

Risk Management and Insurance

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Eduardo de Sancha

«Insurance is a crucial partner and collaborator in successful risk management»

Head of Navantia's Industrial Insurance Management Department



The new means of human survival

Review of traditional models

JOSÉ MIGUEL RODRÍGUEZ-PARDO



Operational risk assessment methodology

A business case in Brazil

IBERE RANIERI



Quo vadis, industrial insurance?

Challenges and future development of the sector

DR. EBERHARD M. FALLER

Sense and reality

For many of us in the northern hemisphere facing the rigors of the summer season—for the vast majority of the population dominated by the issue of a vacation—the most important event so far this year has been the World Cup in Brazil. Some countries were given a respite from all their problems.

There is no doubt that football rouses passions, but it also acts as an escape mechanism in a world perceived as chaotic and unjust, and often we come to imagine that winning a match—not to mention a championship—can change the blunt reality of our lives.

However, this feeling brings us no great satisfaction because reality is reinstated as soon as the competition ends. The fact is, as Albert Einstein said, «reality is an illusion». A succinct, categorical phrase to describe the situation we live in.

If turning the situation over and over in our mind just makes us suffer, we can take another approach and with the crisis as an excuse, we can either spend our time feeling bitter and powerless to climb out of the mire, or we can make use of all the creative resources at our disposal and get the most out of our assets.

This is precisely what Eduardo de Sancha, head of Navantia's Industrial Insurance Management Department, recommends in an interview on the inside pages. He explains how his experience as an international basketball referee for many years in the ACB league helps him to make decisions, sometimes with very little time to ponder the outcome, in an activity where it is clearly possible to see the financial results of your efficient management reflected in a better economic position for the company.

The author of the first study states that age is no longer an issue, either in general or in insurance. This variable is still taken into account when calculating life insurance premiums, but experts now say this makes less and less sense. Under the age of 60 it is irrelevant for this risk, and from 100 onward the mortality rate remains constant. Consequently, the importance of age is, at the very least, questionable.

Meanwhile, among the many ways of looking at risk management, we have always tried to make room for international opinions and points of view on this area of expertise. This second issue includes a study on the methodology for assessing operational risks and their controls, as implemented in a Brazilian insurance company seeking to bring greater security to its corporate processes.

This section ends with the transcript of the lecture given by Dr. Faller in Cologne in January, in which he argues for achieving business success by «controlling the controllable factors rather than the uncontrollable ones».

The issue ends, as always, with the sections on new books and publications about risk management and news from AGERS and FERMA, including an important announcement: approval of a major European certification program for individual risk managers and educational institutions. We hope you enjoy it.

Once again, on behalf of everyone in risk and insurance management, we would like to end this editorial by thanking all our readers and subscribers for their great response to the publication, and particularly for the gratifying feedback received in the survey we emailed to subscribers asking for their opinion about our modest publication.

Thanks for accompanying us and thanks for staying with us. |

Risk

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and Insurance

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«Insurance is a crucial partner and collaborator in successful risk management»

«Companies have come to realize that one of the best ways to protect their balance sheet is to protect themselves from the risks that may impact on it,» says de Sancha. In recent years, Navantia has made great progress in this area, and the challenge now is to achieve comprehensive risk management.

Eduardo
de Sancha

**HEAD OF NAVANTIA'S INDUSTRIAL
INSURANCE MANAGEMENT DEPARTMENT**

Text: ALICIA OLIVAS Photos: ALBERTO CARRASCO



Navantia is owned by the State Industrial Holding Company (SEPI), which owns 100% of the company's capital. How does being a public company influence decisions on risk management policies and taking out insurance coverage?

First, I have to say that SEPI's new management team is very interested in managing insurance at a corporate level, not just for Navantia but for all its constituent companies, basically because taking out policies for the entire group would mean better economic conditions.

However, I believe that, except in the case of some very specific policies, such as general third-party liability, this will be very difficult to achieve because the activities pursued by the group companies vary considerably. We are working in this direction, but I don't think we can make it happen in the short-term.

Therefore, right now Navantia's policy on risk management and insurance contracts is internal, completely internal, and is implemented by the Industrial Insurance Management Department or, in the case of retirement planning insurance, by the Human Resources Department.

Who has the final say at Navantia with regard to risk control?

In the case of low and medium risks, the Industrial Insurance Management Department itself, or, failing that, the Finance Division, to which the department belongs.

For major risks and decisions involving intensive risk to the company's balance sheet, it is the management—the company's Executive Committee or even

the Board of Directors— as recommended, naturally, by the Industrial Insurance Management Department or the Administration and Finance Division.

COMPREHENSIVE, CENTRALIZED MANAGEMENT

In general terms, what is the risk management system at Navantia, Spain's leading company in naval-military technology?

Following the creation of the current Navantia in 2004, the first thing we did was to centralize risk management. Navantia is the successor to Astilleros Españoles and Empresa Nacional Bazán. Both these companies managed insurance and risk differently. While Bazán had a fairly centralized management system, it was the opposite at Astilleros Españoles. So our first job was to centralize the management of all insurance.

As we are a geographically decentralized company, we still have to cooperate with certain peripheral bodies that don't belong to our own department but are part of the Administration and Finance Division, but in any case nowadays insurance management is fully comprehensive and centralized. We also have the support of a broker.

Our aim is to improve industrial risk management by training our workers and professionals, providing technical support for program management, for the exploitation of the productive areas in our shipyards and plant management. In the areas of commercial activity, purchasing and subcontracting, where our aim is to identify and control risks from the initial phase of an operation, we are involved in

«AT NAVANTIA, RISK MANAGEMENT HAS IMPROVED TREMENDOUSLY IN RECENT YEARS»

preparing and reviewing tenders. Here we take special care over the negotiation of contracts and over all documents and internal company regulations that may affect or be directly or indirectly related to risk management. For example, we recommend standard specific clauses for the different methods of contracting and subcontracting to guarantee peace of mind in managing the risk associated with a particular operation... All of this, I believe, has positive results.

What are the challenges posed to your department by the company carrying out naval programs in over 19 countries and currently having offices in Australia, Qatar, India, Turkey and Brazil?

This is, indeed, one of our biggest challenges right now and one of our main concerns. Our naval programs overseas have brought us great international prestige and allowed us to penetrate some very attractive markets, such as Asia and Oceania as well as South America, where we have always been present, having taken part in the past in Chile's naval submarine program (in a consortium with the French DCN company) and in supplying patrol boats to Argentina, and, more recently, working with Venezuela. There is a great deal of interest now as certain countries in that hemisphere have ambitious plans to improve and expand their fleets, and in some cases that means we need to be established there permanently. That is what is happening in Brazil, where we have a branch that may, in the short term, become a subsidiary.

In the case of Australia, we have built two LHD class ships, similar to the Spanish



Navy's *Juan Carlos I*, as major subcontractors to a local shipyard, and now we are involved in another Australian Navy program as frigate designers. Consequently, we have also established a presence there by creating a subsidiary, which in the medium term will be the bridgehead for all of Navantia's commercial activity in the area.

For our company, these permanent establishments and branches are a way of enhancing customer loyalty and increasing Navantia's presence in geographical areas with great potential for economic development, but at the same time it obliges us to consider the need for creating an international insurance program. Internationalization is a core concept for the company and one of our goals is to

**«WE HAVE TO
MANAGE OUR RISKS
IN A WAY THAT
GUARANTEES THE
COMPANY'S
SOLVENCY AND
VIABILITY»**

organize an international insurance program.

How does your area respond to the company's new projects, such as offshore wind farms?

This is a very important project for Navantia because it is in an emerging market where we believe there is potential and where we can compete. That obliges us to study the coverage for such risks, which are known and identified but where we have no specific experience.

Generally, wind farms of this kind operate with general framework policies that cover all phases of the farm's construction and the activities undertaken by each contractor and the chain of subcontractors. Sometimes, playing the



deductibles game, a risk that is not fully identified requires you to protect yourself and study independent protection. We are also working in this regard and, although we do not have a project up and running at the moment, we have some proposals on the table.

Navantia offers global solutions including ship design and construction, the manufacture and integration of systems of on-board equipment, team and crew training, maintenance and modernization of the ship throughout its life, etc. Which of

«INTERNATIONALIZATION IS A CORE CONCEPT FOR THE COMPANY AND ONE OF OUR GOALS IS TO ORGANIZE AN INTERNATIONAL INSURANCE PROGRAM»

these activities is the most complex from the point of view of risk management?

The easiest part is the one where we have ample experience: construction. Nobody can question Navantia's experience in building civil and military vessels. That's where we feel more comfortable, and I have to say that we've had very good insurance partners to cover this situation for us.

Other novelty areas to us are more difficult. For example, the systems area is very complicated because it's quite a highly classified activity, requiring not only a reasonable assessment of the risk—which is not always easy— but also an attempt to find coverage for operations for which the insurance market does not always have a clear answer, because anything that sounds like weapon systems and combat tends to be met with a «gasp of horror.» Even so, we have been able to find solutions so far. This year, for example, we introduced systems activity, including firing control and other components, in our corporate assembly policy, where we have obtained reasonable coverage. We will definitely be reviewing and improving this, but for now we feel confident that we have obtained a satisfactory umbrella cover.

Lifecycles are another challenge. The insurance market in this type of operation is strictly limited to the very reliable coverage Navantia has for all the activities it performs in its own yards and those of the Spanish Navy, but now we are almost always obliged to provide service in remote shipyards where the fleet we are attending is located. So far, we have obtained a temporary solution for the lifecycle contracts we have already signed, as in the

case of the Norwegian frigates, and we are working to achieve the same for fleet maintenance of the Australian and Venezuela navies with whom we are currently negotiating.

INTANGIBLE RISK

Another difficulty is the so-called intangible risk: patents, intellectual property, image, brand, reputation, etc. How have you managed to control these?

This is another issue we are working on. In particular, with regard to patents we are trying to improve our coverage for professional third-party liability. It is very important for contracts to have clear protection clauses for these areas, and we also need to protect ourselves with appropriate policies and require the same of our contractors and subcontractors. They are very expensive policies and the intangible nature of the risk involved makes them very difficult to «sell» internally because the need for them only becomes visible in cases where a claim is made.

Which risks currently concern you the most?

One that concerns us a great deal right now is the posting of staff overseas, which is increasingly common. Another is the threat of cyber attacks. As a company in the defense sector, it would be very dangerous if anyone were to break through our security measures. Our IT Division believes we have the sufficient means and efficiency to prevent any intrusion, and I am sure that is so, but it is our duty to look for a way of minimizing the impact on the

«WE HAVE FOCUSED ON THE NEWEST TYPES OF RISKS BECAUSE WE FEEL CONFIDENT ABOUT THE ONES WE HAVE EXPERIENCE WITH»

company's image if any of our technical or engineering information were to be destroyed, or if the military secrecy of our navy programs were to be breached.

As I said before, one of our concerns is to improve the protection of patents and property rights in our professional third-party liability coverage, because what we have now is really not appropriate for a company with Navantia's profile and aims, which are focused increasingly on the sale of engineering.



How do the company's employees contribute to the goals of risk prevention and protecting the environment?

It's not an easy task. We are facing a problem all industrial companies have, and that is the high volume of outsourced staff. We control and train our own staff directly, but in the case of outsourcing, although we do not relinquish these controls and the same standards are required by contract, monitoring becomes more complicated. Nevertheless, we do try.

