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Creating the Future

In these economically and socially uncertain times, Peter Drucker’s phrase seems extremely apt: “The best way to predict the future is to create it”.

As professionals in this sector we’ve understood that we need a different approach: a sure-fire way of navigating this world of uncertainty; a new vision that complements the classical reasoning that helps us to deal with high levels of uncertainty, whatever the situation we’re facing.

As we know, convictions are useless without consistent actions, so now is the time to promote initiatives that enable us to be more efficient and compete in current market conditions.

We’re facing a year of challenges. So let’s take up the challenge by investing resources and efforts in ourselves and in our environment. May trust and productivity help us to be better and to create the future that we want.

Although it’s not easy to achieve unanimity regarding a publication like ours – as Gerencia de Riesgos y Seguros Magazine is aimed at such a specialized audience –, in the last few issues we’ve begun to move in a new direction and now have new faces on the team, led by Ignacio Baeza, Vice Chairman of MAPFRE and Chairman and CEO of MAPFRE GLOBAL RISKS. In the first interview he tells our readers about main objectives of the GLOBAL RISKS company and talks about the important role of our strong client-oriented approach to stand out in the market.

Then we have an interview with Wilson Toneto, CEO of the MAPFRE Brazil Regional Area, who shares a view of the development of the business and result improvement by controlling the businesses that are less profitable and mechanizing management and customer service processes in order to reduce internal costs.

Our last interview is with Luis Fernando Longo, Corporate Risk Manager at CARVAJAL, originally a family-run business established in Cali (Colombia) in 1904, which has grown generation after generation to become a multilatina with approximately 19,000 collaborators across 14 countries in Latin America.

The News section contains information on some of the main activities from the first half of 2017 for the two Spanish risk management associations: AGERS and IGREA, the Federation of European Risk Management Associations (FERMA) and the Inade Foundation, Atlantic Insurance Institute. In the same section you can also read about the various events MAPFRE GLOBAL RISKS attended worldwide during the first half of the year.

We’ll also find out about the most interesting topics discussed at the 25th MAPFRE GLOBAL RISKS International Conference in Granada (Spain) on June 7, 8 and 9.

The Articles section contains three pieces, the first of which is academic: “Emotional eating and occupational stress: towards healthy work habits and environments”, written and coordinated by Mercedes Borda Mas, Doctor of Psychology in the Department for Personality, Psychological Evaluation and Treatment of the University of Seville.
Editorial

In the second article, Angel Ortega Navarro and Rafael Pascual Camino write about new Risk Management challenges, focusing on increasing risks in the global scene caused by various different countries’ actions.

The last article is “A new threat to your company: Ransomware” by Álvaro Trigo Martín de Vidales and Ignacio Jiménez Pi, Senior IT Security Analysts at MAPFRE’s Information Systems Security Management. They explain this infection, how it affects us and why we should be worried about it.

After two studies prepared by the MAPFRE Economic Research: “Economic and Sectoral Outlook Report” and “The Latin American Insurance Market in 2015”, we offer the third installment of our section “Opinion on the Region”, which gives an interesting summary on Brazil, a country that came out of the recession in 2016 and is starting to grow again this year.

We close this issue with the Claims Observatory and a study on short-term forecasting of damages and disasters. From the “friendship paradox” to the assessment of the impact of a hurricane using Twitter data, written by accredited computer scientist and sociologist Manuel Cebrián.

After 11 years and all the changes that the magazine has been through – from the Fundación MAPFRE paper edition, with the full-color bilingual edition, to the release at a later date of the online edition in Spanish, English and Brazilian Portuguese of MAPFRE GLOBAL RISKS – I’ll miss this period of my life as it’s been good, but I’m also glad to hand over the work to the new generation as they’re fired up with new ideas, and they’ll to continue to work hard and to be dedicated to our loyal readers.

The future is ours!
Ignacio Baeza
VICE-CHAIRMAN OF MAPFRE, PRESIDENT AND CEO OF MAPFRE GLOBAL RISKS

“MGR is a company whose business model is based on the concept of sustainability, our primary main focus is to ensure a sustainable growth”, said Mr. Ignacio Baeza, Vice-President of MAPFRE and President and CEO of MAPFRE GLOBAL RISKS. In his judgment, Mr. Baeza said “we are facing to a market with surplus capacities, where all competitors are beginning to look similar”, so we think “that the distinguishing feature will lie in the customer-focus”. According to Mr. Baeza, another key element in the MGR corporate strategy are the employees, because “we are continuously monitoring and improving our Human Resources policies.”
Risk Management and Insurance (hereinafter ‘R&IM’): In your first year as CEO of MAPFRE GLOBAL RISKS, which challenges and aims have you in mind for this Unit both in the short term and in the medium and long terms?

