and strong involvement of the insurance market –one example is the PERM (*Pool Español de Riesgos Medioambientales* – Spanish Pool for Environmental Risks)–, which facilitated intense work on conciliating and preparing the regulations with the correct orientation. According to José Luis de Heras, General Manager of the PERM, it all started «a few weeks after the publication of Directive 2004/35 on Environmental Liability. Taking advantage of the

possibility contemplated under article 14, the Ministry of Environment announced that Spain would contemplate obligatory financial guarantees within the implementation of the Directive».

Moreover, there was serious concern in doing it correctly because, as de Heras pointed out, «the Spanish regulations already included several hundred rulings on obligatory insurance, most of which were deficient since there had been no prior verification that these insurances were sufficiently available in the market and that the owner of the affected activity could take out such obligatory insurance on reasonable terms». Another difficulty for the general manager of the PERM was that «it did not expressly consider that the said insurances could have exclusions or conditions affecting the validity of the cover».

«To avoid something similar happening with the financial guarantees for Environmental Liability –De Heras continues–, the PERM contacted the Ministry, with the backing of the insurers association, UNESPA, to propose a series of suggestions for the wording of the Law, so that it could comply with the following two objectives: firstly, that the liability mechanism should be clear, practical and, as far as possible, offer legal security for operators and their insurers; and, secondly, that it would be possible to put into practice the legal resolutions of the obligatory insurance». The introduction of standard instruments for evaluating the environmental risks was also proposed, together with cooperation in the whole process. «Fortunately, the Ministry accepted this offer and not only accepted the Pool's input, but also the cooperation with the business sector (CEOE) and other interested administrations and sector representatives».

In this way, Law 26/2007, of 23rd October, implemented the Directive and established the obligation to constitute financial guarantees for those activities listed under annex 111 of the ruling. These guarantees can be constituted in three



alternative ways or complimenting one another: by taking out an insurance policy, obtaining a bond or setting up a technical reserve through a self-owned fund.

POSITIVE AND NEGATIVE ASPECTS

In the opinion of the PERM's general manager, «the result of this transparent and open process was very positive in many aspects although we should also recognize that some mistakes were made», and he enumerates some of them «in the spirit of it being constructive in general».

In this sense, some of the positive aspects of the implementation (Regulation 2090/2008 that partially develops Law 26/2007) worthy of mention are:

- «The structure of the law, overall, is coherent and comprehensible; it does not introduce contradictions or overlap with other laws as the defects that the initial drafts contained were corrected.
- Suitable treatment has been given to the exemptions and alternatives contemplated in the Directive (joint and several liabilities, authorized emissions, development risks).
- The regulation of the obligatory nature of the financial guarantees has been introduced gradually and there are various alternatives for complying with the obligation.
- The nature of the guarantee contemplated limits that were coherent with the market in 2007.
- Guidelines were provided for the evaluation of environmental risks.
- There is also a guide of criteria for the repair of damage.
- Specific norms are contemplated for special situations: the obligation to repair already degraded resources, the insurance obligations for activities with various dependencies, continuity of cover during the liability expiry period liability once the activity has ceased, etc.

Amongst the negative aspects of the Law, José Luis de Heras mentions that:

- ✓ «Although the regulation of insurance is realistic, there is too much detail. Moreover, the extent of the covers has evolved considerably in



IN SPAIN, THERE WAS A CONSIDERABLE DEBATE AMONGST THE DIFFERENT SECTORS AND STRONG INVOLVEMENT OF THE INSURANCE MARKET, WHICH FACILITATED INTENSE WORK ON CONCILIATING AND PREPARING THE REGULATIONS WITH THE CORRECT ORIENTATION

a short time. It would have been better to leave the detail of the regulation for a technical ruling that could have evolved without having to change the law».

✓ «The design for the evaluation of environmental risks is too complex and, probably, expensive. On the other hand, it is wrong to link its usage exclusively to the fixing of the minimum obligatory sum insured»;

✓ «The threshold for the gravity of the environmental damage is too high and, therefore, the law is only applicable for very serious cases».

In conclusion, for the Head of the PERM, the overall result is positive, but there is still a long road ahead. «Despite these defects, which we propose should be modified in subsequent legislation, we consider that the cooperation between the ruling authorities and the affected sectors has been positive, both in respect of the overall result as well as the process itself. The level of mutual understanding has increased and there is a willingness to continue cooperating on other projects and subsequent phases».

IMPLEMENTATION IN PORTUGAL

In Portugal, on the other hand, there has been little or almost no debate. The *Secretaria de Estado do Ambiente*, the organism reporting to the Ministry for the Environment that is responsible for drafting the law, made some consultations to the insurance market through the *Instituto de Seguros de Portugal* (ISP), the authority that controls insurance

activities. The *Associação Portuguesa de Seguradores* (APS), in line with the CEA, constantly voiced its disagreement against having to constitute obligatory guarantees. The reason behind this opposition lay with the fact that it was still a very small and incipient market and they preferred to leave freedom to the parties to develop. So, it can be said that there was a sounding of the insurance market but not a real public debate.

In the opinion of Pedro Ribeiro e Silva, the coordinator of the APS's Civil Liability Follow-up Committee, «during the implementation of the directive into the Portuguese legal system, the APS always demonstrated to the *Secretaria de Estado do Ambiente* that it was perfectly prepared to evaluate the impact of the future disposition on insurance with regard to environmental liability».

However, in his opinion, the Secretary of State, unlike in the Spanish case, did not take advantage of working in a team with the experts and, as Ribeiro e Silva goes on to say, «on 29th July, Law Decree 147/2008 was published which, under article 22, declared, effective 1st January, 2010, the obligatory financial guarantees for those activities under Annex III, amongst them being insurance».

But, apart from other contingencies of the decree, «the first great perplexity for the insurance sector –Ribeiro e Silva adds– was not knowing how to quantify the sums to insure and, moreover, they had serious doubts on the extent of the liabilities. The same article 22 contemplated the possibility of a bylaw to fix the minimum requirements for the obligatory financial guarantees, but it was never published».

Pedro Ribeiro e Silva explains that «half way through 1989, the APS officially expressed its concerns to the *Secretaria de Estado do Ambiente*,



IN PORTUGAL THERE HAS BEEN LITTLE OR ALMOST NO DEBATE. ONLY THE 'SECRETARÍA DE ESTADO DO AMBIENTE' MADE SOME CONSULTATIONS TO THE INSURANCE MARKET THROUGH THE AUTHORITY THAT CONTROLS INSURANCE ACTIVITIES

which, in summary, referred to the object of the guarantees (administrative liability, civil liability or both), as well as other questions such as gross negligence, or the non-obligatory nature of insurance, in such a way that the obligatory financial guarantees be only limited to the damages or amounts not covered by an insurance policy. The APS also pointed out that, if this uncertain situation was to remain, the market would not be able to respond to the extent that was expected».

However, this warning was not heeded. According to the representative of the APS, «the obligatory financial guarantees came into force on 1st January, 2010 and the market started to consider a wide variety of insurance solutions. The guarantees were, and are, independent, alternative and complimentary. Subsequently, the APS contacted the *Agência Portuguesa do Ambiente* (APA), the official authority in charge of applying the disposition, informing them of the situation and making them member of the Advisory Board». We should add that, whilst in Portugal there is not a pool for environmental risks, it was always completely open to the possibility of cooperating with the PERM, through the APS or other companies that specialized on the subject.

The only debating initiatives came from private companies, such as E.Value, a consultancy firm

specializing in environmental matters, that organized a meeting entitled «More liability, more environment». The event involved several committees of experts of which the participating guests included ISP, APS, insurers and specialised brokers, such as MDS, and also large companies with environmental concerns. There were also representatives from the Ministry who, at that time, were drafting the law but they only mentioned some of the dispositions. Although all of the insurance market representatives were against the obligation of constituting financial guarantees, the Spanish example was followed (although only in the obligation, not in the prior dialogue).

Several conferences were also held on the matter, such as the one organized by MDS and E.Value with the title «Liability asset – Environmental Liability and financial guarantee», which was participated by prestigious speakers. Also attending were representatives from the ISP, the APS and large companies from the industrial sector, which led to an interesting debate. During the conference, there were attempts to demonstrate the need to follow the Spanish experience, as far as prior debate and careful preparation of the law is concerned. It was explained, also, that if this was not done, then there would be serious difficulties with its implementation. However, in the end, it was not to be and the Portuguese law introduced without further-a-do.

THE PORTUGUESE EL (ENVIRONMENTAL LIABILITY) SYSTEM

Law Decree 147/2008 of 29th July, in its current form, establishes the legal liability regime for environmental damage and implements Directive 35/2004 into the Portuguese legal system. At the same time, the Portuguese legislators took advantage to «clarify the existing doubts and difficulties in the law on Environmental Liability...».





On the one hand, the disposition introduces a subjective and objective Civil Liability system by which the operators-polluters are obliged to indemnify those persons who suffer damage (for example, personal and property damage, the so-called «traditional damage») due to an environmental disaster. On this aspect, it goes further than the Directive and the Spanish Law that are only concerned with Administrative Liability. On the other hand, the Administrative Liability system was created for not only repair but, above all, preventing damage to the environment and the polluter being liable to the general public. This is the way in which Directive 35/2004 was implemented into the Portuguese law. This truly is a new liability and, moreover, a liability in favour of prevention and repair of environmental damage which, in turn, entails a new and complex concept. The responsibility for this matter lies with the public administration, via the corresponding authority (in Portugal this is the *Agência Portuguesa do Ambiente* – Portuguese Environmental Agency).

On certain questions, the Portuguese regulations are a «minimalistic» implementation of the Directive since they include the exclusions and possibilities of exoneration for the polluter. However, in other sections, fairly hard rulings are incorporated; for example, it determines that «when the polluting activity is attributable to a legal entity, the obligations under the law will fall, severally, on the respective directors and officers». This means that their personal assets could be affected (as is the case in Spain). With regard to the cause, this does

not have to be proven unequivocally as is the case under the civil liability system but, rather, is based on a criteria of probability, which is much more onerous for the polluter.

In both Civil Liability and Administrative Liability, there are two levels of liability: subjective or based on the fault of the polluter; and strict liability which is applicable to the activities set out in Annex III which are considered to be dangerous (for example, operators subject to Directive 96/61/CE – Pollution Prevention and Control, waste management, water collection and discharge, etc.), which means that no-fault liability is applicable to all the activities not expressly excluded and which are not included under Annex III.

Administrative Liability also involves some new concepts, such as environmental damage (damage caused to protected species and natural habitats; damage to water courses and land, in the latter only if there is a human health risk). The Spanish law also adds «damage to the sea shore and river banks», which were not considered under the Portuguese law.

Moreover, and in accordance with the Directive, a series of prevention and repair obligations are contemplated for the polluter who must inform and put into operation a series of urgent measures in the event of an imminent threat. If the operator does not take these measures, APA can, subsidiarily, put them into operation and charge them with the costs. Similarly, the repair measures must always be notified to the APA, who will review them and correct them if necessary. The repair methods are also those contemplated in the Directive like in the Spanish law i.e. primary repair, complementary or compensatory and cannot be substituted by financial compensation.

With regard to financial guarantees, the Portuguese law (article 22) establishes that these are obligatory for those operators that undertake the activities specified in Annex III and, as in the Spanish system, they can be independent, alternative or

complimentary so that «they enable Environmental Liability to be borne by those that carry out the activity». These guarantees can be constituted by taking out an insurance policy, bank guarantee or self funding arrangements created to this effect (the possibility of participating in environmental funds is also contemplated). The law also states that «minimum limits may be established for the constitution of the obligatory financial guarantees (...) through a specific regulation».

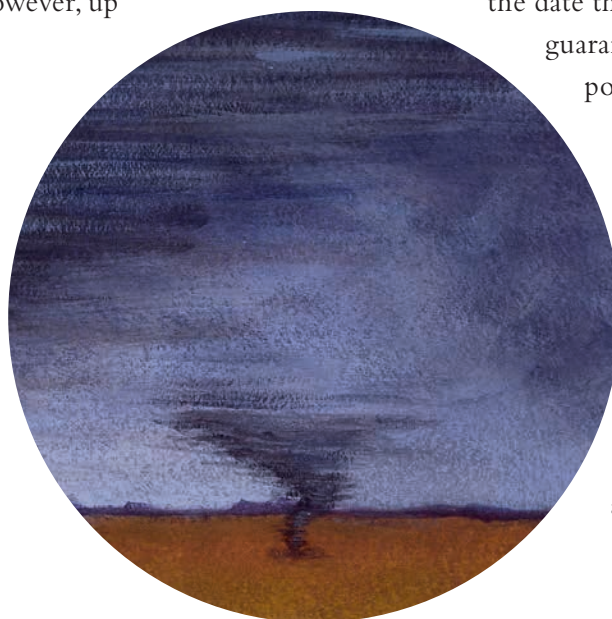
The Environmental Liability Law Decree was subsequently modified by Law Decree 245/2009, of 22nd September, in respect of the use of water resources, and by Law Decree 29-A/2001, of 1st March. The purpose of the first of these changes is to avoid conflicts of authority for its application and establishes APA as the only authorised entity in respect of water. The second modification affects article 22 of the Environmental Liability Law in that it establishes a future fixing of the minimum limits for the constitution of obligatory financial guarantees through a Government ruling (Finance, Environment and Economy). However, up until now, no ruling has been published.

Also, in August of 2010, a regulation was published which established the creation of an Accompanying Permanent Commission and Consultation Board for EL. The former was constituted by public entities such as the Ministry of Environment and APA, the Institute of Water

Resources and Nature Conservation, etc. The purpose was to establish specific articulation mechanisms and to support APA in its decisions, through technical cooperation and the sharing of information amongst the entities represented, whenever there is damage or a threat to the environment. The Consultation Board, on the other hand, is comprised of representatives from business, industrial and agricultural associations, municipal associations, representatives from the insurance and banking sectors. There were also representatives from the Ministry of Environment, Territorial Regulator, Health System, Economy, Transport and Agriculture. Their principal objectives are to prepare recommendations, the follow-up of technical and financial aspects relating to the constitution, preparation of conditions and the evolution of the financial guarantee market.