Every two years we make an inspection of company risk, traveling to all industrial and production areas and taking the opportunity to meet with all managers and departments involved in risk and industrial management, and also in the management of fixed assets, commercial areas, etc. In addition to explaining the various kinds of policies on risk management and insurance, we review the management methods for naval programs and the occupational and environmental risk prevention programs in each industrial

«INTERNALLY, WE STILL HAVE TO ADDRESS THE ISSUE OF GREATER COORDINATION IN ALL AREAS DIRECTLY RELATED TO RISK MANAGEMENT»

area... In other words, we are trying to inculcate this doctrine and we believe it is taking hold.

But obviously there is the added difficulty of controlling outsourced staff. You only have to look at accidents, which fortunately are fewer than in the past, to see how in most cases they involve subcontractors.

TRANSFER OF INSURER

What is Navantia's policy on transferring and retaining risks? What role do you assign to the insurer?

Insurance is a crucial partner and collaborator in successful risk management and the viability of the company. Personally, I value very highly the cooperation that insurers have always offered us, a situation that was passed on to us from the previous period and that continues in the present.

We have to manage threats in a way that guarantees the company's solvency and viability with minimal risk to the balance sheet. However, our resources are limited, and that means we have to find insurance policies and risk retention margins that allow us to balance these two ideas.

Sometimes, in our business operations, we find ourselves confronted with requirements in contract clauses that were previously unknown to us, especially in the English-speaking world. This forces you to adjust to a particular client's circumstances and provide yourself with coverage to win the contract or the award of works. In our case, this is mainly because a large proportion of our clients are public administrations, where the margin for negotiation is more restricted.



Do you have any captive entity?

No, because we are a company currently running at a loss, so right now it would not be feasible. Perhaps in the near future, if the situation improves, this could be considered, but with the company's current financial and assets situation the project does not make sense. However, it is not ruled out for the future.

What are the characteristics of your insurance program?

It is a comprehensive program that aims to cover, with reasonable cost and retention margins, the risks to which the company is exposed in all of its activities. We have focused on the newest types of risk that required immediate action, because we are already confident with the ones we have experience with. For example, we are concentrating on internationalization, which is forcing us to design new coverage and change our work ethic. Our program has to adapt to this circumstance and move toward an international system in the short-medium term.

Are you finding difficulties in the market for some risks?

To answer this, we need to define the market. The insurance market does not present any coverage problems, but in the case of professional third-party liability, in the context of insurers operating in the Spanish market, we have not found any set of clauses that fully satisfies our needs.

Are you working on this coverage? And any others?

Yes, we've had meetings and have offers from several companies to adjust the



cover to meet our needs. I understand that insurers also have limitations on their reinsurance contracts and sometimes cannot go as far as the client asks.

And, as less immediate goals, we are focusing on designing an international program, contingency policies for expatriates and staff posted overseas in general, and cyber risks.

RISK MANAGEMENT

How has risk management evolved in recent years? Has the crisis influenced the way risk is managed?

I don't have an overview on how other companies have reacted, but at Navantia I have to say that risk management has improved tremendously in recent years, both in terms of prevention policy –as our claims ratio figures demonstrate– and the structure of our operational programs.

We have designed a comprehensive program with coverage to match the company's needs, which gives us great satisfaction. Internally, we still have to address the issue of greater coordination in all areas directly related to risk management.

How has the crisis affected us? Well, we have been forced to cut costs, but this has been done not by lowering our compensation limits or removing any coverage but by increasing deductibles. However, I should mention that this year not only have we not increased deductibles but we have actually achieved some reductions, without an increase in cost.

Since 2005 Navantia has reduced its insurance cost by 35–37 per cent while also achieving many improvements for the company in terms of compensation limits, coverage and manageable deductibles.

In your opinion, is risk aversion in companies improving?

Companies are very concerned about this in general. I imagine they are also forced to react because of external factors, such as major weather disasters against which nobody is exempt, and this is causing a change in company mindsets when dealing with risk. It's also a question of culture. Companies have come to realize

**«RISK
MANAGEMENT IS
GOING TO BECOME
A KEY ASPECT OF
BUSINESS
ORGANIZATION»**

that one of the best ways to protect their balance sheet is to protect themselves from the risks that may impact on it. Navantia is working toward this and I believe it to be a general trend.

How is risk management adapting to such a changing and complex world?

Risk management is evolving fast. Perhaps this is less noticeable in the public sector, but more and more public organizations now incorporate risk management. In the private sector, it is set to become a key aspect of business organization and I hope the same will happen at Navantia and in the public sector in general. In fact, the interest shown by SEPI's new management team in starting to organize insurance at corporate level could take us in this direction.

What does the insurance industry contribute to companies like Navantia?

Insurers are necessary partners and collaborators and, in most cases, we feel very comfortable with them. The market is in a situation of reasonable cost margins, and the companies we have worked with have always responded very positively to reach the coverage and limits required by our clients when executing a contract.

In the coming years, what place will risk managers have in companies?

Their growing importance will mean they will climb in the company's organizational system, especially if they aim –as of course I do– to make risk management comprehensive. **I**

«FINDING SOLUTIONS THAT BRING PEACE OF MIND AND CONFIDENCE TO THE COMPANY'S BALANCE SHEET IS CRITICAL»



Born in Madrid, married with one child, Eduardo de Sancha has a degree in law but has never had a legal role at Navantia. «I have always worked in the financial-economic area, with responsibilities in foreign trade and supplier management, etc. More recently, after the company's reorganization, when Musini disappeared, I came to the insurance area with the aim of organizing a risk management system, something which did not exist at that

time at Navantia and in fact was quite rare in public companies in general.»

Although he had not initially planned to work in risk management and insurance, he likes the sector. «It's a field that is changing considerably. The demands of industrial activities and new approaches for companies to survive, etc, mean that I have to be updated to meet these demands. The need to find solutions that bring peace of mind and confidence to the company's balance sheet is a stimulus. It's an activity that gets you in its grip and where it's clearly possible to see the financial results of your efficient management reflected in a better economic position for the company.»

At Navantia industrial insurance management is the responsibility of the Administration and Finance Division, which is part of the company's Executive Committee. However, the management of insurance related to retirement planning is carried out in the Human Resources Department.

In his job, «no day is the same, but I usually get to the office at 8 am and the first thing I do is read the digital news to see if there are any interesting news not just in the world of insurance. Then I usually get down to my daily dealings, meetings with different areas, daily insurance operations management, risk control, claims and so on.»

His greatest challenge is «making risk management at Navantia comprehensive and less compartmentalized than it was before, because we don't always coordinate as effectively as we would like. We are working in this direction, but it's not easy.»

On the personal side, de Sancha has been a keen sportsman. «I was an international basketball referee for many years, in the ACB league. This experience shapes your character and, in some way, helps you to make decisions, sometimes with very little time to ponder the outcome, and to manage teams and become their leader.»

Towards a new paradigm

for the measurement of human survival

Human life expectancy is continually lengthening and looks set to do so even more in coming decades. Experts are therefore vetting the validity of traditional human survival measurement models and phasing in new biomarkers to determine it more precisely. The insurance industry is watching this paradigm shift with great interest.

JOSÉ MIGUEL RODRÍGUEZ-PARDO
CARLOS III UNIVERSITY, MADRID

In October 2012, Sir Tim Hunt, and other 49 Nobel Prize winners wrote a letter to the *Financial Times* stating that: «We are just at the start of a new revolutionary understanding of how our own bodies work with incalculable consequences for our future health and longevity.»

This quotation is the best reflection of the purpose of this paper. The changes that we will be seeing in the years and decades to come as regards a healthy life and the extension of human longevity will be –if they are not already– of such significance that it is becoming urgent to rethink whether the traditional models for measuring human survival should be reformulated.

Man, already known as the *transparent man*, his data on health, including his own individual genetic map, his personal habits (some of them voluntarily uploaded onto the social networks), make it possible to evaluate with complex statistical techniques, the risk of suffering diseases within a specific period of time and, in short, to calculate life expectancy with a degree of precision that had been unthinkable up to now.

The comment made by Manuel Patarroyo, winner of the Príncipe de Asturias prize and developer of a synthetic vaccine against malaria, illustrates the future that lies ahead very well. He believes that by 2050 doctors will have the genome sequence of each patient on their computers and will thus be able to predict the diseases that we will suffer with a certain degree of probability and, in this way, apply personalized preventive treatment.

Privacy and non-discrimination rights must be respected before these models are introduced. Their reliability and predictive relevance are currently being scientifically corroborated and will actually become the guidelines for the protocols of both new preventive medicine and clinical medicine and, in turn, will extend to pharmacological treatments based on the patient's individual genetic profile. A conflict will emerge between the ethical approach, which must protect human dignity, and actuarial accuracy. At the end of this paper we will



ILLUSTRATION STOCK

attempt to propose guidelines for understanding on the basis of a new concept of *actuarial justice or fairness*.

We must not forget also that this new life insurance scenario will result in a significant reduction of the level of uncertainty in the risk of mortality for the human being.

THE TRADITIONAL BASIS FOR MEASURING HUMAN SURVIVAL

The principles underlying the measurement of human survival for the construction of actuarial models should be questioned. This process of redefinition and practical application of the

technical basis will be gradual over time and, in fact, some of the hypotheses are already being corrected by the industry. Others are in the course of practical materialization through actuarial academic research in respect of the evaluation processes for life insurance companies' reserves. Lastly, other principles are being reformulated through biomedical research and from this area of knowledge they will be transferred to clinical and predictive medicine, as well as to actuarial techniques.

If we want to avoid the risk of actuarial petrification, we must place traditional biometrics principles under scrutiny. We will try to provide the solutions that the international life insurance markets are adopting and, if they have not done so yet, to reflect upon what can be the consequences of the new paradigm. We will also prospectively address what will be the human survival metric applied to life insurance in a scenario where biological age will be considered the cornerstone of this new proposed paradigm.

During the past century, actuary science has shown its value but with some weakness managing long term risk of survival. George Bernard Shaw once said «all great truths begin as a blasphemy», and these words of the Irish writer apply precisely to the new proposals that have been formulated early in this century as the basis for supporting human survival models.

Let us revisit traditional actuarial biometry principles.

■ **Stationary in time.** Under this principle the mortality rate of an individual of a given age is unrelated to calendar time. This principle has been

superseded in the preparation of dynamic survival tables with the incorporation of age and/or generational improvement factors –in fact in the construction of survival models from the late 1990's– which can be said to have become a widespread practice in the insurance industry. Thus, survival improvements over time are taken into account in the pricing of annuity insurance policies.

In the case of mortality risk insurance this principle has also been superseded. Although mortality tables do not take into account improvements in time, the insurance industry has developed so-called forward pricing products that incorporate into the time axis the mortality improvements of the population base on which the premium calculation is made.

■ **Independence.** The technical bases do not incorporate into the price the risk of contagion between individuals in the same insured group, i.e. they are considered to be independent risks. It is true that the Solvency II Directive incorporates this sub-risk of pandemic catastrophe and that certain life insurance companies take into account pandemic risk in their reinsurance programs. But pricing models do not include the risk of contagion and, therefore, the costs associated to this sub-risk must be paid from the insurer's own resources.

Traditionally, actuaries that define the price of insurance have disregarded the risk of infectious disease contagion in their technical calculations. The difficulty in measuring the consequences of a pandemic outbreak may be behind the reason for acting in this way.

But we should be warned of the fact that the pandemic risk is the real threat to the results of long term life insurance risks. Let us look at some recent cases of global infectious diseases.