Ignacio Baeza (hereinafter ‘IB’):

Despite the short time as an independent company focused in the management of large risks, MGR is an established company with excellent results. In the coming years we want to continue growing, in particular within Europe. This becomes more complicated because we are facing an endless soft market phase. As second aim, I should like to highlight the deployment of actions to pursue the excellence in Customer Service. For this purpose we count on a specific strategic.

So we are continuously monitoring and developing our Human Resources policies, because our employees are a key element in the MGR strategy. Therefore we try to provide them the best training opportunities, we seek to foster teamwork and to keep our employees motivated, for example helping to reconcile work and family life. After all, people are the most valuable asset of MAPFRE.

R&IM: Which are the company’s greatest competitive advantages to respond successfully to the challenges of the domestic and international market?

‘IB’: We are facing a market with surplus capacities, where all competitors are beginning to look similar. We think that a customer-focused strategy is the key element. We are basing our strategy proving that we are aware of the many challenges that our clients face in the course of its business, while being flexible enough to suit our solutions according to their needs.

MGR is working on two lines: on the one hand we have Spain and Latin America, in which our leadership internationally is unquestionable and when we maintain close relations with our clients.

We have been growing in this region for several years, giving rise to close and co-operative relations with our clients, as real partners.

And on the other hand is the European market, where our work in the past few years has been focused on increasing the brand recognition and our work philosophy, delivering the best possible solutions in order to achieve a long-term and mutually beneficial relationship.

As previously stated, after many years working in the Group, I believe that our primary asset, our competitive advantage, is our people. I am sure that with our team we will be able to offer to the market a closer relationship, with a less transactional nature. Because you can always buy an IT solution, but it is really hard to find a team with values and a clear customer service vocation. Thankfully, we have been working on this for many years in MAPFRE.

“We are basing our strategy proving that we are aware of the many challenges that our clients face in the course of its business, while being flexible enough to suit our solutions according to their needs”
‘R&IM’: Which strategy will follow MGR at an international level and which will be the priority regions?

‘IB’: Under the previous management of Mr. Alfredo Castelo, initial steps were taken to develop activities in Continental Europe with the establishment of offices in France, Germany and Italy. In addition, another office was opened in the United Kingdom, perhaps the more important siting for the insurance market worldwide.

Our goal for the next few years is clear: consolidate our position in this market, in order to ensure the profitability of the business, trying to bring to this market our corporate customer management culture, which has worked so well in Spain as a differentiating element.

Of course we are always looking for new markets to continue the process of expanding our business and we don’t rule out new openings. But at the moment our efforts are focused on what we already have now.

“We remain confident in the Brazilian and Mexican Market and we also took advantage of the good period that other market are currently living, like Peru, Colombia and Chile”

‘R&IM’: MGR competes in a global environment, with a client in an increasingly digitized world. How have you adapted your activities to meet these challenges effectively?

‘IB’: As well our competitors, the investment in IT development is at the core of our strategy. But we must not forget that the GLOBAL RISKS business is a people business. Customer wants to have a prompt access to information, but at the same time they want to get a live voice at the other end of the line. For this reason we invest our resources to ensure that our teams are able to work as an extension of the client’s organization.

“This year we will continue to seek internal synergies in order to strengthen the integration processes of the GLOBAL RISKS business with the other business of the Group.”

‘R&IM’: Which role will play Latin America in the MGR corporate strategy? Which potential still exists in this region for a business development?

‘IB’: Latin America is a key region for us, and in our viewpoint, it has an enormous development potential, even though the challenges faced by some countries. We remain confident in the Brazilian and Mexican Market and we also took advantage of the good period that other market are currently living, like Peru, Colombia and Chile.
‘R&IM’: How is changing the role of the Risk Managers of large companies in the last few years?

‘IB’: Nowadays, one of the main challenges faced by the Risk Managers seems to be the complexity of introducing an international insurance programmes considering the point of view of Compliance and Control. In this respect, takes on special relevance the role of the insurance company, who should asses the client through his partner Service Network and local companies, ensuring compliance with the environmental legislation in the different jurisdictions presents in a complex insurance program.

“One of the main challenges faced by the Risk Managers seems to be the complexity of introducing an international insurance programmes considering the point of view of Compliance and Control”

Another major challenge comes from the technological advances, causing a consistent evolution of risks. This means that Risk Managers should monitor and supervise market developments and the claim ratio. This can pose a major challenge to the own insurance market, as can be seen in the limited offer of cyber risk.

‘R&IM’: What factors does companies appreciate when they should transfer part of its risks? Do you think that the MGR engineering area stands as a differentiating element on your insurance offer?

‘IB’: One of the most important aspects that all companies value, is to have knowledge about the clients’ business. This allows the production of insurance policies adapted to their specific needs. In this respect, our engineering area is of vital importance, with their knowledge about the business activity of our clients, the particular risks inherent in them. All this, with a complete and personalized advising in an attempt to reduce risk. Given that they work with a large number of companies in the various sectors of the economy, they can gather information and transmit the best practices of the market.