DEVELOPMENT OF THE PORTUGUESE MARKET

Although the law fixed the 1st January, 2010 as the date that the obligatory financial guarantees came into force, due to the possibility of future regulations, the market was waiting for «something» that did not happen. There was great surprise, in the second week of 2010, when all the operators in Annex III received a letter from the APA requesting proof of the contracted guarantee and its amount.



ON CERTAIN QUESTIONS, THE PORTUGUESE REGULATIONS ARE A «MINIMALISTIC» IMPLEMENTATION OF THE DIRECTIVE SINCE THEY INCLUDE THE EXCLUSIONS AND POSSIBILITIES OF EXONERATION OF THE POLLUTER, BUT IN OTHER SECTIONS THEY INCORPORATE FAIRLY HARD RULINGS

We would also point out that companies should understand that the requirement or not of a guarantee did not have anything to do with the existence of liability. To be clear, the liability is there (once the legal requirements have been verified, naturally); it has existed since 1st August 2008 and the operator that foresees pollution or pollutes will have to take the necessary prevention and repair measures, without any expense limit. This is the case whether or not the operator has a guarantee which, in any case, would not cover all of its liabilities. This guarantee is required for the most hazardous activities and, it should be added, if the operator does not contract the guarantee, it incurs in a very serious offence with large fines (up to 2,500,000 Euros, applicable to companies in the case of gross negligence).



Going back to 2010, the letter from APA provoked a rapid demand for quotations from insurers (perhaps, also, something similar occurred with the banks who were asked for bank guarantees). Similarly, the consulting firms were asked to undertake studies of the environmental risk and to provide advice on defining the amount of financial guarantee that needed to be contracted. Quotations were requested on a daily basis and the few insurers that could offer suitable products did not have the capacity to respond. Then, there was another problem: it was not known what sum insured was required; although some of the larger companies had carried out an evaluation of their risks, 90% hadn't taken this step and there were no indications from APA on the minimum guarantee amounts or the methodology for evaluation the environmental risk.

Whilst, at that time, there were few insurers in the market that could offer a solution for these types of risk, in a very short time, APA was «inundated» with insurance policies which was the best solution since it was the only one that offered risk transfer.

In this «emergency» situation, our advice as consultants was that operators that still did not have an environmental risk study –which was the case of the majority– should obtain a guarantee with a «provisional» value and that this could be confirmed, or not, afterwards, when a risk evaluation has been carried out. There were very many quotation requests and the operators received numerous proposals for transferring part of their environmental risk to insurers, since the insurance sector could only guarantee a part of the risk –although significant– of the insured's liability.

FOLLOWING THE PUBLICATION OF THE PORTUGUESE LAW AND SINCE THERE WERE NO INSTRUCTIONS OF ITS APPLICATION, ONCE AGAIN, IT WAS THE PRIVATE INITIATIVE THAT CONTRIBUTED, IN A WAY, TO MITIGATE ITS APPLICATION



Today, two years later, where are we? At the beginning of 2010, APA received considerable documentation confirming the existence of environmental insurance liability which, naturally, had different scopes of cover, depending on the insurer, as well as different limits according to the size of each operator and its likelihood of causing environmental damage.

However, during this time nothing has happened and the reaction to the situation is somewhat «strange». On the one hand, those who have contracted the cover and have provided the respective documentation, consider that they have complied with the authorities' requirements and this is the case. Others, on the other hand, even though they had requested an insurance quotation and as they hadn't seen any reaction from the authorities, i.e. coercive measures (that do exist under the law and are very severe), stopped the process, alleging that they were awaiting the regulation which wasn't forthcoming.

TECHNICAL ORIENTATION

Following the publication of the law and since there were no instructions on its application, once again, it was the private initiative that contributed, in a way, to mitigate the situation. In this sense, the E.Value/Critical Software developed the SARAe Project (Corporate Environmental Liability Evaluation System). Its principal objectives are to test and strengthen the EL evaluation methodology

developed by E.Value, creating conditions and opportunities for an effective articulation of the agents involved and obtaining conclusions for the building of an adequate framework for the implementation of the law. Various public entities that have a direct responsibility for the application of the EL at a national level have participated, including APA. The project was concluded in November, 2010 (information available at WWW.sara-eld.com).

In November, 2011, APA published the «Guide for Evaluating Environmental Damage and Imminent threats of Environmental Damage» which, according to Pedro Ribeiro e Silva of APS, «although it is not binding, it helped to position risk evaluation». The guide deals with matters such as the concept of the initial state and quantification of environmental damage, procedures to be adopted in the phases of evaluation, prevention and repair of the damage, the evaluation of environmental risks for human health, etc. It is hoped that the guide can help to reduce doubts and create common procedures (clarify concepts, propose action methodologies) for everyone that uses it and, in such a way, that the Law Decree becomes more transparent.

Moreover, as Ribeiro e Silva points out, «the APS is currently analysing and studying within its Civil Liability Committee, the different ways of contribution for possible uniformity in an insurance product, taking into account that it has to be used for different types of activity in the context of Environmental Liability».



It is also expected that an additional guide will shortly be published, «Methodological Guide for the Constitution of Financial Guarantees», which will include the proposal to exempt the constitution of these guarantees for activities that are considered to be of a low risk and the methodology for evaluating the environmental risk for the constitution of the financial guarantees. Moreover, together with this guide a document will be published on the «constitution of a financial guarantee» which will establish two levels of complexity for low risk activities: those that are exempt from the guarantee obligation and those that will have to contract it. Thus, the undertaking of a thorough analysis of the environmental risk is an essential tool.

WHAT THE INSURANCE MARKET OFFERS

In Portugal, the market reacted in a fairly proactive way to the new needs and, gradually, products adapted to the new legal reality appeared since the traditional covers (sudden and accidental pollution cover linked to Public Liability policies) did not comply with the minimum legal requirements.

Today, what is offered and the underwriting criteria varies. Some insurers, taking advantage of their long international experience on the subject, have provided their products simply against the completion of a questionnaire whilst others, on the other hand, have decided only to offer the cover to

their existing clients. Lastly, a third group of insurers, apart from the cover, are offering an environmental risk evaluation. Without wishing to be exhaustive, we feel that it is important to mention three important examples in the market: Chartis (the North American experience), MAPFRE (a large European insurer with the experience of the pool), and the largest Portuguese insurer, Caixa Seguros.

With regard to Chartis activity on Environmental Liability, Nídia Brito da Costa, Director of Liability at Chartis in Portugal, told us that «back in 2007 AIG had grown considerably in the Environmental Liability class throughout Europe, as a result of its decision and dedication to develop the line of business. At that time, there was no sign of the development of financial guarantees in Portugal, nor of insurance, and the Green Paper for the implementation of the Directive was not known; i.e. there was little talk of Environmental Liability and the financial consequences for operators». This is a true picture of the situation in Portugal only five years ago.

However, as the Chartis representative continues, «by anticipating the change in this situation, AIG decided to invest in a local team and, at the same time, in the creation of a Portuguese product adapted to the local legislation, on the basis that there would shortly be a demand for risk transfer. After all, the Directive had to be implemented into the national legislation». However, as Brito e Costa points out, «with the exception of

certain operators who were well organised in the management of their environmental risks, in general, the impact of the liabilities following the Directive was not recognized, nor the need for risk transfer which was negated or given little importance».

However, he adds, «the awareness of Environmental Liability has grown considerably in Portugal over the last two years, as a result of the increase in legislation on a European level and, above all, on a local level. There have been debates on the matter organized by the interested parties and support for the operators from the point of view of analysis, prevention and repair of environmental damage».

In Portugal, «by importing the US market experience», as from 2007, Chartis offers an Environmental Liability policy called ENVIRONPRO, which protects operators in the event of legal liability following a pollution incident covered by the policy. It was originally conceived to cover very complex industrial risks and we have experienced great demand from different sectors to the extent that this insurance has become one of the most efficient instruments for the transfer of this type of risk.

«ENVIRONPRO cover not only sudden and accidental pollution damage but also if it is slow and gradual and this avoids argument in the event of a claim. It includes prevention and repair costs for environmental damage and also third party bodily injury and material damage, clean-up costs and the insured's own damage, such as loss of profits. Like any other insurance contract, it has typical exclusions such as fines, abandoned property or

wilful misconduct of the insured». Apart from being the first insurer to offer an EL product in Portugal, Chartis has also had to pay the first claim which was handled with the support of experienced international experts.

«MAPFRE PORTUGAL's experience in environmental liability stems from the experience of MAPFRE in Spain, through the renowned PERM», says Pedro Ribeiro e Silva who, apart from being Head of the APS Liability Working Party, is Director of MAPFRE PORTUGAL's legal department. We share Ribeiro e Silva's opinion when he states that the Portuguese judicial system published in 2008, didn't take advantage of «that experience in the implementation of the product for this market, taking into account certain specifics and the lack of deliberation of the Law Decree 147/208, of 29th July». But, he goes on, «in the positioning of the



IN PORTUGAL, THE MARKET REACTED IN A FAIRLY PROACTIVE WAY TO THE NEW NEEDS AND, GRADUALLY, PRODUCTS ADAPTED TO THE NEW LEGAL REALITY APPEARED SINCE THE TRADITIONAL COVERS DID NOT COMPLY WITH THE MINIMUM LEGAL REQUIREMENTS

product created by MAPFRE, it was possible to adapt it to a great extent from the Spanish risk evaluation system, due to its similarity and even though Portugal does not use the UNE 150.008 norm nor any other evaluation norm. In 2011, APA published the «Guide for Evaluating Environmental Damage and the Imminent Threat of Environmental Damage».

He adds: «For certain risks a detailed form is used as it is difficult to associate the risk with the sum insured, especially when the legal disposition establishes a control on the operators by the IGAOT (*Inspecção-Geral do Ambiente e do Ordenamento do Território*), with confirmation of the obligatory financial guarantee through different alternatives, including insurance, that enables them to accept the environmental liability risk related to the professional activity».

Pedro Ribeiro e Silva also makes another very important point: «As the legal system does not contemplate an obligatory insurance, the MAPFRE PORTUGAL product is an alternative in the market and, for this reason, it can go further to satisfy the client / operators' needs without having to adopt wilful misconduct which is an inherent characteristic of obligatory insurances in Portugal, according to Insurance Contract Law (Article 7 of Law Decree 147/2008). In fact, the existing product represents a real commitment with the legal system since the administrative liability cannot be completely covered – limiting it to environmental damage caused by pollution. But, on the other hand, additional covers are allowed in respect of Civil Liability for damage caused by pollution and, in this way, the dual liabilities regime –administrative and

civil– included in the regulation is complied with».

In other words, for the Director of MAPFRE PORTUGAL's legal department, «the absence of the regulation in the Portuguese environmental legislation has enabled MAPFRE to have sufficient imagination to provide its clients /operators with products that, for the moment, meet the existing demand and, at least, ensure a legal ethical minimum. For example, we participate in several programmes in the industrial sector in aviation, mining, commercial and service activities». «At the same time –he adds–, MAPFRE has been contributing and participating in various training activities related to environmental liability with regard to clarifying the consequences of the legal regime in force. MAPFRE has also published articles which, apart from clarifying doubts, have also divulged the qualities of their product».

It is also interesting to learn of Caixa Seguros experiences. According to Susana Teixeira, Head of this company's Liability and Transport Underwriting Department, «since January, 2010, this group offers its clients an Environmental Liability insurance solution that covers damage caused to natural resources. The principal cover is the insured's Administrative Liability for environmental damage or the imminent threat of damage and, also, the costs of primary repair measures that are complementary or compensatory for the natural resources damaged by pollution and that are attributable to the insured. It also include the clean-up costs at the insured location that are obligatory by law and, at the same time, those that are produced outside the premises as a result of the spread of pollution initiating in the insured's premises. This cover is extended to include Environmental Civil Liability that covers damage to third parties following pollution.



THE ABSENCE OF THE REGULATION IN THE PORTUGUESE ENVIRONMENTAL LEGISLATION HAS ENABLED MAPFRE TO HAVE SUFFICIENT IMAGINATION TO PROVIDE ITS CLIENTS/OPERATORS WITH PRODUCTS THAT MEET THE EXISTING DEMAND AND, AT LEAST, ENSURE A LEGAL ETHICAL MINIMUM



The company has also developed a special cover for the Construction industry (for quantity surveyors)».

In his opinion, this is a far reaching project, since «apart from the development of an insurance based of Portuguese legislation and finding and negotiating the appropriate reinsurance for the product, a service has been developed together with Safemode –*Protecção de Pessoas, Património y Medio Ambiente* (previously called EAPS – *Empresa de Análise, Prevenção e Segurança*, SA). This service is the analysis of the environmental risk that is essential for anyone that is going to work in this area». And, for them, «our objective of providing a solution based for the environmental risks for each client has been, and will continue to be, a critical success factor».

The head of Caixa Seguros provided some data on the activity sectors that contract this insurance: «40% is represented by the waste management sector, 35% in industry and 15% by municipalities. The average sum insured is between 250,000 and 1 million Euros». Currently, «we are developing simplified solutions for small and medium sized

businesses and we have yet to have received a claim».

From these testimonials it can be seen that there is an interesting market on offer in Portugal. The products mentioned cover damage following pollution and, in certain cases, for large companies, covers can be wider and do not require that there be pollution but only the existence of environmental damage. Nevertheless, these are special situations and must be studied case by case.