IT IS BELIEVED THAT BY 2050 DOCTORS WILL HAVE THE GENOME SEQUENCE OF EACH PATIENT ON THEIR COMPUTERS AND WILL THUS BE ABLE TO PREDICT THE DISEASES THAT WE WILL SUFFER WITH A CERTAIN DEGREE OF PROBABILITY AND, IN THIS WAY, APPLY PERSONALIZED PREVENTIVE TREATMENT



In 2004, the World Health Organization warned that there had been 9 million cases of tuberculosis that resulted in 2 million deaths and concluded that, although the incidence of such disease occurs mostly in countries with low incomes (80% of the cases), it was increasing in developed countries. One of the causes for this increase is demographic growth and movement (immigrants, refugees and displacements) associated with poverty and exclusion. According to the World Health Organization 2011 data, an estimated 500,000 people suffered from tuberculosis in Europe that led to 44,000 deaths. It is already the second largest mortal infectious disease after AIDS and costs the EU 6,000 million Euros per year.

Other diseases that can give rise to pandemic outbreaks are influenza, the variant of Creutzfeldt-Jacob or mad cow disease, Influenza A virus, hemorrhagic fever or bird flu. Influenza virus subtype H7N9 has killed almost 100 people in China, Influenza virus subtype H9N2 has infected very few people to date.

Finally, we must refer to dengue fever that affects approximately 50 to 100 million people per year; it could affect 40% of the worldwide population. This tropical and subtropical disease has

already reached Europe and, in fact, the first cases were recorded in France and Croatia in 2010.

■ **Homogeneity.** Under this principle, risks of an equal nature result in the same insurance price. However, it is complex to define the homogeneity risk for life insurance where the principle of equity determines the premium. And we are not referring to the consequences arising from the non-discrimination directives that are promoting a larger mutualization of risks that are not necessarily homogenous.

Thanks to new predictive pricing models, the industry has embraced a new range of *preferred or super-preferred* products, where the individual risk profile allows for hyper-segmentation rating, even resulting in the absolute personalization of life expectancy without any possible homogenization. This would be the case of the *Life Settlement* products also known as death bonds.

The incorporation of predictive biomarkers capable of measuring the individual risk profile will challenge, and may even supersede, this homogeneity principle.

Other principles in the general theory of survival measurement are:

● *The risk of mortality increases exponentially with age.* Gompertz developed this principle more than 200 years ago; observations in the dynamics of longevity in advanced populations in terms of life expectancy at birth have evidenced that the rectangularization of the life expectancy curve up to old age and in very old age (ages from 95-100) makes this mortality principle not applicable. This rectangularization phenomenon is also seen, with less intensity however, with regard to health. Therefore, it is expected that in the future mortality and morbidity rates will increasingly become independent from age.

Actuarial science has just begun, from the beginning of this century, to take into account this new phenomenon when preparing survival tables or internal longevity models.

The phenomenon of understanding mortality that Väino Kanisto defined as that whereby a proportion of deaths occur in increasing lower age intervals and around the modal age, leads us to understand the three dimensions of human survival, as evidenced by observations on population evolution. These dimensions are horizontalization, verticalization and extension. The 2005 M-Project, which involved the work of the prestigious demographic and mathematic experts Cheung and Robine, has attempted to evaluate these dimensions and reveals a new way of understanding the survival risk.

- *Human life is finite*; in fact the maximum age for survival tables is around 120-130 years. Whilst it is true that man is finite, the fact that maximum survival reaches 120 years of age is a different matter. Let us reflect on this point; first of all by analyzing the records of maximum human longevity, we can feel comfortable with this age limit established in the standard longevity tables.

However, several questions arise. Firstly, going back to the results of the observations on the dynamics of longevity, demographic experts and



actuaries are finding it difficult to find a pattern for statistically modeling limits for life, or what is technically called the survival extension risk. As a larger number of people become older, this sub-risk may be measured more precisely and the higher end of the survival table can be estimated.

A second question that arises refers to the conclusions of the so-called *fragility theory*, based on the biological observation of different animal species and human populations with high longevity records. This led Professor Leonid Gavrilov, of the Aging Center of the University of Chicago, to coin the term *actuarial kinetics* which attempts to explain the evolution of mortality of extreme old age which, being constant, i.e. there is no biological wear, would mean that there is no theoretical top limit where the mortality rate would be equal to one. We must bear this theory in mind for future modeling, particularly if a disruptive jump occurs in human longevity as a result of cellular and genetic therapies.

The French doctor and biophysicist, Roland Moreau, author of the book *Immortality for Tomorrow* concludes that «by the year 2027 almost all those born that year will reach the age of 100 and, if that is the case, some will reach 130 and, therefore exceed the biological limit of 120 years achievable by human beings» and «if the biogenetic engineering therapies are effective and alter the causes of ageing, the maxim limit for life could probably be exceeded».

- *Mortality rates must be positive and in the long term the hypothesis must be biologically reasonable.* These two principles are part of the ten rules proposed by Plat in 2009 in his definition of the features that a survival model must have. These premises mean that the longevity process is not reversible in time as we grow old. Only from the knowledge provided by the aging biological mechanisms can we assess if the survival rates should be at least positive. Very recently, biomedicine has shown that it is possible to recover

certain level of personal aging. In fact, taking the actual biological age of an individual as a reference, when an individual changes his lifestyle habits towards more healthy parameters, that individual's biological clock can be turned back. This has been evidenced by longevity's main biomarker: the telomeric length of chromosomes.

Just to mention one piece of evidence, a paper published in September 2013 in the prestigious scientific journal *The Lancet* concluded that in a healthy life style group the telomeres average length increased by 10% and, the more people changed their life style, the more dramatic their improvement in telomere length. By contrast, in the group that did not change life style, telomere length reduced by 3%.

In addition to life style changes, in the near future cell regeneration therapies will enable rejuvenation and/or repair of body tissue or organs, as was confirmed by laboratory tests conducted on animals and thus delay the biological clock. Harvard's Genetics Professor and molecular Engineer, George Church, refers to the potentialities of cell therapies and believes we will be young until death since, if we are already able to reverse a cell in laboratories, we will soon be able to do it within the body.

THE NEW PARAMETERS FOR HUMAN SURVIVAL MEASUREMENT: BIOPARAMETERS

Survival of an individual will be measurable before a disease occurs. This is the real news and the

challenge for actuarial and biomedical science since it is a fact that pre-symptom prediction does not exist in traditional clinical medicine. In order to understand better the measurement process for morbidity or mortality throughout the different stages that an individual may undergo from when there are no symptoms until death, bioactuarial models will have different calculation parameters and algorithms.

The study of the human survival process will be represented through the Bio-Faro Pyramid which I have developed jointly with the professor and genetics researcher Antonio López Farré and the validity of which was confirmed with Ana Villanueva, a doctor specialized in the field of medicine for insurance.

For each stage of human health the bio-faro pyramid allows a group of genetic or molecular biomarkers so that individual risk may be stratified. The base of the pyramid refers to the personal family history which for certain diseases of monogenic origin has a certain predictive capacity for the development of a disease on the basis of family descent.

As we climb the pyramid, the predictive capacity increases and is therefore more precise for the purposes of survival metrics. Actuarial science combined with insurance medicine have proved to be effective in the metrics whenever the disease has become apparent, the investigation focuses on asymptomatic disease prediction. Predictive biomarkers must be considered jointly in the algorithm calculation with the individual life style parameters. Genetics and epigenetics play a central role in the calculation of risk stratification.



THE REAL NEWS AND THE CHALLENGE FOR ACTUARIAL AND BIOMEDICAL SCIENCE IS THAT SURVIVAL OF AN INDIVIDUAL WILL BE MEASURABLE BEFORE A DISEASE OCCURS

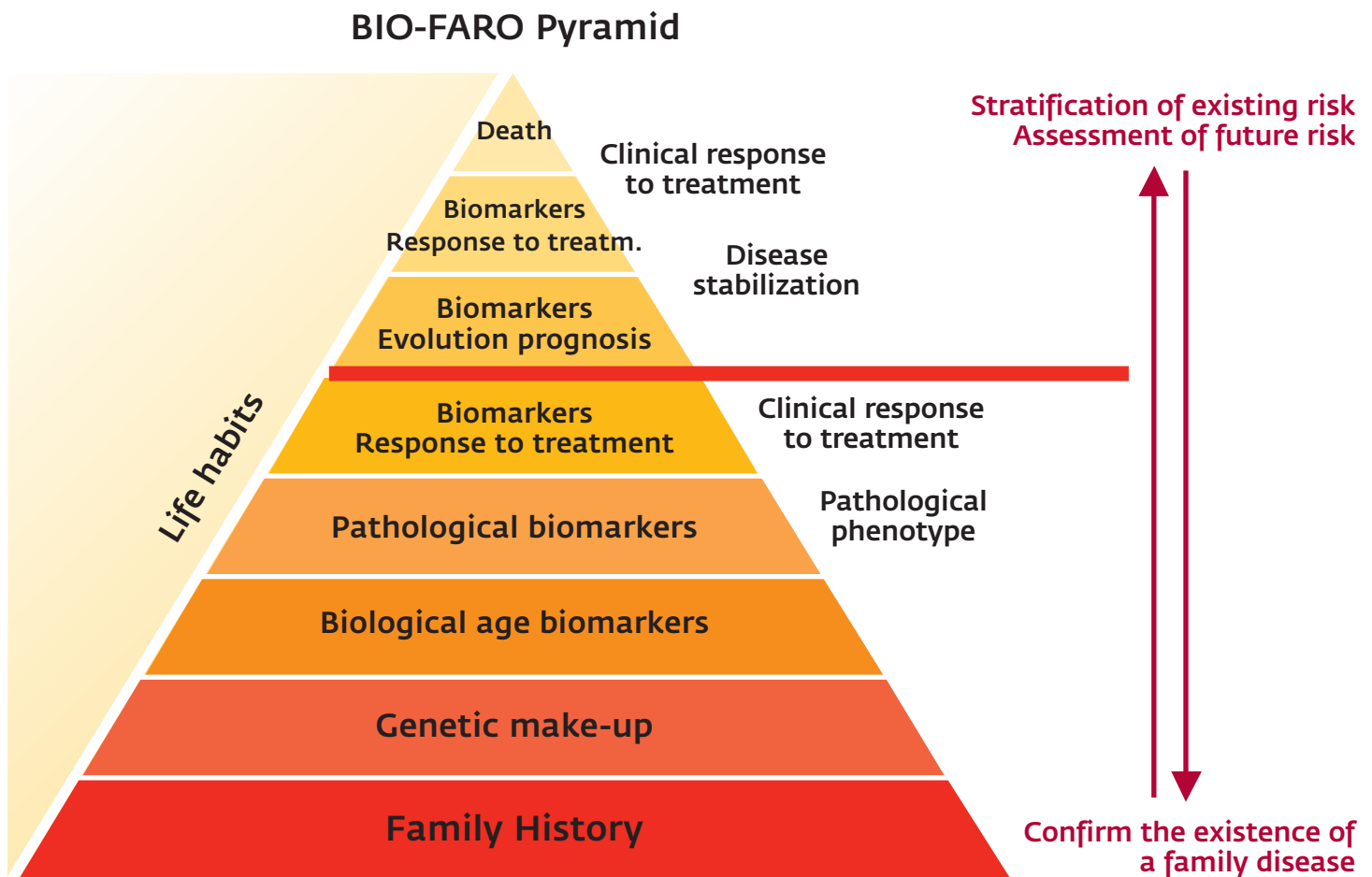


Figura 1. Biomarker stratification pyramid
Source: Lopez Farré, Rodríguez-Pardo, Villanueva Alonso.