“One of the most important aspects that all companies value, is to have knowledge about the clients’ business. This allows the production of insurance policies adapted to their specific needs”

Another important element, as previously mentioned, is the knowledge and to give an assessment services when introducing international programs. This is a work in progress that we are promoting inside the company.

‘R&IM’: Which are the main goals that have always guided your career? How could you reconcile your work and family life?

‘IB’: I have always tried to transmit to our team my passion for this business and the significance to take decisions in pursuit to ensure the corporate sustainability. Likewise, I always give significance to values as leadership, cooperation, flexibility and merit in all projects I have faced within the MAPFRE Group. I am very pleased to be part
of this Group, which ensure and promote the development of these values.

The reconciliation of family and professional life is very important to MAPFRE and we make considerable efforts in order to ensure it. I consider myself as a family man and I understand modern companies should work to create an environment that makes possible to combine working and family life.

“The reconciliation of family and professional life is very important to MAPFRE and we make considerable efforts in order to ensure it. I consider myself as a family man.”
Wilson Toneto

CEO OF THE MAPFRE REGIONAL AREA OF BRAZIL

“After Spain, Brazil is the country with the highest business volume of MAPFRE in the world and our commitment to this relationship was a key element in achieving the quality of the services we offer today, in addition to the trust of the consumer and of the market, in general terms,” stated Wilson Toneto, CEO of the MAPFRE Regional Area of Brazil. The executive explains that “our company has been the leader of the Brazilian major risks market since the end of 2015, with a 16% market share; MAPFRE is entering the market with a clearly defined strategy, allowing its long-term results to be forecasted.”
PROFESSIONAL CAREER AT MAPFRE

Risk and Insurance Management (hereinafter, R&IM): You are a privileged witness of the evolution of the company in the last quarter of the century because you were working for Vera Cruz Seguradora when it was acquired by MAPFRE in 1991. How have you seen the development of the group and of the business since then?

Wilson Toneto (hereinafter ‘WT’): Throughout my professional career at MAPFRE, I have seen the entity as a live entity that renews, adapts and modifies itself on an on-going basis. As an employee who has seen this first hand, I can confirm that the company has transformed itself to face the economic crises, hyper-inflation and a series of external and internal problems. Even when going through internal turbulences, the group managed to achieve consistent growth figures and became a respected brand in the market.

After Spain, Brazil is the country with the highest business volume of MAPFRE in the world and our commitment with this relationship was a key element in achieving the quality of the services we offer today, in addition to the trust of the consumer and of the market, in general terms”, stated Wilson Toneto, CEO of the MAPFRE Regional Area of Brazil.

R&IM: You were the Head of the Audit Department and then held different management positions in the Administration and Finance areas before being promoted to Vice Chairman of the Group in Brazil. What objectives did you set forth in each one of these positions?

‘WT’: I was working for Vera Cruz Seguradora when MAPFRE acquired it in December 1991. I started working for the group in January 1988. In these almost 30 years working for the company I have worked in different areas and learnt about matters that have allowed me to view the company as a whole and, therefore, in everything related to the provision of services and our internal public, made up of our collaborators.

The start of my career in the Audit area was vital, since it allowed me to learn about the ins and outs of all company processes. I quickly took on challenges in the administration and accounting, finance and resource management areas and some responsibilities in the commercial area, which required me to travel a lot throughout a country as huge as Brazil. This allowed me to learn a lot about the regional differences, client service, products and, above all, it allowed me to learn about the importance of establishing relationships with all components of our business that are based on trust. After learning about the key patterns of the processes of MAPFRE throughout the country, I accepted the promotion to Vice Chairman, with the possibility of assuming responsibilities in the technology area and in the activities of CESVI Brazil, in addition to participating in the activities of Fundación MAPFRE in the country.

At the time, I was participating in all of the main important projects being developed by the group in Brazil, which allowed me to acquire solid experience and take on the current challenges. The biggest challenge of each new responsibility was associated with perfecting new products and processes, while building a strong team that focused on establishing a close and long-lasting relationship with our distributors, suppliers, agents and clients.

R&IM: You were appointed CEO in Brazil in 2010 and, more recently, CEO of the MAPFRE Regional Area of Brazil. What are your objectives for this new period?
Holding these positions and being promoted to participate in the Global Executive Committee, a governing body of which I am the first foreigner to become a member, were an important form of recognition of my professional career and of all executives and collaborators that have built and continue to build the group in Brazil, while strengthening the importance of our country to MAPFRE.

The biggest challenge at this point of my professional career was to continue on the trajectory of sustained growth, with the adequate levels of profitability and a low volatility. The Brazilian market is very demanding and competitive, requesting for quick responses to the challenges set forth on a daily basis. The quality of our competitors is a big challenge to all executives operating in the market in relation to achieving a larger share, higher levels of productivity and innovative solutions.