Apart from these examples, other insurers have transformed or developed products to respond to this need. What is also apparent is the need to support operators in the technical analysis of the policy wordings so that they can negotiate better covers and choose, for example, a «package» with different options that are complimentary (such as Insurance and self-funding solutions).

To obtain this type of support it is essential that the operator knows the exposure to environmental liability which requires the undertaking of technical risk evaluation studies. How can we evaluate the degree of pollution at a location and return it to its former state if we haven't identified it previously? In this way, the operator can obtain useful information for defining the level of financial guarantee and, at the same time, take preventative measures or action.

Insurers and the banking system –somewhat absent on this subject– should promote and show their clients the advantages of detailed technical analysis in order to obtain results that will enable the sums insured and conditions to be appropriate for the reality of the risk. ■

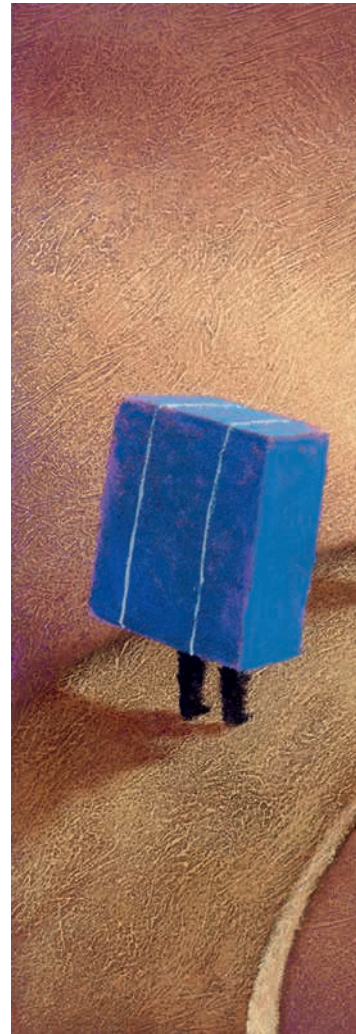
Internal models in

In this article, we analyse the advantages of the usage and implementation requirements of internal models in the Solvency II framework. By way of example, we developed an internal model for the quantification of business through approximations for the coefficient of the loss of portfolio, using real data of policy cancellations for an insurance company's general branch of business. The methodology used was original as it incorporated the contagious effect that exists amongst decisions to cancel policies. The results are compared with those that would be obtained by applying the standard model and with those obtained assuming independence in the decision to cancel. We concluded that to ignore the effect of contagion would lead the insurer to underestimate its exposure to this risk, making the proposed internal model more suitable for quantifying the company's specific business risk.

MERCEDES AYUSO GUTIÉRREZ
University of Barcelona

MONTSERRAT GUILLÉN ESTANY
University of Barcelona

ANA M. PÉREZ-MARÍN
University of Barcelona



↓
Their application in
the calculation of the coefficient
of loss of portfolio

Solvency II:



ILLUSTRATION STOCK

The European Solvency II Directive (Directive 2009/138/CE of the European Parliament and of the Council) intends that insurers maintain a sufficient total level of technical reserves and solvency capital to guarantee stability against adverse external fluctuations. In summary, the intention is that insurers should maintain a financial level in relation to the commitments acquired and that they guarantee the protection of the insured (Ferri *et al.*, 2010).

It is well known that Solvency II is based on three pillars. The first refers to quantitative requirements where there are two fundamental magnitudes: the solvency capital requirement (SCR) and the minimum capital requirement (MCR). The second pillar centres on qualitative requirements, specifically the management of risks and the applicable supervision regulations. Lastly, the third pillar refers to the communication of information to the supervisors and interested parties.

THE INTENTION OF SOLVENCY II IS THAT INSURERS SHOULD MAINTAIN A FINANCIAL LEVEL IN RELATION TO THE COMMITMENTS ACQUIRED AND THAT THEY GUARANTEE THE PROTECTIONS OF THE INSURED



The fourth section of the Directive on SCR establishes that this must correspond to the value at risk (VaR) of own funds calculated with a 99.5% confidence level. To calculate it, all quantifiable risks to which an insurance undertaking is exposed have to be taken into account, including potential losses and the adverse revaluation of assets and liabilities over the period of a year.

Solvency II also offers various methods of calculating the SCR which are basically related to the so-called standard and internal models. This article concentrates on the second of these methods and, by means of empirical applications, illustrates the use of internal models for quantifying business risk and develops scenarios on the coefficient of loss of portfolio.

The work is structured as follows. In the second section we look at certain fundamental

characteristics of the standard model and internal models that come out of the Directive. The potential advantages that can be derived from the internal models are contained in the third section and, in the fourth section, we consider the regulation requirements with which the models have to comply. The fifth section, with an empirical content, presents the results obtained from the application of an internal model, developed by the authors, for the quantification of business risk through approximations of an insurer's loss in portfolio. Lastly, in section six, we present the principal conclusions obtained from the study, together with the final recommendations.

Standard model vs. internal models

The standard model establishes a general formula for determining the SCR. Article 103 of the Directive indicates that the SCR is the sum of three items: the basic solvency capital, the capital requirement for operational risk and an adjustment for the loss-absorbing capacity of technical provisions and deferred taxes. This model contemplates the aggregation of risks so that the basic solvency capital is the sum of the underwriting risk (life, non-life and health business), the market and credit risks.

On the other hand, internal models are not based on a generic formula but are constructed on hypothesis based on the insurers experience and have to be properly justified. Specifically, Solvency II requires undertakings to demonstrate, with documentation, the structure and working of these models, referring to the statistical quality of the data employed, the calibration standards, assigning of profit and loss and

validation rules of the model (articles 118 to 122 of the Directive). Those companies that decide to use an internal model must obtain authorisation from the supervisory authorities and demonstrate that it is widely used.

The internal models can be partial or full. The former are applied in the basic SCR modelling, i.e. in determining the capital requirement for operational risk or to quantify the adjustment for the loss-absorbing capacity of technical provisions and deferred taxes.

They can also be applied to the whole of the business or only to some of the main business units. In general, the structure of risks on which they are based can be different to the standard model but, if it is a full internal model, it must at least evaluate those risks considered under the standard model.



Potential advantages of using internal models

On the one hand, we should point out that the standard model can be less complex and time-consuming in its implementation than an internal model. In our opinion, we consider it to be adequate for companies that have a limited data base and have little experience in modelling their risks. Moreover, on a European level, it provides a harmonized approach to the measurement and categorizing of risks. However, as it is directed at a very heterogeneous group of insurers in respect of size, types of business, etc., it can sometimes contain very general and excessively conservative specifications. In general, we would say that it is applicable to the risk profile of the majority of insurance companies but, in certain cases, it is possible that this normalised approach does not reflect adequately a company's specific risk profile.

On the other hand, internal models are developed within the company itself and analyse the global position of its specific risk based on its own information. The quantifying of the risk is undertaken using duly validated statistical methods and providing the technical-actuarial rigour on which these models are based. So, whilst the standard model is generic and applicable for any insurer, the internal model is specific to each company and, therefore, can be more precise for analysing a risk's specific profile.

In this sense, we would emphasize the great potential available today, within the Solvency II framework, through modelling statistical techniques for quantifying risks and their correlations. Amongst other aspects, they facilitate the study of the

THE STANDARD MODEL CAN BE LESS COMPLEX AND TIME-CONSUMING IN ITS IMPLEMENTATION THAN AN INTERNAL MODEL. ON A EUROPEAN LEVEL, IT PROVIDES A HARMONIZED APPROACH TO THE MEASUREMENT AND CATEGORIZING OF RISKS

INTERNAL MODELS CAN CONTRIBUTE TO THE COMPANY BEING ABLE TO CARRY ITS BUSINESS IN A MORE EFFICIENT MANNER BY IDENTIFYING THOSE BUSINESS AREAS THAT ARE MORE PROFITABLE

behaviour of risk measurement in different scenarios. Moreover, as far as the classification of risks is concerned, the internal models can follow the same, or similar, proposal as the standard model, always with the objective of reflecting, as well as possible, the global position of the company's specific risk. For that reason, we would say that the internal models can contribute to the company being able to carry its business in a more efficient manner by identifying those business areas that are more profitable and facilitating an effective application of risk mitigation techniques.

Internal models: requirements for their implementation

Articles 118 to 125 of the Directive refer to the requirements that have to be complied with by the internal models. Specifically, the undertaking has not only to demonstrate that the internal model is widely used but, also, that it has an important role in the governance system, in particular, in the risk management system, decision taking, evaluation processes and assigning financial capital. Moreover, the frequency of the SCR calculation, via the internal model, has to be coherent with its use. Regarding the responsibility of guaranteeing the suitability of the internal model, the Directive states that this lays with the management or administrative body (article 118).

The statistical quality requirement is laid down in article 119. To be precise, it states that the methods used for determining the probability distribution must be based on actuarial techniques, adequate statistics and

should be coherent with the methods used by the company to calculate the technical provisions. Moreover, up-to-date and reliable information should be used and based on realistic suppositions. With regard to the data used, the Directive states that it must be exact, complete and adequate.

Whilst it does not prescribe a specific method for determining the distribution of probabilities, the internal model should classify the risk adequately in order to guarantee its general application and carry out a fundamental role in the undertaking's system of governance, their risk-management system and decision-making processes, and capital allocation. Additionally, the internal model shall cover all of the material risks to which insurance and reinsurance undertakings are exposed and, as a minimum, in the case of full internal models, those considered under the standard model.

The internal models also contemplate the possibility of considering the existing dependencies between the different risk categories and amongst themselves which, in any event, have to be justified. The effect of risk mitigation techniques can also be taken into account provided that the model adequately reflects the credit and other derived risks. On the other hand, those risks associated with financial guarantees and contractual options have to be evaluated precisely, provided that they are significant.

Moreover, in the internal model, you can contemplate the measurement of future actions that are expected in the event of certain circumstances and can indicate the necessary execution time. In the same way, the model will take into account all forecasted payments to policyholders and beneficiaries, regardless of whether they are



contractually guaranteed. Also, one can use time horizons or risk measurements different to those established for the basic SCR provided that the necessary protection level is guaranteed for policyholders and beneficiaries. In this case, the SCR will be calculated from the distribution of probabilities generated from the internal model using the VaR of own funds at 99.5%. If the company cannot obtain the SCR directly from the distribution of probabilities generated by the internal model, approximate calculations can be used, provided approval is obtained from the supervisory body.

Similarly, the undertaking must demonstrate that the categorizing of risks used in the internal model explains the causes and sources of profits and losses and must review it, at least annually, for each main business unit.

Lastly, the company must check the working of the internal model by means of a periodical validation cycle, verifying that its specifications are still adequate and comparing the results obtained with the reality. This process is based on a statistical process that includes the verification of the validity of the distribution probabilities, as well as an analysis of the stability of the model and the sensitivity of the results compared to variations in the initial hypothesis.

An example of the internal model for the risk management of the business

Without a doubt, the positioning of the insurance company in the market constitutes an element of risk which is reflected in the loss of portfolio registered every financial year. Recent studies (Guillén *et al.*, 2006, Guillén *et al.*, 2008, y Pieschacón, 2010) have shown its importance for the industry and, therefore, in the Solvency II framework, it is fundamental to quantify this risk. In this section we will show an example of the internal model applied to the risk management of business in the insurance environment. For this purpose, we will use data on policy cancellations provided by an insurance company and from which we developed loss of portfolio scenarios in the general insurance class.

The methodology used is that proposed by Ayuso *et al.* (2011a) in which an alternative is offered to the standard model for determining the loss coefficients. This contribution consists of considering the contagious effect that exists between the

**THE POSITIONING
OF THE
INSURANCE
COMPANY IN THE
MARKET
CONSTITUTES AN
ELEMENT OF RISK
WHICH IS
REFLECTED IN
THE LOSS OF
PORTFOLIO
REGISTERED
EVERY FINANCIAL
YEAR**

THE PERIOD STUDIED COVERED TWO YEARS AND WE CONSIDERED ALL OF THE POLICIES WITHIN THREE TYPES OF NON-LIFE BRANCHES: MOTOR, ACCIDENT AND HEALTH INSURANCE

cancellations of policies. We also compared these results with those obtained using the standard model and, in addition, with those obtained assuming the decisions to cancel were taken independently.

In this particular case, the period studied covered from 31st. December, 2005 to 31st. December 2007, and we considered all of the policies within three types of non-life branches: motor, accident (which includes household, funeral expenses and personal accident) and health insurance. The sample consisted of 300,386 policies in force at the beginning of the study. We segmented them according to type (motor, accident or health) and their length of time in force at the beginning of each of the six month periods analysed (differentiating between whether the policy was in its first, second, third year or more). We used these segmentation variables since previous studies (Brockett *et al.*, 2008) show that the probability of

cancellation depends, amongst other factors, on the type of policy and its age.