BIOLOGICAL AGE

Biological age is increasingly being used in biomedical research; the step towards clinical or predictive medicine in clinical protocols is conditioned by the preparing of a calculation algorithm that is acceptable for the medical scientific community.

The new actuarial predictive underwriting models, known by the letters PUW in English, attempt to measure an individual's probability of dying with multi-variant techniques, taking into account not only the chronological age but also the life style. These models enable the correction of the

mortality rates calculated solely by age with a set of variables that explain the mortality.

The predictive underwriting models are nothing more than a statistical approach to an individual's biological age. We will go on to see how the models proposed from biomedicine can converge with those proposed with PUW techniques.

The task is not simple; the algorithm that determines biological age must be an effective combination of life style variables with bioparameter values which must take into account, at least, the following:

- The size of telomeres.
- The immunological profile.
- Metabolical profile.
- Genetic diseases biomarkers.
- Genetic tests.

We are now seeing the most recent advances proposed from biomedical research for measuring biological age. First of all, a definition was found for the features that a biological clock must comply with in order to perform its functions. According to Richard A. Miller, gerontologist at the University of Michigan, the biological clock must meet two conditions:

- Be capable of calculating life expectancy for a middle aged person more exactly than the chronological age.
- Must provide an exact value for biological age.

The University of California in Los Angeles, under the direction of Steve Horvath, Professor of Human Genetics in UCLA School of Medicine and Biostatistics in the UCLA Fielding School of Public Health, has perfected the traditional biological model based on saliva, telomeres and hormones. The new method has been able to show that the different organs of the body all age at a different speed. In fact the cells of healthy tissue surrounding a breast tumor are 12 years older than the body of the person and the healthy breast tissue is three years older than the rest of the body. The algorithm of the biological clock is based on 353 biomarkers that change with age and are present throughout the human body. The so-called Horvath's clock will be patented by UCLA University at the end of 2013, according to the media.

Another biological clock is the one developed by Kang Zhang, of the Genomic Medicine Institute in the University of California in San Diego. His molecular aging clock is inserted in the genome, is composed of chemical labels in DNA molecules that control whether genes are active in the cells. Epigenetic markers change with age, in the paper

published in January 2013 in the *Molecular Cell* journal, scientists analyzed 485 thousand of such labels in the blood cells of 656 persons, and found 70,387 labels that predicted chronological age.

This biological clock has enabled us to see that men age an average of 4% faster than women, a fact that could explain the different life expectancy between the genders. Moreover, it has enabled it to be shown that tumor cells have aged, on average, 40% more than normal cells in the same patient.

These two biological clock models are only an example of what the human survival metrics will be in the next years. The change in paradigm is of such significance that the insurance industry must be attentive to the development of such biomarkers which, in the researchers' opinion, will also be used in clinical medicine before the end of this decade.

PAY AS YOU LIVE PRODUCTS

The next generation of life insurance products will be those where the price of the annual insurance premium will be fixed on the basis of healthy lifestyle behavior patterns. So if the insured can show at each annual renewal that he maintains a healthy lifestyle, the insurance will be renewed with favorable terms and conditions.

The healthy lifestyle may be evidenced either via questionnaire on living habits or by objective biomarkers that accurately determine the exact biological age of the insured.

This new vision for insurance risks has started to be sold, incipiently, in some insurance markets and, as an actuary friend of mine said, they could be called Pay as you Live.

Society will welcome this type of policy where price is linked to healthy personal behavior and pricing has already taken on board the new risk metering paradigm, i.e. biological age.

THE BIO-ETHICAL DEBATE AND THE NEW SURVIVAL MODELS

Bioactuarial models will enable the measuring of predisposition to disease or determining the life expectancy of an individual. These models will be able to be applied before birth at the embryonic stage and even at laboratory in vitro embryos by means of mass prenatal DNA sequence techniques. They will provoke an ethical debate which will have to be resolved before they can be used effectively by the insurance industry.

In any event, we have to put ethics before actuarial modeling factors but we must also strike a balance between the greater risk measurement precision provided by the new paradigm –where the individual’s profile is the basis of measurement– rather than the traditional models where risk categories in most cases, are only made on the basis of chronological age.

We must make two considerations; the first one refers to the fact that the principle of fairness where each risk profile has a different actuarial value but need not necessarily clash with the principle of risk mutualization, whereby the solidarity mechanism of the insurance industry permits the incorporation to the insured group of those that are most vulnerable in terms of risk profile.

The second consideration refers to the breach of discrimination principles from the use of genetic profile data. Professor Carlos María Romeo Casabona, Director of the Inter-University Chair of Law and Human Genome at *Universidad de Deusto* (University of Deusto) and *Universidad del País Vasco* (University of the Basque Country) sheds light on



the ethical-actuarial conflict when he says that any technique that involves the use of genetic markers to measure risk or predisposition to a genetic disease must be submitted to the following principles:

- Proportionality, that is to say that the advantages must exceed the disadvantages.
- Relevance, there must be clinical interest.
- Quality, it must be reliable.
- Predictivity, i.e. there must be sufficient predictive capacity for the risk that we wish to measure.

The contrast between the new survival models with ethical principals will allow us to reconcile ethics and insurance science and legislation will have to determine the framework for conduct. **■**



THE NEXT GENERATION OF LIFE INSURANCE PRODUCTS WILL BE THOSE WHERE THE PRICE OF THE ANNUAL INSURANCE PREMIUM WILL BE FIXED ON THE BASIS OF HEALTHY LIFESTYLE BEHAVIOR PATTERNS

Operational risk and control assessment methodology



This study looks at how the risk assessment methodology is being implemented in Brazil's insurance group Grupo Asegurador BB MAPFRE as a complementary and deeper form of risk-management and control-implementation analysis. It also weighs up the pros and cons and main challenges posed by this method.



IBERÊ RANIERI
BB MAPFRE

The latest crises to hit the financial world have one standout feature that differentiates them from their forerunners: «the breakdown of trust».

The breakdown of trust in financial information and internal processes sparked off a new approach to operational risk and control assessment and ipso facto a worldwide reaction to this issue.

New regulations mushroomed plus new international market rules seeking to recoup confidence in internal company processes and the trustworthiness of their reports on their financial situation.

Among all the myriad concepts telling us how to implement the host of regulation frameworks and good practices, however, operational reviews are now bodying forth as the mainstay of renewed business confidence.

This article is going to look at how the risk assessment methodology is being implemented in *Grupo Asegurador BB MAPFRE* as a complementary and deeper form of risk-management and control-implementation analysis.

The article also addresses the pros and cons and main challenges of this methodology.

RISKS AND CONTROLS

It is not possible to write about this methodology without running through the basic definitions of the risk and control universe.

Every organisation is steeped in good or bad, efficient or inefficient practices. They represent the wake and bearing of its activities and are criss-crossed by the whole value chain. The resulting events of these activities almost always fall within a range of risks or opportunities. The nature of these events is determined by their impact. If the impacts destroy existing value or in some way hinder value creation they are called risks; conversely, if they create or preserve value within the organisation concerned they are called opportunities.



ILLUSTRATION STOCK

THE INTERNAL CONTROL SYSTEM IS DEFINED BY THE MANAGEMENT'S WHOLE SET OF POLICIES AND PROCEDURES TO ENSURE THAT RISKS INHERENT TO ITS ACTIVITY ARE KNOWN AND DEALT WITH

Corporate risk management in any organisation is driven by the board of directors, the management team and other employees. It is applied with the aim of establishing strategies to identify throughout the whole organisation those potential events capable of affecting it and then administrate those risks to keep them in line with the particular organisation's risk appetite and ensure reasonable fulfilment of its objectives.

The word «control» comes originally from the old French word *contrerole* meaning «a counter-roll or register used to verify accounts». The current Spanish dictionary, translated into English, defines it as: *monitoring, supervising or painstaking analysis with certain expectations, standards or conventions in view, etc.*¹.

Corporate risk management is an integral part of internal control. It is a process driven by the board of directors, by the management team and staff of any particular organisation, with the aim of ensuring reasonable fulfilment of its objectives: efficient and effective operations, trustworthy financial reports and law abidance².

The design of any organisation's internal control should enable management to tackle highly competitive and dynamic environments, the ground continually shifting under its feet with constant swings in client priorities and demands and nonstop, growth-seeking structural modifications. The existence of an internal control structure should keep nasty surprises to a minimum for upper management, helping it to maintain a course of profit maximisation and fulfilment of strategic goals.



INTERNAL CONTROL SYSTEM

The internal control system is defined by the management's whole set of policies and procedures to ensure that risks inherent to its activity are known and dealt with.

The main underlying principles of any internal control system are:

- Recognition and continual assessment of any tangible risks that might hinder the company's objectives.
- Suitable flow and availability of financial and operational information in line with market figures and events, underpinned by a secure, independently monitored information system maintained by contingency plans.
- Effective information channels to keep the importance of internal control at the forefront of all collaborators' minds and show how it is carried out at each level of the organisation.
- Ongoing monitoring by means of internal and independent auditing.
- Effective follow up by external regulators.

¹ Houaiss.

² Committee of Sponsoring Organizations of the Treadway Commission.

In sum, all risk screening and shielding is offered by the internal control system, whether these be credit risks, operational risks, market risks, liquidity risks or, in the particular case of insurers, subscription risks, which, if materialised, could affect the whole organisation.

OPERATIONAL RISKS

Without downplaying the other risks that at least match the importance of operational risks nowadays, this article focuses particularly on the latter.

The assessment and self-assessment method described in this article will deal exclusively with operational risks.

In early 2013 the Brazilian regulatory organisation, Private Insurance Superintendencia (*Superintendencia de Seguros Privados: SUSEP*), defined operational risk as follows: *possibility of losses arising from faults, shortfalls and inadequateness of internal processes, persons and systems or from external events or frauds, including the legal risk and excluding the strategic decision-taking and company reputation risk*³.

The methodology dealt with in this article widens this trawl to take in:

- External events
- Internal fraud
- External fraud
- Insolvency
- Process faults
- Persons
- Commercial relations
- Reinsurance
- Rating
- Systems (Information technology)



SELF-ASSESSMENT OF OPERATIONAL RISKS

Companies nowadays have opted to identify their risks by means of self-assessment. Under this way of working it is the areas themselves that are responsible for identifying the risks they run, their assessment and control.

This method, besides being fairly efficient, became in time an excellent vector of the internal control culture, especially risk assessment, involving as it does the whole organisation in its development.

³ SUSEP, 2013.

**COMPANIES
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OF SELF-
ASSESSMENT**

The Brazilian Banking Federation (*Federación Brasileña de Bancos: FEBRABAN*) highlights 8 of the expected results from any risk self-assessment method⁴:

- 1.** Complete analysis of the process by those involved, identifying potential risks and assessing the control and mitigation measures.
- 2.** Reduction or elimination of expensive or inefficient controls, creating alternative solutions and minimising risk exposure.
- 3.** Definition and follow-up of actions to increase the efficiency of controls.
- 4.** Assessment of existing control rules.
- 5.** Building up a common nomenclature and understanding of risks.
- 6.** Support in bringing the risk culture to wider notice within the organisation.
- 7.** Establishment of suitable reporting and monitoring channels of risk exposure improvement actions.
- 8.** Promotion of risk-management and control responsibilities within the organisation.

Some authors⁵ consider that the risk self-assessment method can be conducted in three ways: interviews, meetings and self-analysis.

The method put forward in this study does not consider the first two forms, since both interviews and meetings should be conducted by a team cognisant of risk classification and identification processes.

Self-analysis is carried out by means of questionnaires drawn up to assess control structures. These have to be filled in by the managers themselves or sometimes by the people directly responsible for the operation

in question. This makes it possible to ascertain whether or not the process per se chimes in with good control practices.