R&IM: You have also taken on the responsibility of the Assistance area. What is the role of this activity in the Regional Area of Brazil and what importance does it have in relation to the degree of satisfaction of the group’s clients?

‘WT’: The assistance business is one of the most important differentiating elements of MAPFRE in Brazil. Last year, Brasil Assistência started using the MAPFRE brand, following the global brand unification strategy in Brazil. MAPFRE Assistência has an active portfolio of over 80 corporate clients and 29 million beneficiaries throughout the country. Gathering the assistance services under a single brand gives us a stronger position in the market and for our clients, such as in the case of multi-national assembly and insurance companies and financial institutions.

During this period of over 20 years operating in Brazil, MAPFRE has managed to successfully develop the assistance services in this market. The change of brand has brought unity, strength and relevance in such a dynamic market as the assistance and service market.

R&IM: In addition to all of the responsibilities mentioned above, you were also the Head of the Technology area and of CESVI Brazil, in addition to being the representative of Fundación MAPFRE in the country and a member of the Official Spanish Chamber of Commerce in Brazil. Do you still have time to enjoy your hobbies? How have you managed to balance work and family life?

‘WT’: We have an excellent team of professionals and executives working in Brazil, which is made up of local professionals and colleagues from other countries in which MAPFRE operators, but we still have a lot of work to do. I believe in the importance of balancing professional tasks and personal needs. It is for this reason that we make an effort to encourage professional and personal...
growth, stimulating actions associated with sustainability and volunteer work, in addition to harnessing professional skills to build an excellent place to work in (which will also have a positive impact on personal life).

I like to read or watch TV and films when I am not working. However, my main “hobby” is my family and I try to arrange activities with my whole family whenever I can.

MAPFRE IN BRAZIL

R&IM: How has MAPFRE managed to achieve positive results in Brazil in a scenario of economic slowdown and with the international crisis of the last few years?

‘WT’: We must assume that the situation in Brazil is one of economic prudence with not very optimistic expectations in terms of the growth of the GDP, inflation and interest rates. For some years, the main macroeconomic indicators have not been too promising. These factors not only affect our activity, but also the economic development of the country as a whole. Following the example of what happened in Europe and Spain after 2008, very strict but essential adjustments must be implemented in the Brazilian economy.

The country is currently discussing a series of structural reforms that are essential for its future. We are concerned about the situation, but we are trying to seek for business opportunities to reduce costs, improve efficiency, take advantage of all global synergies and of the success cases in other regions, and seek for new ways to expand the business. In this context, we have a strong group, with a long-term vision and which will be willing to provide us with the much needed support at all times. We have the best professional team in Brazil, with people that are used to being successful but who also have a lot of experience in overcoming all sorts of difficulties and obstacles, which have been common during other periods in Latin America and in our country.

“In June 2017, GRUPO SEGURADOR BANCO DO BRASIL and MAPFRE will celebrate the solid and sustainable growth achieved as a result of six years of operation in the insurance market”

All in all, a crisis must be overcome with a calm approach and no short-term decisions. This will require a lot of work and optimism. The only thing certain about a crisis is that it will end at one time or another and that we must be prepared when the time comes.

R&IM: In this context, what is your opinion about the strategic alliance between Banco do Brasil and MAPFRE?

‘WT’: In June 2017, GRUPO SEGURADOR BANCO DO BRASIL and MAPFRE will celebrate the solid and sustainable growth achieved as a result of six years of operation in the insurance market, contributing to the development of the insurance sector. We started our activities with 9,600 reais in issued premiums and our turnover in 2016 is 15,800 million reais. During this period, we have improved client service activities in our sales points (including the agent, bank agencies and other alternative channels) and with the culture of innovation, responsible for implementing different ways of marketing insurance products and expanding access to the product in the Brazilian market.
Our partner’s brand has been operating in the country for the past 200 years and its image of a solid company and values are very similar to MAPFRE’s values. We are satisfied with the results but we continue to work with the purpose of increasing the profitability of all channels and products, analyzing ways of improving our strategic alliance.

R&IM: How do BANCO DO BRASIL SEGUROS and MAPFRE SEGUROS complement each other and what are the competitive advantages and benefits of this alliance to the corporate client?

‘WT’: These two companies established an alliance in a successful operation, which merges the knowledge and differences of each brand. Banco do Brasil Seguros has an in-depth knowledge about the country and behavior of its consumers, as a vital factor for the materialization of important conquests in the life of each individual. MAPFRE has an expert understanding of the insurance industry, protection of equity and support to achieve goals and the sustainable development of families and companies.

The alliance formed by these companies created a new very solid company, operating throughout the national territory and in different sales channels, demonstrating that innovation, dialogue, attention and trust can transform and improve businesses that have been very successful throughout their history.

R&IM: What organizational and business segments will be strengthened in 2017 and in coming years?