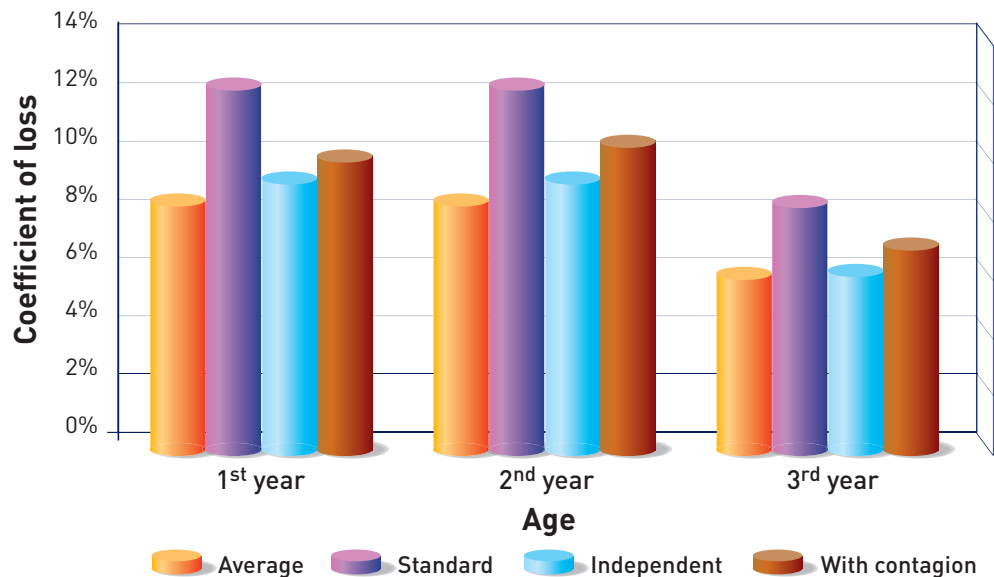
In this way, we determined four coefficients for each segment analysed: the average¹ coefficient of loss, the coefficient of loss under the standard model (which consists basically in increasing the average coefficient by 50%), the one for the case where we assumed independence (absence of contagion) and one that incorporated the contagious effect between cancellations². As we indicated before, the specific formulae used in the calculation can be found in Ayuso *et al.* (2011a).

In figures 1, 2 and 3 we show these four coefficients of loss for the accident, motor and health branches respectively. Whereas figure 4 shows the overall results for the three branches of business analysed. The details of the values used in the construction of the four illustrations can be found in Ayuso *et al.* (2011b).

¹ In this study we assigned the same weighting to the different periods analysed, so the coefficient of loss is nothing other than the arithmetical mean of the six monthly registered percentage of portfolio loss. The percentage of loss is also shown as the quotient between the number of cancellations observed during the period and the number in force at the beginning of said period.

² In the last two cases, the confidence intervals have been constructed at a level of 99.5%.

Figure 1. Coefficients of loss for the Accident branch.



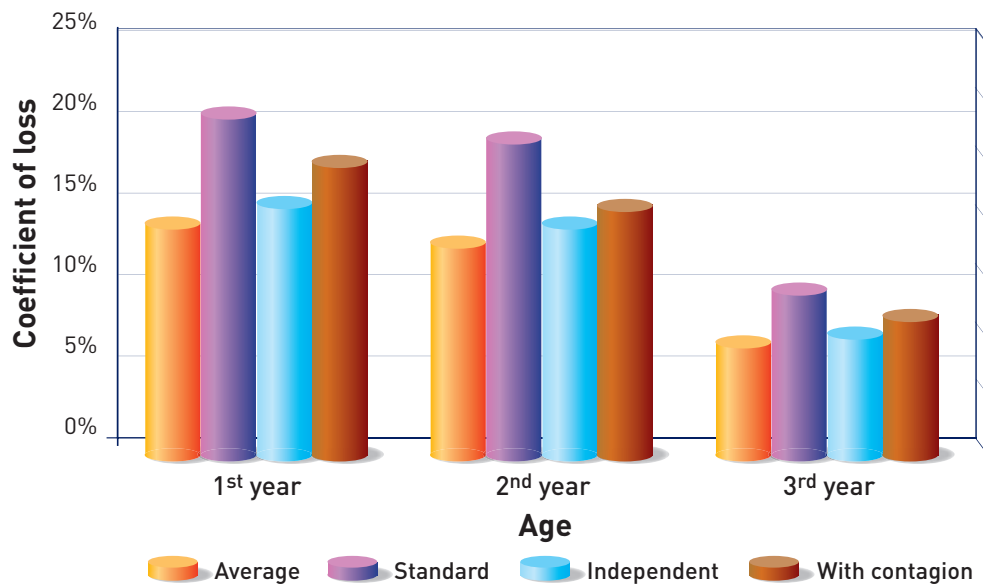


Figure 2. Coefficients of loss for Motor insurance.

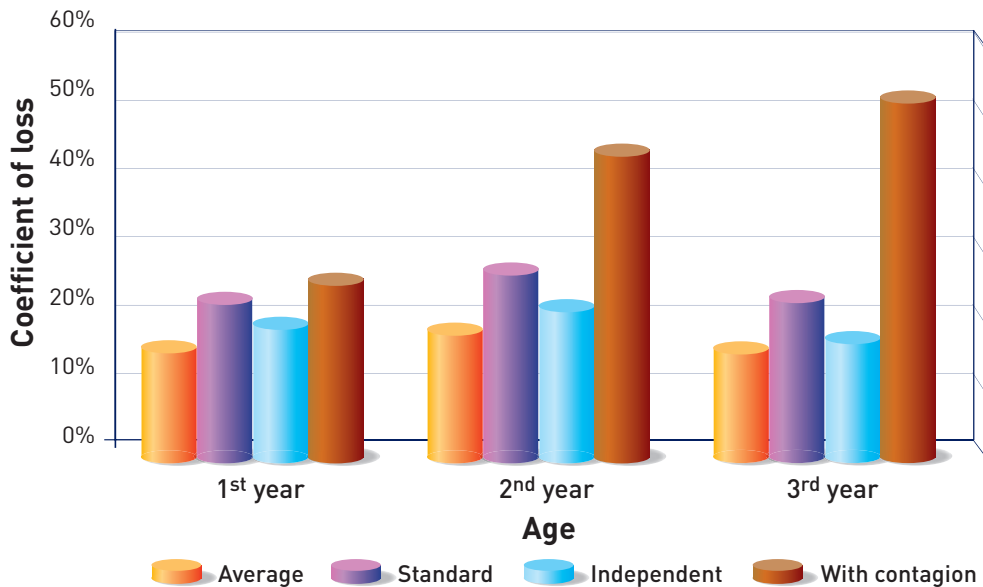


Figure 3. Coefficients of loss for the Health branch.

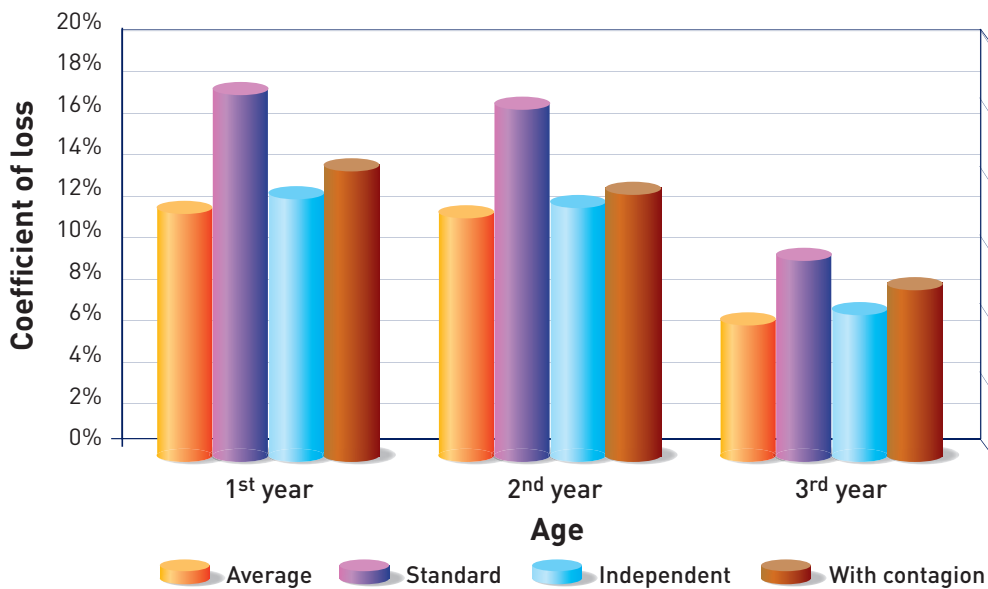


Figure 4. Coefficient of loss for the three general insurance branches.

The coefficients of contagion obtained following the methodology described in Ayuso *et al.* (2011a) are presented in table 1.

Table 1. Coefficients of contagion*

Product	1st. Year	2nd.Year	3rd + Years
Accident	0.11	0.19	0.12
Motor	0.54	0.09	0.17
Health	4.50	32.33	71.50
General	0.19	0.03	0.21

The coefficient of contagion r is shown multiplied by 1000, r^ 1000.

In general, we can indicate that the health policies are those that register the greatest coefficients of loss, followed by the motor and accident branches. We can also say that, as one would expect, the coefficients of loss reduce as the years in force of the policies increase (except in the case of the health branch).

At the same time, we can observe that the standard model shows higher models than those obtained under the hypothesis of independence. They are also higher than those corresponding to the assumption that there is contagion amongst the cancellations, except in the case of health insurance. This is due to the fact that they do not reflect the fact that the decisions to cancel in the health branch are very co-related and this produces high levels of contagion which are apparent in table 1 for this specific branch.

We concluded, therefore, that the standard model is too conservative and produces excessively high coefficients which could be due to its construction, consisting in increasing the loss coefficient obtained by



50%. However, neither the standard model, nor that based on the independent hypothesis, pick up the high level of correlation that exists between the decisions to cancel in the health branch, for which we should obtain a much higher coefficient to those registered for these two models. On the other hand, the model that assumes independence between the cancellation decisions underestimates the risk since it shows lower coefficients than those registered in the case where contagion is presumed.

Lastly, figure 5 shows the results obtained for coefficient of loss assuming that contagion exists in the cancellation decisions, according to the level of confidence. Taking a 99.5% confidence level as a reference and considering the policies in their first year in force, the coefficient value is 13.46% and reduces to 12.61% for a confidence level of 97.5% and 14.88% for a 99.9% confidence level. In conclusion, the data represented in figure 5 describes the sensitivity of the coefficient of loss when there are changes in the level of confidence and, therefore, can provide the company with valuable information for properly managing its business risk as it shows a greater propensity to cancel during the first year of the policy.

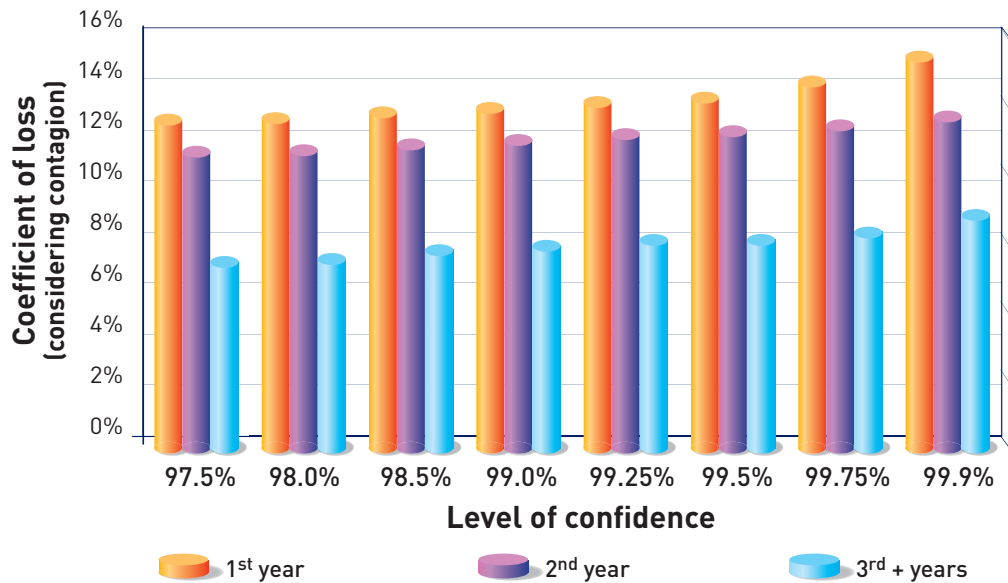


Figure 5. Coefficients of loss (assuming contagion) according to the confidence level. Results for the three general insurance branches.

By way of summary, we can say that the internal model presented enables the presentation of loss of portfolio scenarios considering that the cancellation decisions are produced as a «chain reaction». In our example, prepared with real data, we have established the existence of this contagion and that it has an important impact on the results. In fact, the greater the degree of contagion, the greater the error that we will make in the preparation of scenarios for the loss coefficient assuming independence in the decisions. On the other hand, the standard model is too conservative in the majority of the cases, giving rise to excessively high percentages of loss. As a result, to not take into

account the dependency that exists between the cancellation decisions of the insureds will lead the company to quantify incorrectly the real business risk exposure whilst, to use the standard approximation, can imply excessively unfavourable scenarios.

Conclusions and final recommendations

In this article we have summarized some of the potential advantages of using internal models in the context of Solvency II and the regulatory requirements that have to be followed for their implementation. By way of example, we carried out the application, with real data, of the methodology proposed by Ayuso *et al.* (2011a) for the development of an internal model applied to the management of business risk through approximations of a company's loss of portfolio. This methodology considers the impact on the results of the existence of a certain contagion between the cancellation decisions of the insureds and, thus, the





scenarios formulated are more realistic and precise than those obtained using the standard model.

The internal model that we have presented, by way of example, allows us to conclude that to ignore the effect of contagion and assume independence in the decisions to cancel policies introduces an error in the estimations that could lead an insurer to underestimate its business risk. Also, the standard model tends to produce excessively conservative coefficients. Our recommendation would be to carry out the

analysis developed in this study for different types and durations of policies in view of the fact that both can affect the probability of cancellation.

In any event, we consider that this article illustrates the great potential of internal models in the management of risks and also contributes some general guidelines for insurers in respect of the correct preparation of loss of portfolio scenarios and, as a result, the measurement of exposure to the business risk, within the framework of Solvency II. ■

BIBLIOGRAPHICAL REFERENCES

AYUSO, M., GUILLÉN, M. & PÉREZ-MARÍN, A. M. *Methodology for the calculation of scenarios with loss of portfolio in Solvency II with contagion between cancellations. Annals of the Spanish Institute of Actuaries*, 2011a, n° 17, 13-30.