Self-analysis questionnaires are ideal for glean information on risks and control levels in a broad, general and rapid way, providing the questionnaires are drawn up in such a way as to foster reflection by the respondent about his or her own processes.

RiskM@p

Since 2003, *Grupo Asegurador MAPFRE* has been consolidating risk management processes worldwide; it was in fact in this era that a self-analysis-questionnaire-based method was set up called RiskM@p.

The self-assessment promoted in RiskM@p is based on the following features: risk- and control-evaluation questionnaires; identification of risks and controls carried out by the management of process manuals and monitoring of action plans deriving from previous work.

Every two years *Grupo MAPFRE's* insurance and reinsurance organisations, which, in the case of Brazil is the *Grupo Asegurador BB MAPFRE*, are invited to carry out the operational risk self-assessment process and also to weigh up the effectiveness of controls and action plans drawn up. The overall purpose of this exercise is to take necessary measures for the prevention or mitigation of identified risks and improving the control environment.

⁴Leite Costa.

⁵Assad, Oliveira, Martins Ferreira, Duque Estrada Felipe y Frank, 2010.

The questionnaires, taking in all operational risk categories, are directed at managers who take a direct part in the insurers' critical processes.

MAPFRE's global sphere of action is conducive to an across-the-board awareness of critical processes; this makes it possible to work from a global base of operational risks and to standardise risk factors.

The self-same working method applied to the group's insurers is also applied to RiskM@p. Although the validation tests are conducted every two years, administrators of the tool verify globally every year the implementations that can be carried out.

The final product of the RiskM@p is risk matrices, which can then be observed through various filters, thus allowing managers to identify the most critical risks within the processes they are responsible for.

The same goes for upper management, which can use this information for strategic planning.

INDEPENDENT ASSESSMENT OF OPERATIONAL RISKS

The pros of risk self-assessment are unquestionable in terms of speed, scope and low application cost. The widespread take-up of this method by the major corporations vouches for its value and efficiency.

At least as a complement to self-assessment, however, independent assessment can by no means be ruled out.

For the purposes of this study, an independent assessment is considered to be one carried out by an external consultancy or the internal control area itself.

Independent assessments are generally led by people aware of the risk and control



concepts, structures and categories. They are carried out by means of interviews and analysis of the rules, process design and internal documents that describe or show the trend of the analysed processes over time.

In comparison to self-assessment, independent assessment is more time consuming and more restricted in scope. So what are the pros of using this method?

Some natural characteristics of the human being can justify this choice:

1. There is a natural and human characteristic to downplay risks when these are analysed by the person actually responsible for the process in question. People tend to believe that certain events are much likelier to happen to others' processes than their own.
2. The sheer routine of constantly repeating the same process tends to

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INDEPENDENT ASSESSMENT IS A PROCESS CARRIED OUT BY PROFESSIONALS DEALING WITH ALL ASPECTS OF RISKS AND CONTROLS ON A DAY-TO-DAY BASIS

reduce the care taken. Controls are slackened in favour of process speed or, with time, some important aspects may be skimped to engender a false complacency in the process.

3. Even deeper down in the human psyche lurks a fear that a bad self-assessment of the process you yourself are responsible for could make your line manager suspect flaws in your own management, showing you up in front of your colleagues, team or superiors.

4. Lastly, the fear that any flaw flagged up in the process might lead to an increase in your already heavy workload. For each flaw at least an action plan will have to be conceived, drawing valuable and often scarce resources away from more productive uses.

In an ideal world none of the abovementioned aspects would be tolerated within any organisation. Much as we might resist them, however, we should never forget that management is always an activity carried out by human beings and, as such, susceptible to a whole range of behavioural tics.

Independent assessment frees the process manager from these knee-jerk reactions. It is also a process carried out by professionals dealing with all aspects of risks and controls on a day-to-day basis. Assessing risks and controls is the proper remit of these team members rather than a complementary responsibility of the manager, who will no doubt spend 90% or more of his or her concentration on his or her day-to-day activities.

On the downside, the greater depth of the independent analysis is more time-



consuming and resource-intensive. For this reason the best use of independent assessment may be in very specific and one-off cases to flesh out the self-assessment activities and results.

BB MAPFRE OPERATIONAL RISK ASSESSMENT METHOD

Driven by all the abovementioned challenges, *Grupo Asegurador BB MAPFRE* developed its own methodology for assessing operational risks as a complement to the tried and tested Riskm@p self-assessment process.

To develop this methodology no direct observation was made of the existing self-assessment method. Since

both are based on international standards, it was in fact possible to build up strong synergy between them.

The BB MAPFRE operational risks assessment method comprises a pre-analysis phase and then another 11 stages, to be described below⁶:

Pre-Analysis. The main aim of this phase is to train up and drill the team that is going to carry out the assessment processes. During a period of time that varies according to the process involved, the team begins the work of establishing standards, designing processes, policies, regulations, legislation, inspection notes, information on impacts and processes resulting from the business continuity plan (BCP), among other items. All this could be considered as a warm-up phase.

Stage 1. Identification of Risks and Controls. This stage involves mapping out the whole process, if this has not been previously designed, or validation if the process is already up and running. This phase also includes identification of the risks in their pure form, free of controls, weighing up whether the risks exist or not. By internal definition, the area responsible for assessing internal controls does not carry out the process design; it is therefore necessary to bring in the support of the area of processes that in this particular moment are acting as one of the main providers of the operational risks and controls team, thereby mapping out the processes that are to be validated by means of the ARIS tool⁷.

Risks are identified in terms of a strict categorisation based on international rules to ensure maximum systemisation.

Stage 2. Assessment of the Pure Risk and Drawing up the Risk Matrix.

On the basis of the information gleaned in the pre-analysis and the risks identified in Stage 1, the specialist internal control team begins the work of vetting information and assessing the pure risk for drawing up the pure risk matrix. Twenty three types of risks are assessed for each process activity.

The pure risk matrix is created on the basis of frequency and impact. Frequency is represented on a scale of 1 to 3; the value 1 means «Rare» for a period of over 6 months and 3 means «Frequently» for a period of 1 to 30 days. The impact is also represented on a 1-to-3 scale, in which 1 is considered to be a low value and 3 a high value.

It should be pointed out here that impact is not established from a financial perspective. Impact in this method is observed from the point of view of the activity's ultimate objective. This means that even activities that prima facie produce no financial impact could have an associated risk, classified as high if the manifestation of this particular risk could hamper achievement of the activity's ultimate goal. As already pointed out, process activities create some sort of value within a corporate structure; if manifestation of the risk hinders the activity, this also represents an obstacle to value creation.

⁶Controles, 2013.

⁷ARIS (Architecture of Integrated Information Systems) is an integrated Company modelling approach. It offers process analysis methods and comes up with a holistic view of the design, management, workflow and application-implementation process. (Architecture of Integrated Information Systems, 2013)

**GRUPO
ASEGURADOR
BB MAPFRE
DEVELOPED ITS
OWN
METHODOLOGY
FOR ASSESSING
OPERATIONAL
RISKS AS A
COMPLEMENT TO
THE TRIED AND
TESTED RISKMAP
SELF-ASSESSMENT
PROCESS**

PURE RISK MATRIX (WITHOUT CONTROL)				
FREQUENCY	Frequent	3x1	3x2	3x3
	Occasional	2x1	2x2	2x3
	Rare	1x1	1x2	1x3
		Low	Medium	High
		IMPACT		

THE BB MAPFRE OPERATIONAL RISKS ASSESSMENT METHOD COMPRISES A PRE-ANALYSIS AND ANOTHER 11 STAGES

Stage 3. Walkthrough. Stage 2 onwards represents the start of the control assessment and verification process, Stage 3 being the only stage in the process that is optional. It consists of monitoring execution of the control and its activities and is conditional upon the quality of information obtained in previous stages. Should it be established that the material obtained up to that time is insufficient for coming to any conclusion on the existence or quality of the controls, there would then be a need for monitoring of their execution directly in the area affected or responsible.

Another characteristic of this stage is that it can be carried out concurrently with Stage 4, since the need of a *walkthrough* may also crop up during the collection of information and control testing.

Stage 4. Control Testing and Assessment. In this stage, as in Stage 2, the work concentrates on the objectives in view. The base of Stage 2 is the objective of the activity; in this stage it is the objective of the control.

The test to be carried out is defined in terms of an analysis of the objective of the existing control.

As in previous stages, score-based criteria were again established here to assess the control test. In this case the scoring scale runs from 1 to 4, in which 1 means «Unsatisfactory» and 4 means «Satisfactory».

It is deemed to be «Unsatisfactory» when there is seen to be no control or if the internal control specialists lack the wherewithal for carrying out the tests. «Satisfactory» means the existing control has been tested and no error has come to light.

Stage 5. Residual Risk Matrix. The residual risk matrix combines pure risk and control, combined in factors of 1 to 3 for the risk (low, medium and high) and 1 to 4 for the controls (unsatisfactory, partially unsatisfactory, partially satisfactory and satisfactory).

RESIDUAL RISK MATRIX (WITH CONTROL)				
CONTROL	Unsatisfactory			
	Partially unsatisfactory			
	Partially satisfactory			
	Satisfactory			
		Low	Medium	High
		PURE RISK		

The result of this stage is the risk matrix for the analysed process.

Stage 6. Recommendation or Suggestion of Improvements. Once the matrix has been obtained and the position of the risk in the quadrant, the control team then initiates the process of describing the recommendations and suggestions of improvements.

Here again the independence of this model comes into its own. The recommendations will help managers to direct efforts by means of action plans in the most objective and efficient way possible, minimising the unnecessary expenditure of resources.

Stage 7. Drawing up the Final Result. The final result involves compiling all the information obtained in the 6 earlier stages and communicating the opinion and comments on the findings to those responsible for the process. This knowledge is transmitted in a presentation, which is the objective of Stage 8.

Stage 8. Presentation and Action Plan. The various points are vetted in a final meeting with those responsible for the process. Any doubts and differences of opinion that may crop up are dealt with in this meeting, enabling managers to propose with more security an action plan to mitigate or eliminate those risks.

In very specific cases, risks cannot be mitigated or eliminated. This will be manifested by the manager, thus recording his or her opinion that the risk must be assumed and that no action should be taken in the first instance.



Stage 9. Validation of the Action Plan. The managers, within a previously agreed deadline, have to present an action plan to mitigate or eliminate the risks. This action plan is again analysed by the internal control specialist team, checking whether the plan is realisable and, if so, in which timeframe.

It may be the case that some plans are initially linked to group projects, some of which might overrun the time period during which risk exposure can reasonably be tolerated. When this happens, the person responsible for the process has to seek an alternative form of control with the aim of minimising risk exposure until such time as the plan is definitively implemented.

Stage 10. Gearing the Action Plans towards Conformity. Within this methodology the other major collaborating provider besides the process area is the conformity area. In this model, once the revised plans have been approved they are sent to the conformity area, which then has to monitor the implementation stages and flag any possible deviations or deadline overruns.

THE ACTION PLAN DESTINED TO MITIGATE OR ELIMINATE THOSE RISKS SHOULD BE ANALYSED BY THE INTERNAL CONTROL SPECIALIST TEAM

WORKING AT THE SAME TIME WITH THE SELF-ASSESSMENT METHOD AND WITH THE INDEPENDENT ASSESSMENT HAS PROVEN TO BE AN EXTREMELY ENRICHING EXPERIENCE

Stage 11. Process Area Feedback. Should it come to light at any moment during the work that the process flow does not tally with initial representations, this information is then transmitted to the process area for it to make the due alterations.