‘WT’: We are present in almost all segments with a wide range of products and services. Even though there are signs of improvement in our economy, the consumer will take some time to reach the previous consumption levels. We trust the agricultural business sector, in which we are the main market actor. Our commitment to this segment is based on its muscle power and efficiency, as well as the expansion in the insurance coverage. The new regulations of the popular automobile product and Universal Life are two good opportunities we will take advantage of.

Likewise, we consider that the financial saving and asset management products (savings, retirement and capitalization), in which we had a reduced presence, have organic growth possibilities, which are complementary to the preferences of our clients, who know us for more traditional products linked to insurance. Similarly, we are still committed to making cautious but steady progress in the health insurance sector, in which we started our operations in 2015.

R&IM: What new steps are being taken to improve underwriting processes and what synergies will be created to further strengthen MAPFRE’s position in Brazil as a multi-channel and multi-product insurance company?

‘WT’: Our strategic plans are in line with the global strategies of the group, but we have to take into account the challenging reality of the country. In this scenario, we have established the priority according to the initiatives in two blocks: the first block involves growing more than the market, giving priority to projects that strengthen the relationship with the client, in addition to diversifying the multi-channel and multi-distributor portfolio.

The other priority entails a reduction of the expenses and technical improvements, making an effort to reduce the acquisition expenses, achieving improvements in the operations area and applying a greater rigor to underwriting and claims management. We will make a huge effort to expand the predictive fraud models and to learn more about and manage risks better.
“The assistance business is one of the most important differentiating elements of MAPFRE in Brazil”

R&IM: In Brazil, MAPFRE has grown a lot in the Major Risks market in the last few years, becoming the market leader at the end of 2015. In your opinion, what have been the main reasons for this?

‘WT’: With the economic crisis and the solvency and capital requirement regulations, some actors have changed their position, abandoning some business lines and products. Our group took advantage of the huge support received from MAPFRE GLOBAL RISK and MAPFRE RE, expanding its capacity and offering commercial options and alternatives to the main business groups of the country. When the market business volume dropped, MAPFRE expanded its operations in this segment.

We respond to the demands of our clients, understanding risks better, acting jointly in relation to prevention, collaborating with specialized brokers and taking advantage of the synergies derived from such collaboration.

“We make a huge effort to expand the predictive fraud models and to learn more about and manage risks better”

R&IM: How will the group continue to delve into the segmentation of different markets to satisfy the needs of the different consumers and the specific requirements demanded by each profile?

‘WT’: The segmentation and client relationship model are a challenge for everyone but also for MAPFRE in Brazil. The brokerage characteristics of our market have remained unchanged for decades. The role of the distribution company has been and is very important to the safe development of the country. We are using our distribution channels jointly with modern tools, implementing tactical segmentation practices and using a value proposition for each type of client, consumer and distributor.

This global initiative is making progress in Brazil and it will require the biggest boost during 2017 and 2018. The capacity to handle each client profile starts by understanding the client’s needs, characteristics and peculiarities. To this end, there are still many opportunities for us.

RISK MANAGEMENT IN LARGE COMPANIES

R&IM: What new risks have appeared during this period and how is MAPFRE BRAZIL going to face them? What new coverage products have been developed?

‘WT’: The Brazilian insurance market is starting to become more and more sophisticated. Crises like those through which the country has currently lived (environmental, water crisis, corruption) stimulate the growth of the insurance industry. Companies started to calculate the possible impacts and harm of these crises on the image or production lines of the company and this helps the insurance industry to develop new product lines.

For example, in the case of the environmental damage, the impact is on long-term actions and on very high fines and penalties. However, any company can be exposed to environmental risks as a result of their current operations or operations that had been previously carried out.
at its facilities. However, it is still a new market. The main environmental risk products started to become available in the market some 5 years ago, when insurance companies, mainly multinationals, started to develop more specific forms of coverage. Nowadays, some companies are not interested in these types of insurance, mainly due to the many different events that did not affect these companies. However, this type of insurance product is growing as a result of the strict requirements of the Brazilian environmental legislation.

There is also another line that covers possible damages or losses in the management activities of an executive. This is known as D&O (Directors and Officers Liability Insurance). This market has also been strengthened by the increased rigor of companies in relation to certain governance aspects, something that is very common in the most developed countries. The scandals appearing in the media back the need to implement some form of protection.

It is also important to highlight the concern for the new cyber-risks, which are starting to become more and more present in companies, although they are hard to identify and it is very hard to measure their impacts and consequences. The insurance market is still developing adequate products to cover these risks and their development will come with the necessary adaptations of the existing solutions, so these can be marketed in Brazil in the short-term.

R&IM: How is the current financial crisis affecting companies and their risk management practices?