AYUSO, M., GUILLÉN, M. & PÉREZ-MARÍN, A. M. *Methodology for the calculation of loss of portfolio considering contagion between cancellations in general insurances. Research on Insurance and Risk Management: Riesgo 2011*, Eds.: J. M. Fera, E. J. Jiménez y M. Guillén. Madrid: MAPFRE Foundation Notebooks, 2011b, n° 171, 109-121.

BROCKETT, P. L., GOLDEN, L., GUILLÉN, M., NIELSEN, J. P., PARNER, J. & PÉREZ-MARÍN, A. M. *Survival analysis of household insurance policies: how much time do you have to stop total customer defection?. Journal of Risk and Insurance*, 2008, vol. 75, n° 3, 713-737.

Directive 2009/138/EC of the European

Parliament and of the Council of 25th. November, on life insurance, the taking up and pursuit of insurance and reinsurance (Solvencia II).

FERRI, A., RODRÍGUEZ, P. & ROMERO, M. J. *Risk Management. A study on the insurance sector in Spain in 2010: qualitative aspects of Solvency II*. Dir. P. Blanco-Morales y M. Guillén, Fundación de Estudios Financieros, 2010, n° 38, 111-129.

GUILLÉN, M., NIELSEN, J. P. & PÉREZ-MARÍN, A. M. *The duration of different insurance policies in the household – an integrated approach*. Gerencia de Riesgos y Seguros, 2006, n° 96, 23-32.

GUILLÉN, M., NIELSEN, J. P. & PÉREZ-MARÍN, A. M. *The need of monitoring customer loyalty and business risk in the European insurance industry*. Geneva Papers on Risk and Insurance – Issues and Practice, 2008, n° 33, 207-218.

PIESCHACÓN JR., C.A. *The loss of life portfolio and its consequences*, Actualidad Aseguradora, 2010, 10-11.

Risk management

drives

credibility and transparency

It helps to boost income, cut costs and manage intangibles such as reputation and brand



Risk management, from both a threat and opportunity point-of-view, should never be seen as a mere tag-on to other processes. It has to be fully integrated into any organisation's corporate management, favouring ethical behaviour, legal security and corporate social responsibility.

ÁNGEL ESCORIAL BONET
RISKIA

The introduction to the standard «UNE-ISO 31000-2010 Risk Management: Principles and Guidelines» states categorically that «all activities of an organisation involve risk». Later on it recommends that «organizations develop, implement and continuously improve a framework whose purpose is to integrate the risk management process into the organization's overall governance, strategy and planning, management, reporting processes, policies, values and culture».

Moreover, according to Spain's Unified Good-Governance Code (*Código Unificado de Buen Gobierno*), also known as the Conthe Code, the board of director's powers include approval of «the risk management and control process and also the periodical monitoring of the internal information and control systems».

As regards the Audit Committee, the Unified Good-Governance Code recommends that its members, especially the president, «should be designated in light of their knowledge and experience in accountancy, auditing or risk management».

It also recommends that the risk management and control process should deal at least with all the following. Firstly, it has to identify the various types of risk (operational, technological, financial, legal, reputational) that the company has to cope with; financial or economic risks will include contingent liabilities and other off-balance risks. It should also establish the risk level deemed by the company to be acceptable as well as the planned measures to mitigate the impact of the identified risks and the internal control and information systems to be used for controlling and managing them, including contingent liabilities or off-balance risks.

As for the internal control and information systems, the Audit Committee, under the Unified Good-Governance Code, is considered to be responsible for «periodically reviewing the internal control and risk management systems to ensure that the main risks are pinpointed, managed and brought to wider notice».

Working from this reference framework, a Spanish school- and office-material production and

distribution company hired the services of a specialist consultancy to ensure the former's compliance with the Conthe Code for listed companies and the standard UNE-ISO 31000. In this particular case the consultancy's remit was to audit the integral risk analysis that it had conducted in 2005 and whose conclusions were incorporated by the firm concerned into section D, Risk Management Control Systems, of its Annual Corporate Governance Report of this same year.

The purpose of the audit was to update the firm's risk map and bring it into line with its new business context, paying special attention to the purchase of a new company in 2009. The business of this purchased firm, with a turnover tripling the purchasing firm's, was the distribution of computer consumables; its production targeted the European market.

PHASE-BASED APPROACH

Working from the information and figures furnished by the firm, the consultancy's approach was phase based to fit the risk management stages: risk assessment (identification, analysis and evaluation), risk treatment (validation of the action plan by the organisation), monitoring and review (periodical auditing of the validated plan). This phase-based approach ensured optimisation of results and costs.

The study objective was to draw up a risk map and an updated draft of the action plan to optimise the organisation's risk situation and thus ensure compliance with the Unified Good-Governance Code for listed companies within the framework of the standard UNE-ISO 31000.



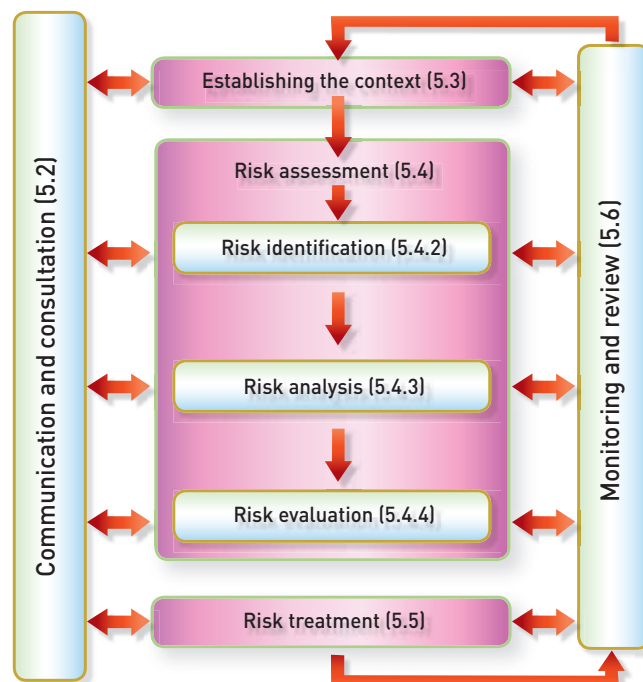
**WORDS LIKE CONTROL, PREVENTION, LEARNING, EFFICIENCY, IMPROVEMENT OR EFFICACY ARE
INEXTRICABLY BOUND UP WITH THE CONCEPT OF RISK ANALYSIS**

As already pointed out, it should be remembered here that the company concerned purchased a new subsidiary in 2009, whose volume and activity called for a review of the conclusions of the integral risk analysis conducted in 2005. Furthermore, while the project was underway, the company bought the continental business of a European competitor.

The consultancy's proposal for achieving the object in view involved the following steps: Audit the status of the improvement process proposed in the 2005 report. Identify and analyse the risks



RISK MANAGEMENT PROCESS UNDER UNE-ISO 31000

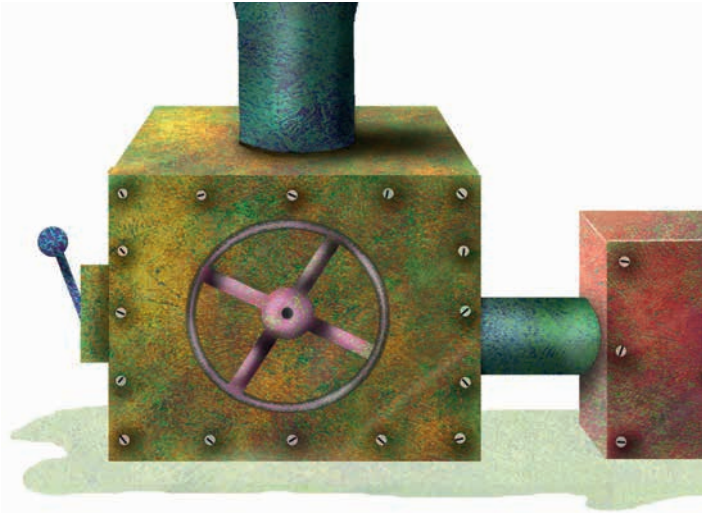


Source: UNE-ISO 31000

indicated in the Good-Governance Code, duly brought into line with the organisation's new situation, to build up an updated risk map in due accordance with the standard UNE-ISO 31000, on the basis of FERMA's risk classification. Validate the new risk improvement plan together with the firm.

Thus conceived, the project provided the company with all the following:

- An updated risk map with the desired scope.



- A draft action plan to minimise the analysed and assessed risks.
- Validation of the plan by the audit committee.

METHODOLOGY

The audit, conducted by a multidisciplinary team of experts, pinpointed the different types of risks (operational, technological, financial, legal, reputational) faced by the company.

For the systematic management of the risks, the consultancy broke down its inventory and analysis into groups of risk in keeping with the company's structure and activities, according to the following classification:

- I. Management** (human resources policy, market regulation, business- and sector-culture, communication, including crisis readiness and board makeup).
- II. Information systems** (analysis of IT risks and physical security including cyber risks).
- III. Supply chain** (study of the contracts and suppliers of raw materials and supplies, including their logistics and transport, and of the products made by the organisation).

IV. Business processes (identifying bottlenecks with their back-up alternatives, taking maintenance into account).

V. Products and services (including the quality system).

VI. Environment (targeting environmental risks including those deriving from new legislation on the protection of natural sites and resources).

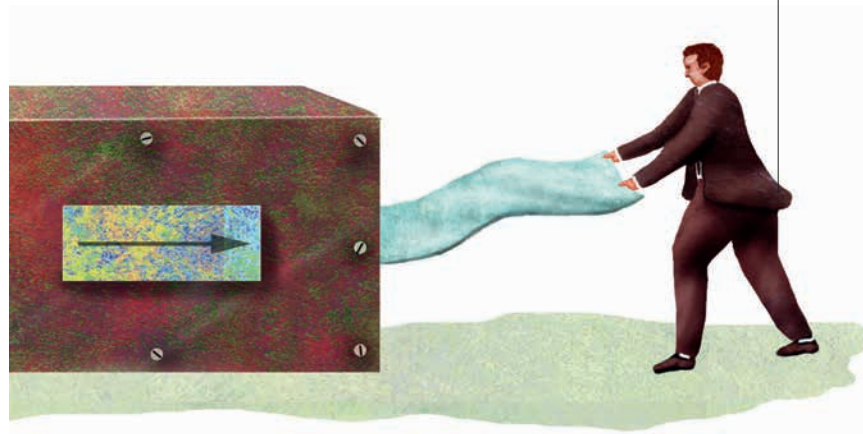
VII. Properties (taking in not only traditional internal risks like fire and explosion but also those deriving from public access and external natural events like floods and earthquakes).

VIII. Employees (focusing on health and safety aspects).

The eight abovementioned groups would take in operational risks and hazard risks as laid down in the scheme of the Federation of European Risk Management Associations (FERMA) and studied under the integral risk analysis conducted by the consultancy back in 2005.

The scope of the new analysis was broadened, incorporating Strategy and Finances into the abovementioned groups.

IX. Strategy (analyses the organisation's market situation, studying such aspects as competition, customer demand, customer- and industry-changes, the life cycle of products and services, potential mergers and acquisitions and the organisation's intellectual capital).



X. Finances (analyses the organisation's liquidity, cash flow, interest- and exchange-rates and credit).

The scope of the work carried out would thus cover the whole spectrum of the FERMA risk classification, with the 2005 risk analysis being updated to the current situation taking into account the purchase of the new company and the new strategic and financial risk groups. This meant that an opinion in keeping with the Unified Good-Governance Code could then be issued.

Risk evaluation involved the same semi-quantitative method of potential scenarios and their effects, as used back in 2005. This meant that past results could be harnessed, cheapening the cost of the project.

The semi-quantitative method of potential scenarios combines several of the techniques laid

down in the new UNE-ISO 31010 standard, assigning to each identified risk a value from 1 to 16, the result of multiplying their intensity / severity by their probability / frequency, each one scored from 1 to 4.

Three risk-valuation thermometers were used:

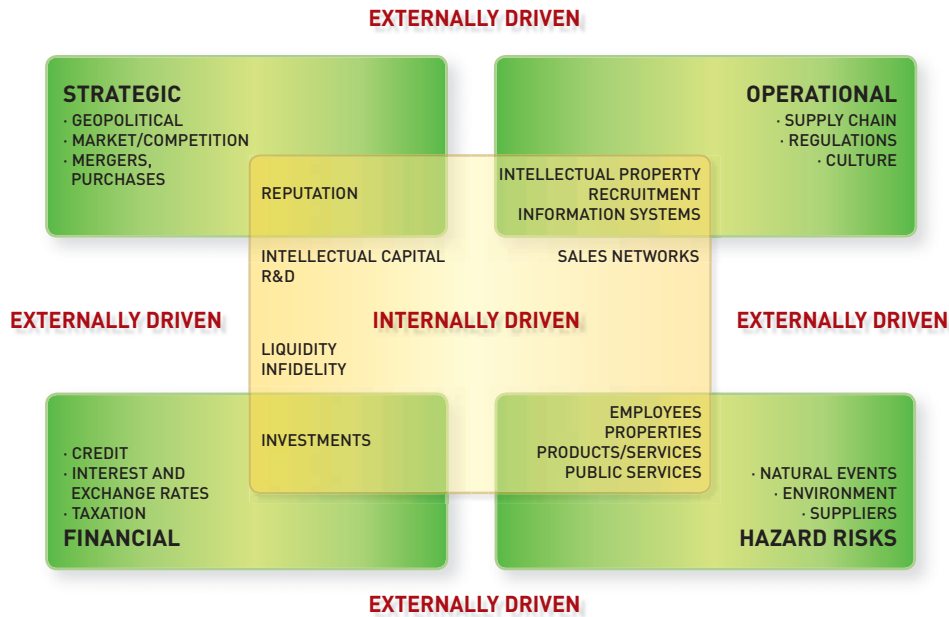
- **ERL:** Estimated risk level in 2005.
- **ARL:** Audit risk level in 2011.
- **TRL:** Target risk level.