CONCLUSION

The methodology developed by *Grupo Asegurador BB MAPFRE* does not aim to override the self-assessment method. Quite on the contrary, both methodologies can feed off each other, thus ensuring that one-off points that might otherwise have been overlooked are properly dealt with.

Working with two models has proven to be an extremely enriching experience. Self-assessment, with its wide-ranging vision, identifies the points that the manager considers to represent significant risks. Independent assessment rounds this out by studying at much greater depth the points already analysed during the self-assessment process to identify new flaws that can then be dealt with more objectively, drawing up action plans more clearly focused on risk elimination and thus minimising wastage of resources.

It goes without saying that from here on in the whole organisation comes out winning on the strength of the wide-ranging vision of the one method and the more detailed study of the other.

In a financial world beset by crises of confidence, an awareness of the risks that companies are exposed to undoubtedly makes shareholders and other stakeholders feel more confident while also boosting the security of corporate processes. **I**

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Quo vadis Industrial Insurance?

This topic entails not to address the current market environment or the unquestionable societal value of the insurance business. Instead I advocate a strategic approach for Industrial Insurers as successful companies do focus on «controlling the controllable factors and not the uncontrollable».

DR. EBERHARD M. FALLER
SVP CORPORATE INSURANCE, BASF SE

CURRENT CHALLENGES OF INDUSTRIAL INSURANCE

The first category of challenges I name Homemade Issues and see four aspects:

- **An unfavorable image.** Insurance as a member of the financial services industry cannot isolate itself from the prevailing negative press of the banking sector but also own image issues like certain sales practices, reportedly high commissions or aggressive claims handling practices, all do not really facilitate our business in a multinational company. My only advice here is acting professionally

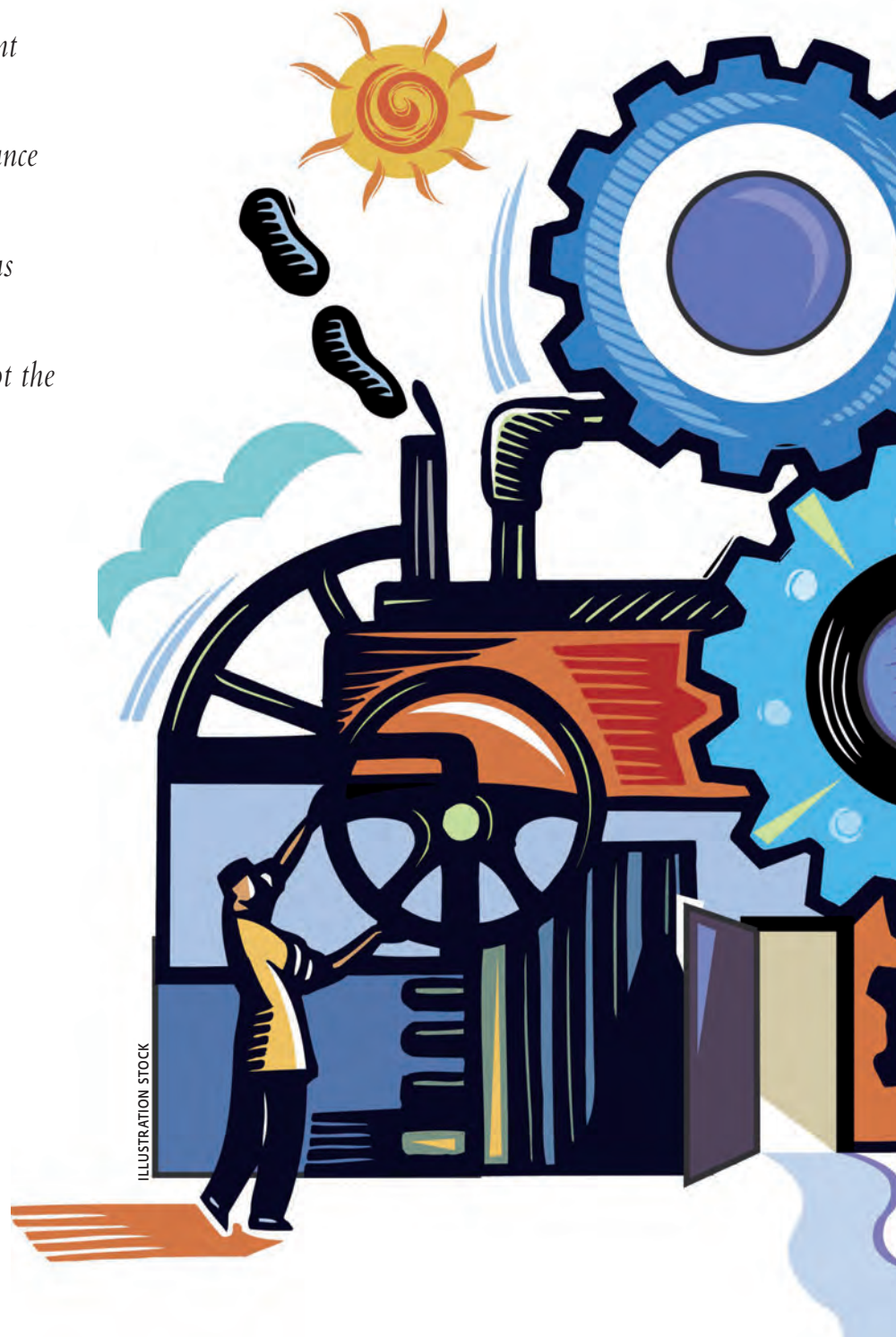


ILLUSTRATION STOCK



excellent and compliant as a Risk Manager to gain board room acceptance.

● **A lack of product innovation.** The classical conservative and more evolutionary and underwriting focused insurance business model tends to hinder embarking on a strategic growth path but really should not. At the same time, I see an identical lack of innovation demand by us the Insureds. BASF employs 10% of the work force and spends 3% of net sales on R&D to ensure our business's future and to fulfill the high demands of our customers for technological progress.

● **Lack of IT investment or in a broader sense administrative process deficits.** In our daily transactional life we all deal with an administrative super effort in getting the core of our business, namely the pure risk transfer, commercially managed. And one wonders if the enormous amount of data gathering predominantly serves the assessment of the underlying risk or more check-the-box purposes.

● **Lack of talent.** In the last 15 years buyers and sellers of insurance and intermediaries have not invested

enough in people as their main resource, also in industrial insurance. The retirement of the baby boom generation will present us most likely severe staffing issues.

Herewith I come to the second category, Macro-economic factors:

- We are confronted with a loss in relative importance of insurance over GDP growth. Main reason: new industrial sectors and new business models often do not follow the classical «brick-and-mortar» or in other words a capital intensive production mode. They are more based on «soft» assets such as Intellectual Property that are today in principle not insurable. It appears insurance products presently do not yet adequately accompany the new economy.

- Monetary Policy as the current main macro-economic driver. The historically low and prolonged interest rate environment as a consequence of the chosen monetary doctrine leads in our business to a sharp inflow of so-called Alternative Capital in form of Insurance Linked Securities, Collateralized Reinsurance, Cat Bonds and so on. This provides the system currently with cheap and abundant capacity and facilitates a continuation of the famous «soft» cycle. The same factor is further enforced by a strong growth of emerging insurance players in China and other upcoming markets coupled with the generation of a new



IN THE LAST 15 YEARS BUYERS AND SELLERS OF INSURANCE HAVE NOT INVESTED ENOUGH IN PEOPLE AS THEIR MAIN RESOURCE

hub in Singapore assembling this new international capacity.

Regulatory aspects form the third category of challenges:

- **Regulation.** As a consequence of the financial crisis and the resulting negative public sentiment towards the financial sector we saw the pendulum of regulatory supervision almost worldwide swinging substantially to more tightness and in Germany culminating in what the Head of the Social Democratic Party vigorously described as «taming the unbridled entrepreneurial players». For all of us this implicates at the end of the day additional cost for and of compliance.

- **Legislation.** Allow me to be a bit critical in this context ! Our industry tends to entertain extended expert debates if we take the latest dealing in Europe with U.S. sanction clauses in our wordings as one example. To get me right, there is no shade of grey in legal compliance matters and, precisely therefore, our industry would be better advised adopting in such cases an industry standard instead of «shadow boxing» such issues with the hope of potentially gaining a short-term competitive advantage in the market place.

Taking all challenges together, some black painting visionaries appear to see no promising business model and no solid future for industrial insurance. In one article the picture of polar bears fighting for the last not yet melted iceberg was used

to describe this alleged industry survival mode.

But, do we really lack a solution or face a gloomy future? In my opinion certainly NOT ! In the following I will describe the three future trends I see and advocate a strategic approach for the successful participant in the insurance market place.

FUTURE DEVELOPMENT OF INDUSTRIAL INSURANCE

Trend 1. Organizational Adjustments at Insurers

The successful growth oriented Insurer will adjust the following levers of the current modus operandi and thereby apply enterprise specific nuances and adaptations:

- Introducing a line of business overlapping customer segmentation as well as a service and underwriting approach along customer needs and their respective business challenges. While this may sound a bit cryptic or even abstract let's take Cyber as an example of a new risk falling in between many traditional insurance buckets of today that one leading Insurer addressed by setting up what they call Industry Groups or MAPFRE *Wirtschaftssektoren*.
- Providing more transparency in terms of service versus risk transfer. This transparency in pricing together with a more differentiated offering of complete business solutions will lead to higher customer confidence and



AS A CONSEQUENCE OF THE FINANCIAL CRISIS AND THE NEGATIVE PUBLIC SENTIMENT TOWARDS THE FINANCIAL SECTOR, WE SAW THE PENDULUM OF REGULATORY SUPERVISION SWINGING SUBSTANTIALLY TO MORE TIGHTNESS

ultimately new business models. The latter also follows recent taxation rulings in the same direction fostering the trend to more clearly distinguish both components in today's «all-inclusive» premiums. Furthermore, I see «trusted insurance products» and eventually ISO certifications of those as helpful to restore a broader product and industry confidence.

- Acknowledging also in industrial insurance an expected commoditization of certain products as they develop into standard solutions off-the-shelf and marketed with different sales channels including the internet based on minimal distribution cost. Other products will be marketed as pure service products based on agreed fees and performance metrics.

- Investing in Professional Excellence by promoting in-house professional expertise and herewith a differentiation from prevailing technical and managerial know how across the market place today.

- Appointing also of *Fachfremde* Senior Executives. While multinational peers, like BASF, growingly appoint non-industry seasoned managers as their Risk Managers, the insurance industry today still operates very much inward bound.

Trend 2. Pursuing Growth Opportunities

Again, the successful and growth oriented Insurer will be able to tap a number of business opportunities and expand current business revenues:

- Expansion of the Insurance Product Portfolio by developing more products along new emerging business risks through a systematic and rigorous challenge of today's boundaries of insurability. Insurability of «soft» assets like IP, but also CBI, mega catastrophes all represent a challenge to be developed perhaps also by joint R&D think tanks.

- A new approach to insurance R&D as I advocate a higher willingness to test new risks with what we at BASF would call «laboratory» capacity and in a client specific test environment.

- More strategically addressing long-term growth options stemming from commonly accepted global mega



THE SUCCESSFUL AND GROWTH ORIENTED INSURER WILL BE ABLE TO TAP A NUMBER OF BUSINESS OPPORTUNITIES AND EXPAND CURRENT BUSINESS REVENUES

trends such as the expected population growth to 9 billion people by 2025, the associated growth in emerging markets, the respective urbanization trend, the reinforcing single household pattern, the e-mobility and self-driven motorcars, a new energy landscape, and so forth. I expect medium-term to see new insurance solutions focusing on these aspects.