‘WT’: In the general context of the crisis, the concern for insurance companies focuses on the fact that companies are allocating less resources to areas such as maintenance, replacement of machinery and protection. To sum up: in this scenario, companies tend to reduce the measures aimed at managing risks. Even though this is something that requires attention, we have not seen a reduction in the quality of the risks resulting from the crisis in our Brazil portfolio.
In this context, it is vital to stress on the importance of the role of the risk manager in companies to identify, quantify and mitigate the risks threatening their assets, both material and personal, and in terms of reputation, to guarantee the long-term sustainability of the activity. Evidently, contractual obligation and credit guarantee insurance have a higher impact. However, in our case, these elements are not too relevant and we are not affected by them, but they are still a source for concern.

‘GRyS’: Currently, what are the main needs of the risk managers of Brazilian companies? How do you think they will develop in the next few years and how will the global extrinsic factors and new economic and social trends affect them?

‘WT’: We are living in a world that is constantly changing, mainly due to the unstoppable introduction of new technologies, as well as the global threats that are more and more present, such as climate change, terrorism, etc., which bring new risks that must be identified, assessed and managed. Therefore, risk management is starting to become more and more complex, but also necessary in companies, mainly in those with international interests.

“Risk management is starting to become more and more complex, but also necessary in companies, mainly in those with international interests”

The risks of the past are completely different to those we will face tomorrow, and risk managers must be prepared to face them. The insurance market will also face the challenge of seeking for the adequate solutions. We are all learning to live these new times together with the challenge of seeking for solutions together.

‘GRyS’: To this end, are there significant differences between large and small companies?

‘WT’: Evidently, the risks of a local company and those of a large and international company are different from the qualitative and quantitative points of view. Large companies have specific risk management teams and receive the advice of the main international brokers. However, the resources of small and medium-sized enterprises are much more limited and it is to these companies that insurance companies like MAPFRE can offer a differentiated value proposition, which focuses on risk management and offering the adequate insurance solutions, not only defending the product from the perspective of the premium.

“Resources in SMEs are more limited and it is insurance companies like MAPFRE that can offer a differentiated value proposition to SMEs in relation to risk management and insurance solutions”

‘GRyS’: We can see that many companies in the Brazilian major risks insurance market have changed their strategy (important sale of portfolios, new players, etc.). In a scenario of constantly changing positions, what has MAPFRE’s strategy been?

‘WT’: Our company has been the leader of the Brazilian major risks insurance market since the end of 2015, with a 16% market share; MAPFRE is entering the market with a clearly defined strategy, allowing its long-term results to be forecasted. Firstly, this was
possible thanks to the trust of our clients, to the robust
associations built with the main distribution brokers
and to the access and availability of expert knowledge,
with the tools, reinsurance capacity and commercial
support of MAPFRE GLOBAL RISKS. We do not
stop to analyze the strategies of our competitors but
will continue to operate in this segment with the
purpose of expanding our corporate businesses.

“The main differentiating
element of MAPFRE is
its presence, with its own
companies in all countries
of the Latin American
region, except in the case of
Bolivia, in which we have a
trustworthy partner”

R&IM: What makes MAPFRE different from
the service that “Multi-Latin” companies can
offer?

‘WT’: The main differentiating element of MAPFRE
is its presence, with its own companies in all countries
of the Latin American region, except in the case of
Bolivia, in which we have a trustworthy partner. This
MAPFRE structure allows us to establish an insurance
program that is perfectly structured in the region,
controlling all of the phases of the different processes
(underwriting, issue, collection and regulation), while
it also allows us to understand the distinctive legal and
regulatory features of each country, arranging a team
of specialists on major risks to provide support to
local offices of the client, etc. Finally, we believe in this
market. We have a clear advantage to become leaders
of the sector, there are many business opportunities
and we have a very solid infrastructure in the area of
reinsurance.
Luis Fernando Longo Upegui, Corporate Risk Manager at Carvajal, states that “it is very important to forecast and act sufficiently in advance to mitigate or minimize the new risks appearing in the market.” For this executive of the Multi-Latin company, their identification during the periodic assessment “allows businesses to remain in operation in the future”. In his opinion, the main current risks are Compliance, Legal, Internal Fraud, Financial, Technology, Information Security, Country, Reputational, Physical or Pure and Operational risks.
Risk and Insurance Management” (hereafter, R&IM): Organización Carvajal was established in 1904 in Cali and has grown to become a large Multi-Latin company. What are the differences between the risks the Colombian company faced during its initial years of operation and those it is facing now?

Luis Fernando Longo Upegui (hereafter, ‘LFLU’): After it was established, Organización Carvajal started operating in Cali and it was solely dedicated to printing books and magazines. Being a local business, risk was controlled with a centralized approach.

The company entered new markets, expanding its risk universe and responsibilities, since it was not a centralized business any more, forcing the organization to generate new administration approaches. It must currently administrate risks by type of activity and in each country in which it operates, in addition to adapting to the different risks.