The intensity / severity and probability / frequency for each risk scenario were rated from 1 to 4 according to the following criteria for each one of the variables considered:

Intensity, severity:

- 1. Moderate:** If the consequences call for the modification of some resources or processes, causing economic disturbances that can be assumed in the results for that year.

EXAMPLE OF EXTERNALLY AND INTERNALLY DRIVEN FACTORS

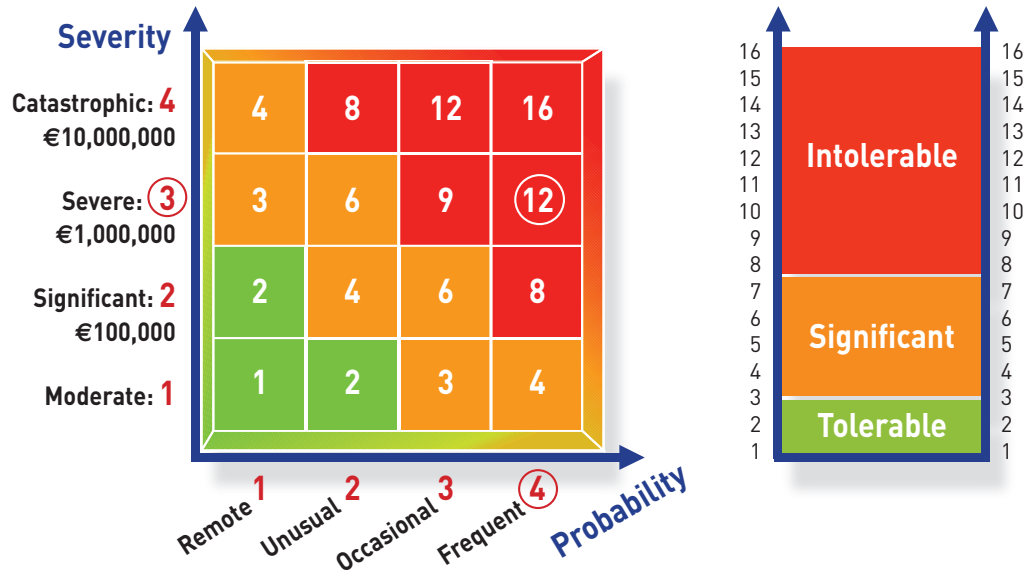


Source: FERMA.



RISK MANAGEMENT SHOULD BE FULLY INTEGRATED INTO ANY ORGANISATION'S CORPORATE MANAGEMENT, FAVOURING ETHICAL BEHAVIOUR, LEGAL SECURITY AND CORPORATE SOCIAL RESPONSIBILITY

RISK TRAFFIC LIGHT



Source: Riskia.

2. Significant: If the losses cause considerable short-term difficulties calling for the modification of some objectives and a knock-on effect on results for the year.

3. Severe: If their impact on results is such that the organisation not only has to tweak its short-term objectives but also rethink all its future plans.

4. Catastrophic: If they threaten the organisation's very survival.

Probability or frequency:

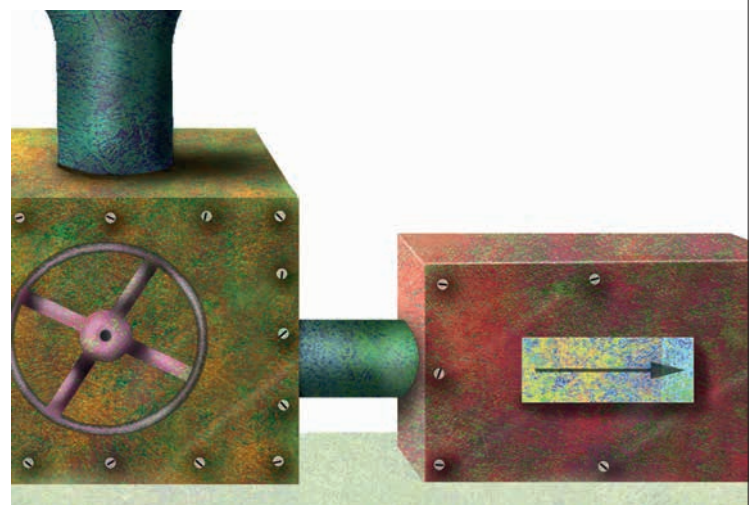
1. Remote: If the event concerned happens only extraordinarily (once a century or once in the organisation's existence).

2. Unusual: If it happens rarely (less than once a decade).

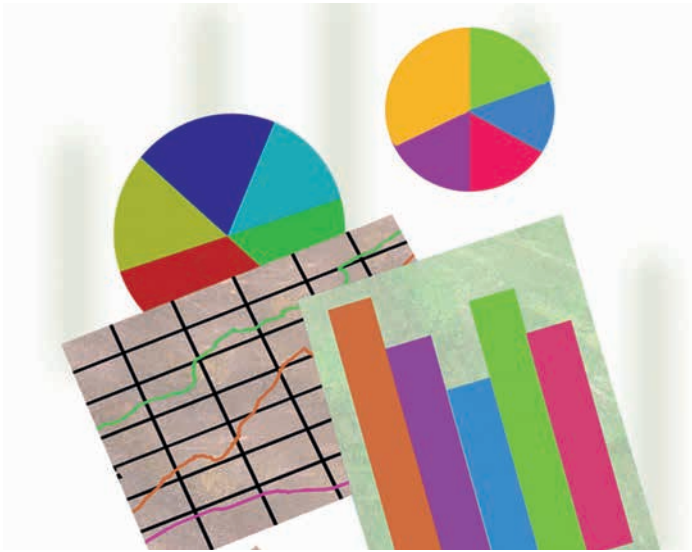
3. Occasional: If it happens once a decade.

4. Frequent: If it happens every year.

The estimated score obtained for each risk (on a scale from 1 to 16) gives a value that is classed in three zones of the thermometer under the ALARP



INTEGRAL RISK ANALYSIS ALSO FACILITATES COMPLIANCE WITH THE COMPANY'S LEGAL AND REGULATORY REQUIREMENTS



method (The ALARP method is defined in annex B27 of the standard UNE-EN 31010 and is put forward as ideal for risk management purposes):

- **Red**– intolerable risks.
- **Orange**– ALARP zone (As Low As Reasonably Practicable).
- **Green**– broadly acceptable risks according to the organisation’s risk policy.

For each risk analysed and assessed (outside the acceptability zone), the consultancy proposed an improvement action to bring it down to a target risk level (TRL) in keeping with the organization’s risk policy, so that:

- As regards the risks of the 2005 report, the consultancy audited their current state. At the same time it checked for the appearance of new risks or the disappearance of old risks.
- For increases of scope (taking into account the company bought in 2009 and the strategy and finances groups) the indicated process was carried out from scratch.

The consultancy’s report proposed minimisation measures for each risk analysed, such as the following:

1. Elimination technique from position A to D (tolerable).
2. Combination of risk minimisation measures

to bring it down from A to D, passing through B (by applying probability-reducing prevention measures); to C (by applying severity-reducing protection measures) for a subsequent transfer (insurance or other contract) to position D.

A weighted measure can then be obtained of the risk levels of the risk groups analysed; this would represent the Overall Risk Level.

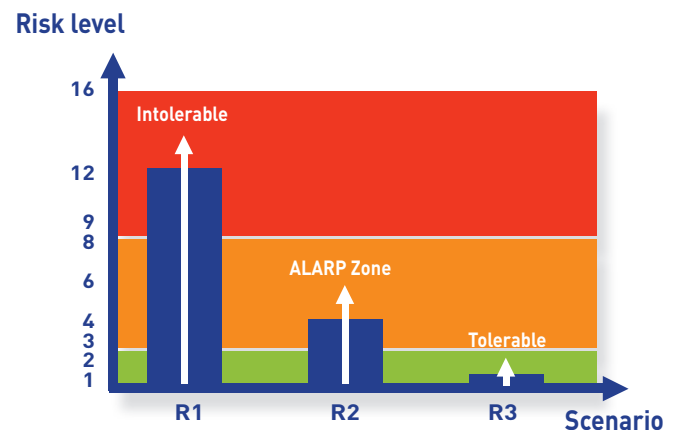
This Overall Risk Level is then broken down into an Estimated Overall Risk Level (estimated initially), an Audited Overall Risk Level (audited at each moment) and a Target Overall Risk Level, all of which then serve as global indicators of the improvement process. These indicators can be customised for each risk group or industrial establishment in the case of operational and hazard risks.

The consultancy used a colour system to facilitate monitoring of the risk inventory and of the improvement measures, as follows:

- Risks and actions of our 2005 report in black.
- Auditing and updating of the new 2011 risks in blue.

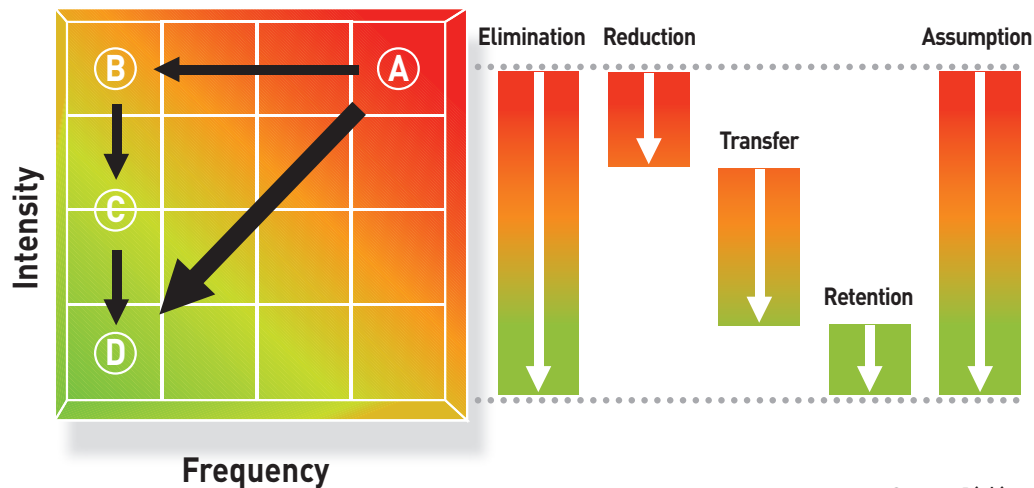
In June 2011 the consultancy company issued a preliminary report with the factfiles of the 10 groups

ALARP METHOD (AS LOW AS REASONABLY PRACTICABLE)



Source: Riskia.

RISK MANAGEMENT SAFETY CYCLE



Source: Riskia.

that had been sent to the company coordinator, who then sent them out to the various interlocutors for their comments. The company's resulting notes and comments were recorded in red, as were the activities to be taken by the organisation or even those planned as a result of the preliminary report.

The consultancy used the following ratings for its monitoring system:

- Pending, when no efficient measure has yet been taken.
- Underway, when measures have been planned but not yet enforced.
- Partially executed, if the measures partially reduce the risk.
- Eliminated, if the risk has disappeared when the audit is conducted.
- Assumed, if the risk is taken on by the organisation.

- Executed, if an effective minimisation measure has actually been carried out.

THREATS AND OPPORTUNITIES

The consultancy established the 2011 risk map (both threats and opportunities) breaking down company risks into ten groups according to the FERMA risk classification, as already pointed out. The risk-identification and -assessment methodology used in a severity vs. probability map was in line with the standard UNE-ISO 31000.

Together with the 2011 risk maps, the consultancy's report included comments on the standout aspects of each one of the groups analysed and a comparative analysis of the target risk of the proposed indicator system for monitoring the level of each one of the ten risks from 2005 to 2011.

Likewise, the company was furnished with a set of indicators for periodical monitoring, internal and external, for controlling and managing identified risks.



INTEGRAL RISK ANALYSIS ALLOWS AN ORGANISATION TO IDENTIFY AND DEAL WITH ITS RISKS IN A PROACTIVE MANNER. THIS HELPS TO HEAD OFF THREATS AND PINPOINT IMPROVEMENT OPPORTUNITIES THAT INCREASE A COMPANY'S CHANCE OF ACHIEVING ITS STRATEGIC TARGETS

RISK CARD MODEL

XXX Risk Audit

Group I. Management risks Risk 1.1: Contingency plan

Action by XXX	RESPONSIBILITY PART: IMPLEMENTATION DATE: STATUS / SITUATION:	To be defined To be defined Pending		
ERL	RISK DESCRIPTION	ARL	IMPROVEMENT ACTIVITY (2012)	TRL
L=3 P=3	XXX factories are complementary and neither could stand in for the other in the event of a significant accident in any of them. It would therefore be necessary to replace lost production by turning on the market. The firm does not have a contingency plan laying down action to be taken in the event of any accident or production shutdown, based on analysis of its response to a series of events such as fires, floods or other that might shut down one of the plants for a significant length of time.	L= P=	Drawing up a contingency plan defining all of the following: 1.- Appointing a coordinator and considering possible events (fire, flood, power fault, transport strikes, etc.). 2.- Definition of backup of key tasks and functions. 3.- Setting up teams and assigning responsibilities. 4.- Definition of plan-triggering conditions. 5.- Training and awareness raising.	L=1 P=1

Source: Riskia.