- Pursue growth potentials in emerging insurance markets through a) accompanying globalizing enterprises and satisfying their insurance needs in these markets, and b) investing in own engagements in insurance markets of developing countries. Formation of joint ventures with locally quickly growing insurers may in this context constitute a worthwhile alternative.

- Continuation of the classical what I call MORE approach, i.e. more capital, more capacity, more cover, more risks; I should say regularly at somewhat lower prices per unit. Undoubtedly our core business today will remain crucial and also needs to be fostered but again it will become a – more – challenging proposition if pursued as the sole strategic centerpiece.

Trend 3. A Stronger Market Consolidation

The insurance market will like other maturing sectors or businesses in more mature markets consolidate more strongly in the foreseeable future as a result of two

pain points: a) the mentioned current low and prolonged interest rate environment through the associated severe cost pressure, and b) a Solvency II linked higher future equity requirement. Apart from possible recapitalization needs Insurers will have to streamline their business and consciously elect their specific future business model. I expect to continue to see only a few Service Insurers with a truly global reach able to run international programs and the others – more capacity providers – focusing on particular products, regions, market niches, etc. We should therefore medium-term see a re-organized offer side of our product. To be very clear from my side, we definitely need both types and through some flexibility in terms and conditions to be able aligning them in international insurance programs.

LIKE OTHER MATURING SECTORS OR BUSINESSES, THE INSURANCE MARKET WILL CONSOLIDATE MORE STRONGLY IN THE FORESEEABLE FUTURE

CONCLUSION

It appears we operate in a basically conservative and evolutionary industry focusing more and speaking still more about a RISK landscape than investing a greater portion of energy on the OPPORTUNITY map.

I am optimistic seeing more opportunities for growth in our industry if all stakeholders contribute their share to the common good:

- Insureds, by more seriously requesting and supporting instead of awaiting product or process innovation.
- Insurers, by more actively spearheading new developments instead of following someone else's pilot when pursuing a new business opportunity.
- Regulatory Supervision supporting the market development, by encouraging a bit more doing business rather than binding management attention rather strongly on monitoring aspects.

Let me then finish with my credo of today: «Let's sharpen our industry's mindset and dare to push the growth button». **!**



25th Spanish Insurance and Risk Management Congress

Before an audience of over 300 professionals, the event dealt with the emerging risk-management challenges now being posed for companies of any size or activity

On 29 May Madrid hosted the 25th Spanish Insurance and Risk Management Congress (*XXV Congreso Español de Gerencia de Riesgos y Seguros*) of the Spanish Association of Risk Managers and Insurers (*Asociación Española de Gerentes de Riesgos y Seguros: AGERS*) to celebrate the 30th anniversary of AGERS. The association indeed has now chalked up three decades of transmitting the risk culture to society, bringing risk-mitigation systems to wider notice and supporting the implementation of top-quality risk management in companies of all types.

Attracting a turnout of over 300 professionals working in the various fields of risk management, from Spain and abroad, the congress bore witness to the keen ongoing interest in risk management. The title of the congress alone (*Global Risks in a Global World*) aroused an eager sense of expectation and the event itself dealt with the emerging risk-management challenges now being posed for companies of any size or activity.

The opening address was given by Jaime Mayor Oreja, stressing the importance of values in our daily lives with a special nod towards the situation of our sector and European policy.



The Working Group of International Programmes (*Grupo de Trabajo de Programas Internacionales*) then set out the conclusions drawn by the group from their work over recent months, culminating in the publication of the manual *Programas de seguros internacionales (International Insurance Programmes)*.

The various speeches and debates gave congress-goers a flavour of the different opportunities to be found nowadays in organisations, the new regulation changes or even the current trends that will lead to the progressive setting up of new in-company control measures.

The last panel looked at natural

catastrophes (NAT CAT), investigating how to deal with them and prevent them, stressing the importance of proper planning and analysis as the only reliable way of tackling catastrophic risk.

The closing address of the 25th Spanish Insurance and Risk Management Congress was given by the President of the Federation of European Risk Management Associations (FERMA), Julia Graham, accompanied by María Isabel Martínez Torre-Enciso, member of AGERS's *Junta Directiva* (Executive Board) and also of FERMA's board. Both gave a European slant while also demonstrating the good understanding

between both associations, the shared endeavours and the common challenges faced by risk managers.

After the Assembly of 30 May 2014 the Executive Board of the *Asociación Española de Gerencia de Riesgos y Seguros* (AGERS) met to set up the new Executive Board:

–President: **Juan Carlos López Porcel**

–Vice-President I: **Alfredo Zorzo**

–Vice-President II: **Mario Ramírez Ortúzar**

–Secretary General: **Gonzalo Iturmendi Morales**

–Vice-Secretary General: **Carmen Sarandeses**

–Treasurer: **Andrés Elósegui Ichaso**

–Auditor: **Mariano Blanco Gema**

Members:

–**Alfonso Garrido Romero, Ubaldo Llorente Fernández, Iván Alcaza Casante, Ignacio Martínez de Baroja y Ruiz de Ojeda, Fernando Caballero de la Sen, Cristina Gil Olmo, Cayetano Ramírez Rubio, Cristina Gutiérrez Pérez, Esperanza Pereira Fernández, Fernando Redondo Izquierdo, Juan Manuel Gayá Soler, María Isabel Martínez Torre-Enciso, Miguel Ángel Zarandona Alburquerque and Teresa Lozano Martín-Buro. |**

AGERS kicks off its 1st Safe Biomedicine Project with the aim of drawing up the first actuarial tables of critical-illness insurance in Spain

A GERS begins its 1st Biomedicine Project with the aim of drawing up the first actuarial tables of critical-illness insurance in Spain, covering all the various illnesses classified as such. Premium rating will be based on rates already calculated in other countries.

This initiative bodes very well for the Spanish market, which as yet has none of its own benchmarks to work from. The product is now one of the boom life-insurance items and offers various points of view. The working group is coordinated by José Miguel Rodríguez-Pardo, member of AGERS's biomedicine commission.

As well as this rate calculation, this working group will collaborate with the Traditional Underwriting Working Group to define cover and exclusions

Another two projects are also in the pipeline:

- Measurement of the biometric longevity shock risk additional to the expert judgement trend risk.
- Measurement of longevity

and morbidity with predictive biomarkers.

Under the leadership of Ana Villanueva, Medical Director of MAPFRE Re, AGERS is now launching its Biomedicine Commission, involving working groups dealing with subjects as interesting and diverse as bioactuarial models, predictive underwriting, traditional underwriting, research, bioethics and assessment of bodily and mental harm, ranging right through to the new technologies applied to the underwriting process.

Neither should we forget international relations, a sine qua non of today's global world, and ongoing training to continue learning and swapping notes. |





FERMA SEMINAR 2014, 20-21 OCTOBER, BRUSSELS

No risk manager can be unaware of the issues of climate change

No risk manager can be unaware of the issues of climate change,» says Helle Friberg, a member of the board of the Federation of European Risk Management Associations (FERMA) and chairman of the programme committee for the 2014 FERMA Seminar. «At the Seminar on 20 and 21 October, we will announce the findings of the 2014 FERMA Benchmarking Survey. As part of this significant event, Danish meteorologist, TV weatherman and climate expert, Jesper Theilgaard, will give a keynote speech on the subject

of climate change and its implications for Europe and European business.»

For Europe, Jesper neatly sums up the probable picture of climate change: too much water in northern Europe, and not enough in southern Europe. The accompanying hazards are storms with high winds and heavy rains. He intends to explain to the FERMA members why the issue has now become so serious and the consequences for risk managers and insurers.

He often speaks with risk managers and insurers, and so he is

well aware of their concerns. «There is an economic risk of doing something which turns out not to be necessary but if we don't do enough it might be too late, not for the planet but for humanity.»

FERMA Executive Director, Florence Bindelle, comments: «Climate change will bring about a transformation in business as companies seek to manage hazards that we believe will intensify. They will also innovate, developing new products and processes that need less energy to produce or to use. In fact, this evolution is already underway, and while this is taking place, it seems a good time for the risk managers to think about what they want for their role in the business of the future, taking into account the combined factors that shape the global economic environment.» |





FERMA agrees plan for European certification of risk managers

The General Assembly of the Federation of European Risk Management Associations has agreed a framework and funding to implement this project

The programme will provide certification of the professional competences and experience of individual risk managers and accreditation for the risk management programmes of education bodies. Certification will be supported by a requirement for continuous professional development and a code of ethics. FERMA's aim is to start accepting applications for certification from risk managers and accreditation from education providers in 2015.

The President of FERMA Julia Graham commented: «This is one of the most important projects that FERMA has ever undertaken. We know there is a great appetite for certification, and it will be a key achievement for FERMA and for our member associations with whom we have engaged and worked on this project closely.»

The General Assembly also agreed for funding from FERMA's reserves for the development and



implementation phase of the project, which will run on a not-for-profit basis.

FERMA Vice President Michel Denner, who is chairman of the certification steering committee, said: «A new designation is born: European Certified Risk Manager. We can be proud of that we will be providing one of the first pan-European recognitions of a profession, and one that will be a benchmark for other risk managers' professional bodies worldwide.»

«The thanks of the steering group go to representatives of our member associations being involved in the

development including AIRMIC, AGERS, AMRAE, BELRIM, DARIM, DVS, NARIM, POLRISK, RUSRISK, SI-RISK, and SWERMA, FERMA board members and FERMA team. Together we have built the foundations for recognition of risk managers as a respected, structured and mature profession among other global professions.»

The scheme agreed by the FERMA general assembly has three parts:

- The general framework and content of certification based on the four pillars of knowledge, experience, continuous professional development and ethics.
- The governance structure.
- The business model, including funding and the value proposition for users.

Risk managers will benefit from pan-European recognition, job portability and the assurance they will



drive their company risk management function on the basis of best practices, while education bodies will be able to leverage being recognised by the profession to promote accredited programmes in risk management.

FERMA will continue to involve its member associations closely in the development and implementation of the project now that the framework has been agreed. Michel said: «We know that all the detail is not yet in place. This is an ongoing process over several years which we will do in partnership with our members.»

He added: «Personally, I have long wished for the risk management profession to provide itself with values and standards to help ensure that risk competences at a high level are disseminated through organizations. Certification will enable us to support governance bodies and top management with the level of confidence that they need to have an accurate picture of risk taking and the best advice for mitigation and strategic planning.» |

FERMA named official partner in European-wide campaign to manage stress at work

More than 60 partners integrate this initiative, which fights the second most frequently reported work-related health problem in Europe

The European Agency for Safety and Health at Work (EU-OHSA) has named the Federation of European Risk Management Associations (FERMA) as an official partner in its 2014-5 campaign to manage workplace stress (#EUmanagstress). Stress is the second most frequently reported work-related health problem in Europe, and it is believed to cause more than half of all lost working days.

FERMA executive director Florence Bindelle said: «As in previous years, FERMA is pleased to have been selected among the partners of the EU-OSHA campaign to improve workplace health and safety. We are aware of the positive effects that tackling psychosocial risks can have on overall business performance, particularly long-term sustainability and social responsibility. Some FERMA members have launched initiatives to work closely with human resources directors to define risk indicators.»

There are currently more than 60 partners, including FERMA, in the Healthy Workplaces Manage Stress campaign. They come from a variety of sectors across Europe and include employers' and workers' federations, technology platforms, non-governmental organisations and multinational companies. EU-OSHA's director, Dr Christa Sedlatschek, explained that the diverse range of official campaign partners is crucial to the campaign's success.