“Currently, Organización Carvajal must administrate risks by type of activity and in each country in which it operates, in addition to adapting to the different risks”

R&IM: How are risks currently managed by a company that offers many different products, services and solutions, and which has 19,000 collaborators and operates in 14 countries in America?

‘LFLU’: A global application methodology was defined, in which Risk Management and Administration is contemplated as follows: establishing the context, identifying risks, analyzing, assessing and handling them. This is carried out while they are monitored and reviewed, reporting and requesting for assistance in each area.

R&IM: What are the biggest risks in the internal corporate environment, in the market and in the current global international scenario?

‘LFLU’: The main risks are: Compliance, Legal, Internal Fraud, Financial, Technology, Information Security, Country, Reputational, Physical or Pure and Operational risks.

R&IM: The company operates in different business sectors: packaging, Propal, education, technology and services, Mepal, B2B media and communication solutions. Are there specific risks in each segment and market?

‘LFLU’: Yes, different risks are managed in each type of operation, according to the type of activity.

“The most unexpected risks are pure or physical risks are those arising from natural disasters and operational risks arise from the exposure received, in accordance with the materials used during the activity”

R&IM: What are the most unforeseen uncertainties and those that are most difficult to face? What tools do you use to fight against them or minimize them?

‘LFLU’: Pure or physical risks are those arising from natural disasters and operational risks arise from the exposure received, in accordance with the materials
used during the activity. They are mitigated with exhaustive loss control measures, supported by the different international regulations (NFPA – FM) for the administration of risks.

R&IM: What are the other characteristics of the risk management model implemented by your company and what external support do you receive?

‘LFLU’: We implement exhaustive monitoring procedures to the risk mitigation controls, which are classified by type of activity, with the support of the insurance broker, insurance companies and internal and external auditors.

R&IM: Has risk management been spread and integrated throughout the company as a whole? What areas and departments collaborate, participate the most and are aware of these procedures

‘LFLU’: Organización Carvajal uses an Integral Risk Management system, in which all teams of the Organization participate, according to their level of responsibility.

R&IM: The different activities and countries in which the company operates have to face a large variety of risks. How are these actions coordinated?

‘LFLU’: The work of the team is led by the Corporate area, which is passed on to the whole of Organización Carvajal.

R&IM: For the fourth year on a row, the Gartner study “IT Services Market Share Ranking” confirms that Carvajal Tecnología y Servicios is still leading the ranking of Information Technology (IT) service providers in Colombia, with a 10.4% market share. What new risks have appeared in the technology sector?

‘LFLU’: Cyber-attacks and information leakage.

“En el ámbito tecnológico han surgido nuevos riesgos como ataques cibernéticos y fuga de información”

R&IM: How are these new technological risks and, especially, cyber-risks faced?

‘LFLU’: The company is facing these new risks by implementing the following controls: security measures focusing on mitigating information leakage and the implementation of the update project, focused on IT security.
R&IM: In your opinion, what are the biggest concerns for risk managers in Latin American companies right now and into what segments or areas will this evolve in the future?

‘LFLU’: The biggest concerns are those associated with geopolitical, technological and market risks.

R&IM: Do you believe that it is important to forecast and act sufficiently in advance to mitigate or minimize the new risks appearing in the market?

‘LFLU’: This is very important. These are identified in the periodic risk assessment and will allow businesses to continue operating in the future.

“The biggest concerns for risk managers of Latin American companies are those associated with geopolitical, technological and market risks”
## Agenda

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<td>25-29 July</td>
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<td>Risk Forum Australasia</td>
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<td>Western Regional Conference</td>
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<td>Insurance Leadership Forum</td>
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<td>Tax, Regulatory &amp; Risk Management Conference</td>
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<td>Risk Management Forum</td>
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## Agenda

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<td>ICMIF Biennial Conference</td>
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<td>Legislative Summit</td>
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<td>XXXVI Hemispheric Insurance Conference</td>
<td>12-15 November</td>
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<td>National Conference</td>
<td>15-17 November</td>
<td>Canberra (Australia)</td>
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<td>Insurance Solidarity Prizes</td>
<td>22 November</td>
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<td>Risk Forum Middle East</td>
<td>5-6 December</td>
<td>Dubai (USA)</td>
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<td>Annual General Meeting and Annual Lecture</td>
<td>7 December</td>
<td>London (U.K.)</td>
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<tr>
<td>Annual Meeting</td>
<td>10-14 December</td>
<td>Arlington, TX (USA)</td>
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More than 500 attendees from 30 countries gathered in Granada at one of the world’s leading insurance events.

From June 7 to 9 MAPFRE GLOBAL RISKS held its 25th International Conference, in which more than 500 experts from 30 countries discussed the challenges facing the insurance industry in the current environment of economic recovery and the new opportunities opening up, with emerging businesses such as cyber risk or the use of drones, in a meeting that has become a benchmark for the international insurance industry.