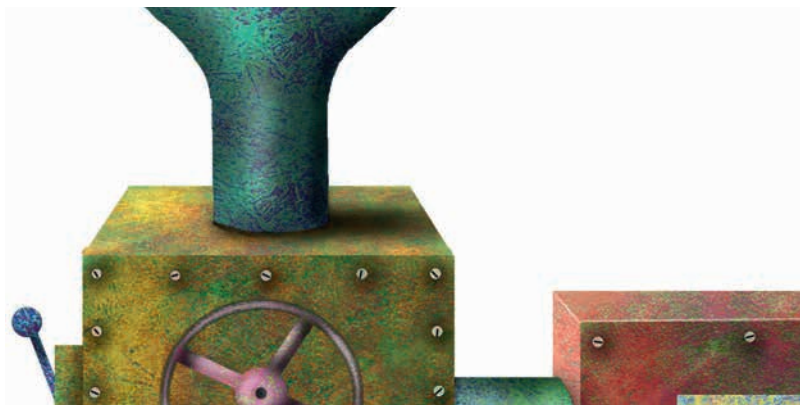
In its conclusions the consultancy proposed an action plan with a series of minimisation measures for each identified risk-threat, with the aim of reducing the likelihood of its occurrence and mitigating its impact if it should materialise.

The conclusion we can draw from this article is that integral risk analysis allows an organisation to

identify and deal with its risks in a proactive manner. This helps to head off threats and pinpoint improvement opportunities that increase a company's chance of achieving its strategic targets, pursuant to UNE-ISO 31000.

Integral risk analysis also facilitates compliance with the company's legal and regulatory requirements. For example, the provisions of the Unified Good-Governance Code or Conthe Code for listed companies, or section D of the Annual Corporate Governance Report on risk management.

Words like control, prevention, learning, efficiency, improvement or efficacy are inextricably bound up with the concept of risk analysis, whose implementation provides the company with a trustworthy base for planning and decision making. |



The Latin American INSURANCE market in 2010–2011

CENTRO DE ESTUDIOS
FUNDACIÓN MAPFRE

¹Basic observations from «Economic survey of Latin America and the Caribbean, 2010-2011», by the Economic Commission for Latin America and the Caribbean (ECLAC).

MACROECONOMIC ENVIRONMENT¹

The GDP of Latin America and the Caribbean region grew 5.9% in 2010, thanks to robust domestic demand and a rise in overseas demand. This expansion followed a fall of 1.9% in output in 2009 as a result of the financial crisis, although internal factors –counter-cyclical policies– and external ones –such as a rise in exports– helped launch a recovery in the second half of the year.

The increase in private consumption (5.9%) stemmed from an improvement in labor indices, better expectations for how the economy will perform, more credit in the private sector and in some countries a recovery in remittances sent by emigrants. Public-sector consumption grew more moderately (3.9%) and investment rose 14.5%. As for the overseas sector, there was a significant increase in exports, mainly to the countries of the



ILLUSTRATION STOCK

MERCOSUR bloc, and in imports and goods and services. This was a reflection of the strength of internal demand.

The highest rates of growth were seen in Paraguay (15.0%), Argentina (9.2%), Peru (8.8%), Uruguay (8.5%), the Dominican Republic (7.8%), Brazil and Panama (7.5%). But Venezuela saw output fall 1.4%, mainly because of a decline in exports, final private consumption and gross fixed-capital formation.

In 2010 there was an across-the-board rise in inflation, with the exception of Ecuador and Puerto Rico, because of an increase in the prices of basic goods, in particular foodstuffs and fuel. Venezuela and Argentina posted the highest rates of price increases, at 27.4% and 10.9%, respectively. The

trend continued in 2011, and the yearly inflation rate is expected to come in at around 7.5%.

Another point to highlight is a significant rise in exchange rates in the region, due to several factors. These include a high level of international liquidity and the strength of some economies in Latin America, along with the massive influx into some countries of foreign currency because of high prices for basic export goods and a rise in foreign investment.

Data available for the first half of 2011 indicate that economic activity has remained strong, although growth is slowing somewhat as a result of the slowing of the international economy and in some cases the gradual removal in some countries of policies that were implemented to confront the

crisis. The Economic Commission for Latin America and the Caribbean (ECLAC) estimates that the economies of Latin America and the Caribbean grew 4.3% in 2011.

INSURANCE MARKET

The Latin American insurance sector, which accounts for 3% of world premiums, again posted in 2010 nominal average growth of 14.2% as measured in local currency, with increases in premium volume in all regions. Average real growth was 7.5%, compared to 7.3% in 2009, with all countries posting increases, except Honduras, Mexico and Venezuela.

In real terms South America registered a larger increase than Central America, at 9.7% compared to 1.9%. Puerto Rico and the Dominican Republic grew 5.7% and 0.6%, respectively, and the Mexican market experienced a 0.5% decline in premiums.

Puerto Rico has the highest premium per capita in the region, at 1,958 euros/inhabitant, followed by Chile

Figure 1. Variation in premium volume in 2010 in Latin America.

Source: own statistics from the information published by each country's insurance oversight authority.

% VARIATION IN PREMIUM VOLUME 2010			
COUNTRY	NON-LIFE	LIFE	TOTAL
ARGENTINA	25.4	2.5	20.5
BOLIVIA	10.4	17.9	11.9
BRAZIL	14.3	20.0	17.3
CHILE	15.9	19.8	18.2
COLOMBIA	9.3	2.5	7.2
COSTA RICA	7.3	1.1	6.8
ECUADOR	16.9	15.6	16.7
EL SALVADOR	2.3	3.8	2.8
GUATEMALA	6.4	11.6	7.4
HONDURAS	7.0	4.4	6.3
MEXICO	-0.5	2.7	3.9
NICARAGUA	11.3	2.4	9.9
PANAMA	12.9	-2.7	8.5
PARAGUAY	13.6	27.6	14.8
PERU	8.1	60.4	26.2
PUERTO RICO	7.1	-2.6	6.2
DOMINICAN REP.	7.4	3.8	6.9
URUGUAY	11.4	27.7	14.9
VENEZUELA	22.7	23.3	22.7
TOTAL	12.7	15.8	14.2

²The insurance density and penetration have been calculated taking into account the earnings of all the segments of Brazilian private insurance: Insurance, Health, Private pensions and Capitalization.

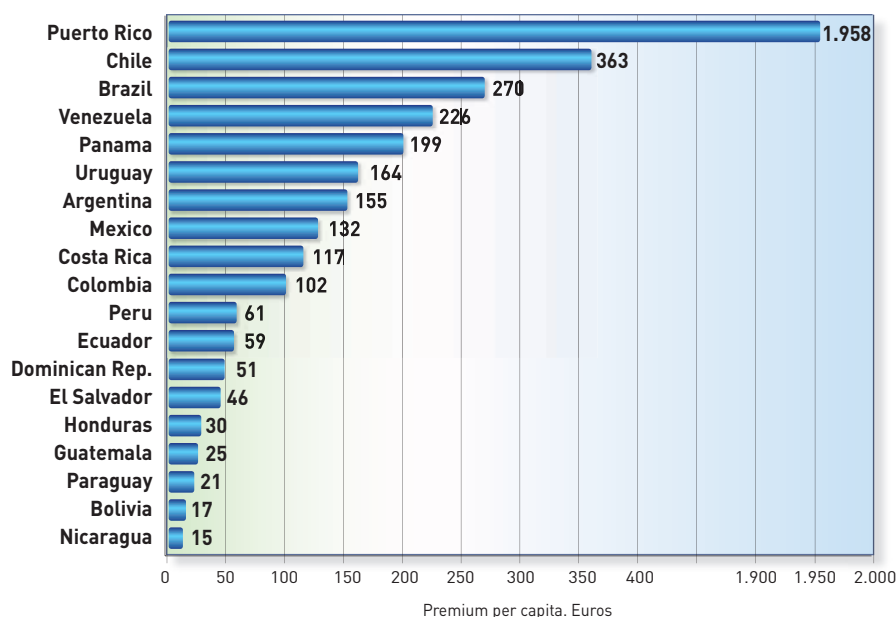
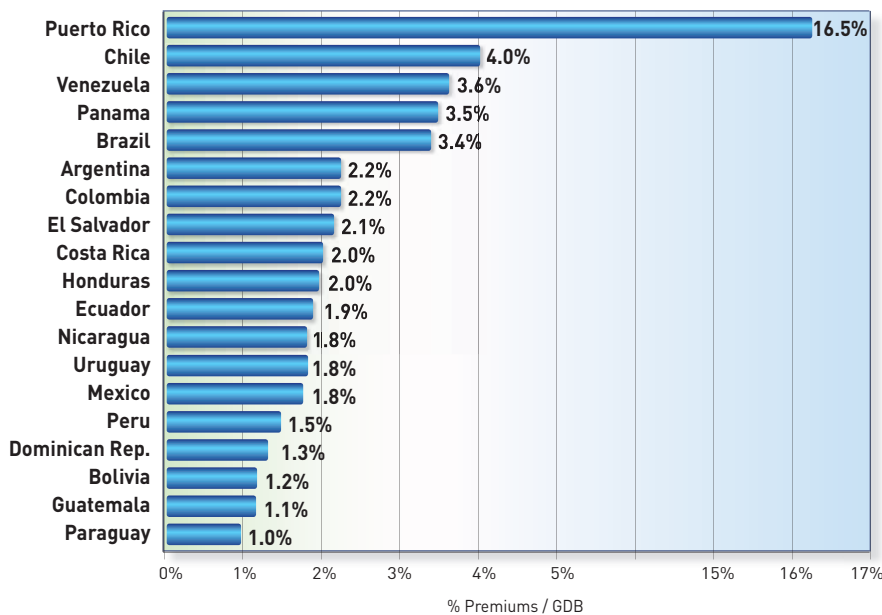


Figure 2. Latin America. Premiums per capita 2010. Source: own statistics from the information published by each country's insurance oversight authority and by ECLAC.

(363 € /inhab.). Next come Brazil² (270 € /inhab.), Venezuela (226 €/inhab), Panama (199 €/inhab.), Uruguay (164 €/inhab.), Argentina (155 €/inhab.) and Mexico (132 €/inhab.). Bolivia and Nicaragua are the countries with the lowest per capita premiums.

Premium volume in Latin America totaled 91,370 million euros in 2010, for a nominal rise of 19.3%, compared to 10.5% in 2009. As stated earlier, the average growth as measured in local currency was 14.2%, which shows that the growth in euros



³Premium volume in Puerto Rico includes Health insurance for low-income people. Their premiums are managed by private insurers and paid by the government of Puerto Rico.



Figure 3. Latin America. Insurance penetration 2010.

Source: own statistics from the information published by each country's insurance oversight authority and by ECLAC.

As for insurance penetration (% premiums/GDP), Puerto Rico's³ figure again stands out at 16.5%, followed by Chile (4.0%), Venezuela (3.6%), Panama (3.5%), Brazil (3.4%) and Argentina (2.2%).

was favored by the appreciation of most local currencies against the single European currency, mainly the Brazilian real and the Colombian peso. On the other hand, the devaluation of the bolivar in January 2010 caused a 35% drop in premium volume as measured in euros in the Venezuelan market, in contrast with a 23% rise in local currency.

The region's eight largest insurers accounted for 95.1% of premiums, and of them the three biggest accounted for 67.1%. Brazil, with a 42.5% share (36.4% in 2009), continued to have the largest market in the region, followed by Mexico and Puerto Rico, which regained third place after being overtaken in premium volume by Venezuela in 2008.



PREMIUM VOLUME IN LATIN AMERICA TOTALED 91,370 MILLION EUROS IN 2010, FOR A NOMINAL RISE OF 19.3%, COMPARED TO 10.5% IN 2009

Data in millions of euros. Nominal growth expressed in euros.

PREMIUM VOLUME 2010						
COUNTRY	NON- LIFE	%▲	LIFE	%▲	TOTAL	%▲
BRAZIL	17,682	35.8	21,177	42.5	38,859	39.4
MEXICO	7,721	12.6	6,772	23.6	14,493	17.5
PUERTO RICO	7,313	13.1	629	2.8	7,943	12.2
VENEZUELA	6,358	-35.2	155	-34.9	6,513	-35.2
ARGENTINA	5,245	10.6	1,019	-9.5	6,264	6.7
CHILE	2,448	33.9	3,752	38.4	6,200	36.6
COLOMBIA	3,434	31.3	1,440	23.2	4,874	28.8
PERU	982	21.6	773	80.5	1,755	42.0
ECUADOR	697	23.4	138	22.1	834	23.2
PANAMA	521	19.1	176	2.7	697	14.5
URUGUAY	420	31.0	131	50.2	551	35.1
COSTA RICA	502	23.6	48	16.4	550	23.0
DOMINICAN REP.	441	11.3	73	7.6	514	10.8
GUATEMALA	287	13.5	70	19.0	357	14.5
EL SALVADOR	223	8.0	120	9.6	344	8.6
HONDURAS	168	12.8	60	10.1	228	12.1
BOLIVIA	135	16.6	37	24.5	172	18.2
PARAGUAY	122	9.7	13	23.2	135	10.8
NICARAGUA	75	10.7	13	1.9	88	9.3
TOTAL	54,774	11.4	36,597	33,6	91,370	19.3

Life insurance represented 40% of all premiums and did better than non-Life, with a rise of 33.6% thanks to a very strong performance by this kind of insurance in the region's largest markets: Brazil, Mexico and Chile. In Brazil, the product known as *Vida Gerador de Beneficio Livre* (VGBL) was once again the main engine of growth, bringing in nearly 16,000 million euros in revenue, for market share of



LIFE INSURANCE REPRESENTED 40% OF ALL PREMIUMS, WITH A RISE OF 33.6% THANKS TO A VERY STRONG PERFORMANCE BY THIS KIND OF INSURANCE IN THE REGION'S LARGEST MARKETS: BRAZIL, MEXICO AND CHILE

Figure 4. Latin America. Premium volume 2010 by country.
Source: own statistics from the information published by each country's insurance oversight authority and by ECLAC.

43% of all Life insurance sold in Latin America. In Mexico there was a 9.3% rise as measured in local currency and 23.6% in euros, thanks mainly to Pension insurance stemming from Social Security Laws and group life insurance, which have greater premium volume. After declining the previous year, Life Annuities recovered in Chile. This made for a

fine performance by the Life insurance sector, with rises of 19.8% in local currency and 38.4% in euros.