A statement from EU-OHSA added: «Our official partners are a committed group of European leaders in managing work-related stress and will help spread the campaign's message that psychosocial risks can be managed in the same practical, systematic way as any other occupational safety and health risk. Their input is essential for coordinating the campaign on the shop floor across sectors and geographies,» said a statement from EU-OHSA. |

2014 AGENDA			
CONFERENCES AND SEMINARS			
CONFERENCE	DATE	VENUE	ORGANISERS
Board Meeting	4 September	Bruxelles (Belgium)	BELRIM
2014 Symposium	10-12 September	Munich (Germany)	DVS
2014 Seminar	11-12 September	Nyborg (Denmark)	DARIM
Rendez-Vouz	13-18 September	Montecarlo (Monaco)	RVS
2014 Conference	14-17 September	Winnipeg (Canada)	RIMS Canada
General Assembly	18 September	Bruxelles (Belgium)	BELRIM
2014 Conference	25-26 September	Milan (Italy)	ANRA
National Congress	1-3 October	Brisbane (Australia)	RMIA
Risk Frontiers in Africa	2 October	Bruxelles (Belgium)	Commercial Risk
Risk Frontiers in Spain	9 October	Madrid (Spain)	Commercial Risk
ERM-BCM Congress	9-10 October	Mexico D.F. (Mexico)	RISK Mexico
2014 Seminar	20-21 October	Bruxelles (Belgium)	FERMA
2014 Forum	4-5 November	Pfäffikon (Switzerland)	SIRM
Risk Frontiers. Emerging markets	4 December	Madrid (Spain)	Commercial Risk
Annual Conference	7-10 December	Denver, CO (USA)	SRA

**PROGRAMAS DE SEGUROS
INTERNACIONALES
(INTERNATIONAL INSURANCE
PROGRAMS)**

RISK MANAGEMENT WORKING
GROUP

MADRID: AGERS, D.L. 2014
ISBN: 978-84-697-0279-6

The AGERS Risk Management Working Group, created to study the situation of the international insurance programs during the course of various sessions held with different operators in the sector, publishes its conclusions in this manual released to coincide with the 30th anniversary of AGERS.

The book takes a practical approach to questions about terminology, regulations and taxation, all of which are examined with insights from insurers, law firms, brokers and regulators.



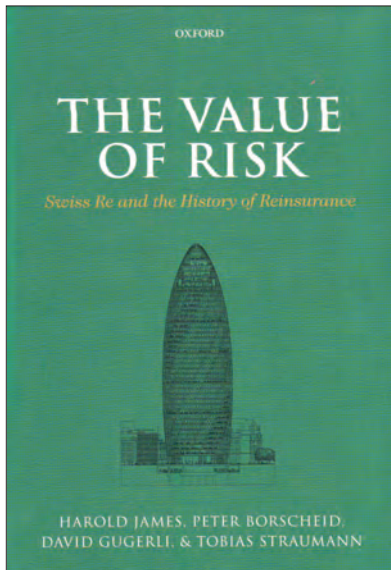
It is vital for businesses to have appropriate international insurance programs as they can be an important competitive factor. This book will certainly help to facilitate the preparation of these programs. |

**THE VALUE OF RISK: SWISS RE
AND THE HISTORY OF
REINSURANCE**

HAROLD JAMES (EDITOR), PETER
BORSCHIED, DAVID GUGERLI,
TOBIAS STRAUMANN
2014 OXFORD UNIVERSITY PRESS
ISBN: 978-01-996-8980-4
ISBN: 978-01-910-0399-8
(ELECTRONIC VERSION)

Published to coincide with the 150th anniversary of Swiss Re, this book examines the history of reinsurance and of Swiss Re in particular.

Edited by Harold James, professor of history and international affairs at Princeton University, the book's introduction explains the basic principles of insurance and describes the development of the insurance industry.



The book has three chapters, each written by an expert on the subject. The first part, by Peter Borscheid, deals with the history of international and global affairs in the insurance world and describes in detail the worldwide expansion of modern insurance, the difficulties it has faced and how the market environment has changed over time.

In the second part, David Gugerli places the reinsurance industry in the context of the second half of the 19th century with the proliferation of companies founded after Cologne Re in 1842. The San Francisco earthquake in 1906 was a milestone, leading to the modernization and

internationalization of the reinsurance industry up to the year 2010.

Finally, in the third part Tobias Straumann examines the history of the Swiss Reinsurance Company, from its foundation in 1863 up to 2013, in the context of a changing world. |



GLOBAL PENSION CRISIS: UNFUNDED LIABILITIES AND HOW WE CAN FILL THE GAP

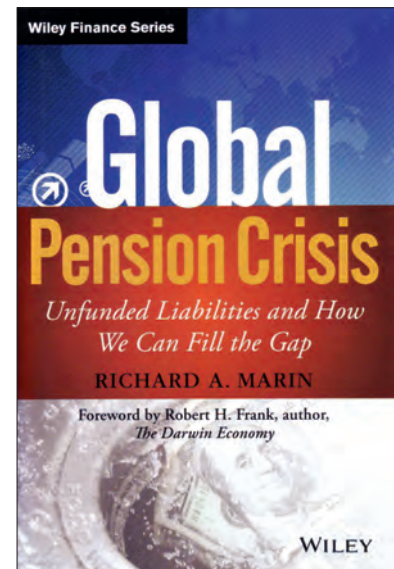
RICHARD A. MARIN, ROBERT H. FRANK (FOREWORD BY)
2013 WILEY
ISBN: 978-1-118-58236-7

It is increasingly clear that neither governments, corporations nor individuals have been able to prepare adequately to meet their future pension obligations and needs. Retired people are living beyond actuarial life expectancy, pension liabilities are very high, pension plans are underfunded, and medical costs are rising.

This book analyzes the global pensions crisis and offers practical ideas to retirement plan managers and financial advisers, while also explaining how to strengthen pensions and prevent similar crises in the future.

In a global world the pension issue affects everyone and will require global solutions and tough decisions at both the national and personal level.

The book is divided into 12 chapters. The language is simple and straightforward and suggestions are given at the end on actions that both institutions and individuals can take to help mitigate the global pension crisis. |



FUNDACIÓN MAPFRE

Insurance and Social Protection Area

EL SEGURO BASADO EN EL USO (USAGE BASED INSURANCE)

MANUELA ALCAÑIZ ZANÓN /
MERCEDÉS AYUSO GUTIÉRREZ /
ANA MARÍA PÉREZ MARÍN
FUNDACIÓN MAPFRE, 2014
ISBN: 978-84-9844-422-3
PRICE: 20€ CUADERNO 199


Pay-As-You-Drive (PAYD) insurance is a new vehicle insurance concept now being marketed in various countries. Also going under the name of usage-based insurance, this system calculates the premium in terms of new risk factors, such as the yearly mileage clocked up by the insured driver, the amount of night driving, the habitual driving area and driving habit, among other factors. This is all made possible by telematic resources (GPS, for instance), which now allow premiums to be tailored more closely to each particular person. The underlying idea is simple: people who use their vehicle more will pay a higher premium because they run a greater risk of accidents. Nonetheless, the companies marketing products of this type have to surmount considerable difficulties, since there is little to go on statistically, and the reference works that do exist are scattered and time-consuming to consult.



This book revolves around three main thrusts. Firstly it runs through all the reference works on usage-based insurance, filling in the reader on the various types of products and showing how they are being implemented in other countries. Secondly, it comes up with some reflections on how to extend the idea of usage-based insurance to other insurance products besides vehicles. Lastly, to help PAYD policyholders, it describes many real cases showing the importance of use-based factors as accident-rate variables. For example the study shows that the accident risk increases directly

with mileage and speeding. The accident probability also increases in direct proportion to the amount of driving in built-up areas and sporadic (rather than routine) night driving.

In view of the importance of use-related factors in explaining the accident rate, we see this type of insurance taking off in coming years as a new premium rating trend. This ushers in a new line of research, centring on the concept of personalised insurance, which to some extent now sets the tone for the future development of the sector and of actuarial science as a whole. ■

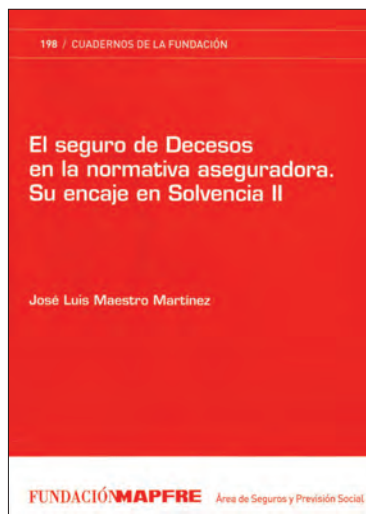


EL SEGURO DE DECESOS EN LA NORMATIVA ASEGURADORA. SU ENCAJE EN SOLVENCIA II FUNERAL INSURANCE IN INSURANCE LEGISLATION: HOW IT FITS INTO SOLVENCY II

JOSÉ LUIS MAESTRO MARTÍNEZ
FUNDACIÓN MAPFRE, 2014
ISBN: 978-84-9844-421-6
PRICE: 20€ CUADERNO 198

In today's insurance practice there is a type of insurance with a massive takeup but which is not

dealt with in Spain's Insurance Contract Law (*Ley de Contrato de Seguro*): it concerns fee-for-service insurance policies whose various arrangements are dealt with in certain scattered parts of contractual law but in general are governed mainly *ad hoc* by the stipulations of the parties, even though these stipulations have to abide by general insurance contract provisions. One idiosyncratic feature of these fee-for-service insurance contracts is that the insurer's benefits in each case do not clearly show whether this should be considered as property insurance or personal insurance. And one particular type of fee-for-service insurance is funeral insurance. Unlike most fee-for-service insurance arrangements, funeral insurance is not the result of modern insurance practice but rather a long-standing tradition. Moreover, the sheer number of insureds makes it second in importance only to vehicle insurance, clearly outgunning other important lines like illness or multi-risk in its various arrangements. The fact that the funeral-insurance risk is bound up with the death of the insured has prompted identification of this insurance on many occasions with life insurance, as though it were a simple strand thereof. It has even



been mooted that funeral insurance stands in need of technical-financial guarantees that are a rightful part of life insurance, like policy reserves. This book argues, on the contrary, that the differences between life insurance and funeral insurance, despite their ostensible similarity of both covering the insured's death, are deep and far-reaching. So much so that it should really be dealt with in its own right in the *Ley de Contrato de Seguro*.

Another question posed in relation to funeral insurance is how far the insurance supervision rules laid down in European Directives are applicable to it. This question comes into its own within Solvency II. The situation under this new regulation framework is not radically different from the current one. Allowance is once more made for the phasing-in of a new technical provision calculation procedure for portfolios set up since the coming into force of the Private Insurance

Supervision and Organisation Regulation (*Reglamento de Ordenación y Supervisión del Seguro Privado*). This question would have to be cleared up in the new regulatory framework.

The conclusion drawn is that, just as the supervision principles and criteria applicable to this line do not differ significantly from those laid down in general for the insurance activity as a whole, the situation under Solvency II should not be too different either. Under this latter regime, however, a crucial factor in calculating compulsory solvency capital is the loss-absorbing capacity of the technical provisions manifested in this line, where the future-discretionary-benefits arrangement is seen to be the most suitable. This is dealt with only skimpily in the Solvency II Directive but is developed in greater depth in the community draft regulations on this matter. ■