Non-Life branches maintained a growth rate of around 11%, with a slight increase of two-tenths of a percentage point to 11.4% in 2010. Brazil, Mexico and Puerto Rico boast the largest markets, followed by those of Venezuela, Argentina, Colombia and Chile. These seven countries account for 91.7% of the total, and the main sources of growth were Automobile (13.9%), thanks to its larger role in the market, Personal Accident (28.3%), Worker Compensation (20.8%), and Transport (18.3%). The only branch to decline in 2010 was Health insurance.

Automobile insurance again posted double-digit growth of 13.9%, after the slow-down of 2009. Revenue totaled 20,643 million euros, and the countries with the highest premium volumes were, in this order, Brazil, Mexico, Venezuela and Argentina.

Together they accounted for 85.2% of all premiums. Except for Guatemala and Puerto Rico, all the countries of the region saw their revenue rise.

The Health branch contracted 3.3% in 2010, in large part due to the devaluation of the bolivar and the resulting decline in premiums as measured in euros for the Venezuelan insurance market. Venezuela has the second-largest Health insurance market in Latin America and in 2009 it accounted for 38% of all premiums. That share has now gone down to 24%. Puerto Rico features the largest health insurance market in the region, representing half of the premium volume. In Puerto Rico, health care plans for retirees (the Medicare program) continued to decline in 2010 thanks to the spread of the product called Medicare Advantage. All markets posted growth in local currency, except Paraguay. Mexico's, the third-largest, took in 21.9% more than in the previous year.

Premiums in millions of euros

LATIN AMERICAN INSURANCE MARKET 2009-2010 PREMIUMS BY BRANCH

LINE OF BUSINESS	2009	2010	%▲	% SHARE
Life	27,383	36,597	33.6	40.1
Individual and group plans	24,265	32,090	32.3	35.1
Private pension plans	3,119	4,506	44.5	4.9
Non-Life	49,185	54,774	11.4	59.9
Automobile	18,129	20,643	13.9	22.6
Health	12,197	11,796	-3.3	12.9
Other lines of business	5,986	7,321	22.3	8.0
Fire and allied lines	4,576	5,054	10.4	5.5
Personal accident	2,193	2,813	28.3	3.1
Transport	1,954	2,312	18.3	2.5
Third-party liability	1,226	1,417	15.6	1.6
Credit and/or Surety	1,025	1,122	9.4	1.2
Worker compensation	1,901	2,297	20.8	2.5
TOTAL	76,569	91,370	19.3	100.0



Figure 5. Latin America. Premium volume by branch 2010.

Source: own statistics from the information published by each country's insurance oversight authority.

The third largest insurance branch by premium volume is Fire and allied lines, which had revenue of 5,054 million euros in 2010, a rise of 10.4%, down more than 7 points from the previous year. A major factor contributing to this decline was the multi-year renewal of the comprehensive policy held by *Petróleos Mexicanos* (it was done in 2009 and in 2010 there was no issuance) as Fire insurance premiums fell 30.4% in Mexico. The largest market in 2010 was that of Brazil, with a market share of 25%, followed by Mexico's at 22%, whereas the previous year the order was reversed. Next comes Chile with a 14% share and growth of 21.1%.

The following are highlights from the region's main insurance markets:

- In Argentina Non-Life insurance was again the main driving force in the market, thanks mainly to growth in Automobiles and Worker Compensation.
- The Life insurance product known as VGBL (*Vida Gerador de Beneficio Livre*) has consolidated its status as one of the main sources of growth in the Brazilian market. Sold mainly through banks, this product continues to enjoy tax incentives that have lured money from mutual and pension funds.
- The Chilean market posted growth of 18.2% (compared to -1.7% in 2009) as both the Life and Non-Life insurance branches expanded. The rise in Life stems mainly from an increase in sales of Life Annuities. In Non-Life, Automobile insurance did well because of a strong increase in the number of registered vehicles, as did Earthquake insurance thanks to increases in rates charged to foreign reinsurers.
- In Colombia, the largest growth came in Non-Life, especially Automobile and Third-Party Liability.
- In Mexico, premium volume rose slightly (3.9%) thanks to the renewal of the multi-year comprehensive policy held by *Petróleos*



Mexicanos (PEMEX). This was done in 2009 and renewed in 2011.

- For yet another year, the insurance market in Puerto Rico was driven by Health insurance, more specifically the Medicare program.
- Premium revenue in the Venezuelan market achieved nominal growth of 22.7% but a drop of 3.5% in real terms due to high inflation in that country. The Health and Automobile lines, which account for 80% of the sector, expanded 16.0% and 20.8%, respectively. Growth in Automobile insurance stemmed mainly from changes made in premiums and insured capital. The major increase in Health was caused mainly by greater purchases of private policies by the State.

Corporate transactions in 2010 were not numerous, but the ones that did take place were significant:

- The Superintendency of Private Insurance in Brazil approved the sale of a 60% stake that SulAmérica held in *BrasilVeículos* to Banco do Brasil.
- MAPFRE and Banco do Brasil reached full agreement on implementing their strategic alliance in the insurance business. The alliance was formed by creating two holding companies (BB-MAPFRE, for Life and Crop insurance,

and MAPFRE-BB, for Automobile and General Insurance) that incorporate the insurance units that both companies have in Brazil. Thanks mainly to this agreement, the MAPFRE group rose in the overall ranking of largest insurance groups in Latin America, taking second place behind Bradesco.

■ In November 2010, the U.S. company MetLife concluded the purchase of American Life Insurance Company (ALICO), the Life insurance unit of American International Group (AIG). ALICO had units in several countries of Latin America. This acquisition has not modified MetLife's position in the ranking of the region's insurance groups, but it did boost its market share by seven-tenths of a point.

One of the most important events of 2010 was the powerful earthquake that hit Chile early in the year. It was the sixth-largest quake recorded in the world and the second most intense one ever recorded in Chile. A total of 225,000 insurance claims were filed, 80% of them for damage to homes. Ten months after the catastrophe, the insurance industry had paid out nearly all the claims for household damage (99%), and what remained pending was part of the claims related to industry and businesses. It is estimated that the cost of the disaster will approach \$30,000 million, of which the insurance industry will cover \$8,500 million once all business claims have been settled. These are more complex due to the difficulty of calculating how much a business loses when it is closed.



2010 WAS PARTICULARLY TOUGH FOR THE REGION IN TERMS OF NATURAL DISASTERS: THERE WERE 98 MAJOR ONES THAT CAUSED MORE THAN 223,000 DEATHS AND AFFECTED NEARLY 14 MILLION PEOPLE. THE ESTIMATED COST OF THESE EVENTS IS IN EXCESS OF \$49.400 MILLION

According to an ECLAC publication⁴, 2010 was particularly tough for the region in terms of natural disasters: there were 98 major ones that caused more than 223,000 deaths and affected nearly 14 million people. The estimated cost of these events is in excess of \$49,400 million. Although events of a geophysical nature (earthquakes, tsunamis and volcanic eruptions)⁵ caused the greatest number of deaths and involve a great economic cost, most disasters had to do with the weather: tropical storms and large-scale flooding over broad swaths of territory stretching from Mexico to South America⁶.

Despite a slight fall in the financial result in some countries, results were quite positive. The technical result improved in 13 of the 18 markets that were analyzed⁷, thanks to an across-the-board decline in the claims ratio.

In the first half of 2011, the insurance sector of Latin America took in premium volume of 50,414 million euros, which marks nominal growth of 18.1% compared to the same period of the previous year. Non-Life branches expanded two percentage points more than Life insurance, to 19%. Accident

⁴Preliminary results of economies of Latin America and the Caribbean 2010.

⁵Earthquakes in Chile (February), Baja California (Mexico, April) and Ecuador (August). Eruption of the Pacaya volcano in Guatemala (May).

⁶Hurricanes Alex (June) and Karl (September) in Mexico, tropical storm Agatha in Guatemala, Honduras and El Salvador (May), heavy rain and flooding in Peru (January) and Brazil (April).

⁷No information is available on results in the Dominican Republic and Puerto Rico.

Data in millions of euros. Nominal growth in euros.

insurance (both personal and in worker compensation) and Transport continued to post a higher rate of growth than other lines did.

Automobile and Health, which have the highest volume, grew around 10%.

As for business transactions, the following are worth noting:

- In February, Zurich and Grupo Santander announced the signing of an agreement aimed at forming a strategic alliance to distribute bancassurance in Latin America over the next 25 years. Under this accord, the Swiss group would acquire a 51% stake in the Pension, Life and General insurance operations of Santander in Brazil, Mexico, Chile, Argentina and Uruguay and would take on the running of the companies. The Spanish bank would retain the remaining 49% and sign a distribution agreement for the sale of insurance products in each country.

- ING sold its Pension and Life insurance business to Colombia's Grupo de Inversiones Suramericana (Grupo Sura). The sale does not include a 36% stake held in Brazilian insurer SulAmérica.

PREMIUMS BY LINE OF BUSINESS. First half of 2011			
LINE OF BUSINESS	June 2010	June 2011	% ▲
TOTAL	42,696	50,414	18.1
Life	16,479	19,244	16.8
Non-Life	26,217	31,169	18.9
Automobile	8,733	9,685	10.9
Health	5,587	6,093	9.1
Other lines of business	4,577	6,592	44.0
Transport	2,512	2,988	18.9
Fire and/or allied lines	2,234	2,618	17.2
Personal accident	1,315	1,668	26.9
Worker compensation	1,260	1,525	21.1

Figure 6. Latin America. Premium volume by line of business, first half of 2011. Source: own statistics from the information published by each country's insurance oversight authority.

- As part of its strategy of global expansion and broadening of its presence in Latin America, the German group Talanx announced in April it had acquired the Argentine and Uruguayan units of L'Union de Paris, and in July it announced the purchase of Mexican insurance company Metropolitana.

Finally, we comment on the most relevant legislative changes made during the two years being analyzed:

- In February 2011, the Argentine insurance oversight authority issued Resolution 35.615, which made major changes to the regulatory



THANKS MAINLY TO THE AGREEMENT WITH BANCO DO BRASIL, THE SPANISH MAPFRE GROUP ROSE IN THE OVERALL RANKING OF LARGEST INSURANCE GROUPS IN LATIN AMERICA, TAKING SECOND PLACE BEHIND BRADESCO

framework for reinsurance. The resolution went into force in September 2011. As of that date, Argentine insurance companies can reach reinsurance contracts only with Argentine reinsurance companies; in other words, with companies based in that country or with the Argentine units of foreign companies, with a local capital of at least 20 million pesos (approximately \$5 million). Foreign reinsurers that do not set up Argentine units may only accept risks from Argentine insurers when, due to the size and characteristics of the ceded risks, they cannot be covered by the Argentine reinsurance market.

- The National Council of Private Insurance approved in December 2011 rules for micro-insurance in Brazil. Under this resolution micro-insurance can be sold over media such as

cell phones and the Internet. It also establishes the maximum limit for the insured sums. This will serve as a parameter for determining whether a particular product can be classified as micro-insurance.

- In Colombia, Decree 2281 of 2010 was published, regulating the institution and functions of the Financial Consumer Ombudsman. Also, Decree 2555 of the same year brings together all the rules concerning insurance, insurance entities, ARP and special insurance. Until now these were spread out in several different decrees.

- In June 2011, after a second round of debate in Costa Rica, the Law on Regulation of Insurance Contracts was approved.

- In Ecuador, in October 2011, the organic law on Regulating and Controlling Market Power was passed. It is also called the «Anti-Monopoly Law». The goal is to correct, prohibit, regulate and sanction four basic infractions: abuse by economic operators with market power, agreements that go against the principle of competition, restrictive practices and disloyal practices. The rule gives banks one year to break ties with stock brokers, insurance companies, fund administrators and trust funds.

- In April 2010 in Peru, the regulations stemming from the Law on Universal Health Insurance were approved, with the goal of establishing dispositions that allow implementation of universal health insurance in that country.

- The new Law on Insurance in Venezuela went into force 29 July, 2010. This law, which repeals the Law on Insurance and Reinsurance that had been in effect since 1994, sets up rules for the control, oversight, supervision, authorization, regulation and functioning of insurance in Venezuela. |



responds to the sense of social responsibility which is a basic principle behind MAPFRE's business activities. It was founded in 1975.



The Insurance Sciences Institute of FUNDACIÓN MAPFRE was created to promote educational and research activities concerned with the world of insurance and risk management.

Gerencia de Riesgos

y Seguros

FUNDACIÓN MAPFRE

Instituto de Ciencias del Seguro

Paseo de Recoletos, 23. 28004 Madrid (España)

Tel.: +34 91 581 12 40. Fax: +34 91 581 84 09

www.gerenciaderiesgosysegueros.com

PRESIDENT: Filomeno Mira Candel

DIRECTOR: José Luis Ibáñez Götzens

EDITOR IN CHIEF: Ana Sojo Gil

COORDINATION: María Rodrigo López

EDITORIAL BOARD: Irene Albarrán Lozano, Alfredo Arán Iglesia, Francisco Arenas Ros, Montserrat Guillén Estany, Alejandro Izuzquiza Ibáñez de Aldecoa, César López López, Jorge Luzzi, Francisco Martínez García, Ignacio Martínez de Baroja y Ruíz de Ojeda, Eduardo Pavelek Zamora, M^a Teresa Piserra de Castro, César Quevedo Seises, Daniel San Millán del Río, François Settembrino.

EDITORIAL PRODUCTION: COMARK XXI Consultores de Comunicación y Marketing (direccion@comarkxxi.com)

GRAPHIC DESIGN: Adrián y Ureña

PRINT: C.G.A.

LEGAL DEPOSIT: M. 9.903-1983

ISSN: 0213-4314

ENGLISH APPENDIX