The program was divided into two parallel blocks, with roundtables, speeches and presentations specifically on Insurance and Security, respectively. The agenda includes topics such as cyber risk in global companies, the application of drones to risk management, and the global model of aviation and air safety, among other things.

The Vice Chairman of MAPFRE and CEO of MAPFRE GLOBAL RISKS, Ignacio Baeza, inaugurated the conference with a discussion on the importance of knowing and recognizing the obstacles and challenges that insurers face in order to be flexible enough when providing solutions tailored to the needs of its clients. He also stressed that MAPFRE GLOBAL RISKS, which is the leading global risk insurer both in Spain and Latin America, is committed to continue to strengthen its competitive position in the coming years, especially in Europe, with a focus on profitability and searching for excellence in client focus.
The Chairman and CEO of MAPFRE, Antonio Huertas, closed this event, which for its duration turned Granada into the capital of the insurance industry.

Below you will find all the information about the 25th MAPFRE GLOBAL RISKS International Conference, which was held in Granada on June 7, 8 and 9.

During this event, topics were dealt with in relation to the new challenges facing global risk markets.

The program of social events began on Wednesday, June 7 at 8 pm, with a visit to the Alhambra and later a welcome drinks party at the Parador. On Thursday, June 8, the traditional gala dinner was held at the Ave María College, and finally, on Friday, June 9, the conference was closed with a closing drinks party at the Palacio de Congresos de Granada.
Fire protection competitions.

In addition to the Technical Conference, they were able to take part in the Fire Extinguishing Competitions Program held at the FORTEM El Casar Comprehensive Emergency Training Center (Guadalajara), which was attended by more than 50 professionals from different business sectors.
MARSH CELEBRATED ITS 13TH ANNUAL FORUM ON INDUSTRIAL INSURANCE IN WIESBADEN

Once again, on 22nd March the meeting between Marsh and the industrial insurance market took place in Wiesbaden, which is a highly recognized professional event in the annual calendar for all the big players in the German market.

The Kurhaus in Wiesbaden, an old spa of European royalty, was the elegant setting for the event, which was attended by 120 collaborators of Marsh Germany. For their part, the most important insurance companies of the German, Austrian and Swiss market were represented by about 250 guests. Central acts were a series of talks on insurance today and parallel round tables, while at the same time a fair took place with stands by the insurance companies with greater weight within the market.

For the fifth time MAPFRE GLOBAL RISKS Cologne participated in that forum with a stand, where we reinforced MAPFRE’s image, presented ourselves, expanded our contacts, and exchanged views on industrial insurance.
The German branch held its tenth New Year’s reception in Cologne. Manfred Alsdorf, Director of the German branch, was pleased to welcome 80 external guests, comprising clients, brokers, and other business partners, in the venue with a picturesque view at the Cologne cathedral.

The management committee of MAPFRE GLOBAL RISKS was represented by Bosco Francoy, COO, José María del Pozo, CFO, Chris Smith, CRM0, Juan Luis Roman, CTO, and José Carlos Nájera, CUO.

Chris Smith talked in his welcome speech about the way of doing business in the shadow of the Brexit.

Bosco Francoy gave an overview about last year and reiterated the long-term commitment of MAPFRE GLOBAL RISKS to the German market, although this is one of the most challenging markets in Europe.

A highlight of the event was the guest speaker. Gerd Kaiser, Managing Director of Daimler Insurances Services, gave a lecture about the mega claim, the explosion in Tianjin/China. Gerd Kaiser mentioned some impressive details: 3,000 tons of illegally stored toxic chemicals caused an explosion with the power of 21 tons TNT dynamite. More than 7,000 cars of Daimler were affected. The claims management process took more than 14 months.

The guests appreciated the opportunity to meet the management of MAPFRE GLOBAL RISKS and the casual talks.
Events in the first half of 2017

FORUM ON THE “CHALLENGE POSED BY THE NEW DATA PROTECTION LEGISLATION”

This workshop, organized by AGERS, was held in Madrid on February 21.

In attendance at the event were Ms. Cristina Fernández-Miranda (Willis Towers Watson), Mr. Agustín Puente (Spanish Agency for Data Protection), Mr. Juan Gayá (El Corte Inglés), Ms. Irene Robledo (Dac Beachcroft), Mr. Frederick Albanez (Zurich Spain) and Mr. José Luis Zimmermann (CEOE).

In summary, the following aspects were discussed:

- The **right to data portability** as the main new development of the 2016 European regulation establishes that data may be transferred between supervisors when the owner of the data requires so, provided that it is in a commonly used and machine-readable format.
- **Security breaches** that compromise third-party data must be reported to both the Agency for Data Protection, within 72 hours, and the interested parties promptly.
- **The new regulation does not set out rules** rather it establishes that the data manager is responsible for identifying risks and mitigating them.
Sanctions have been increased, up to a maximum of €20 million or 4% of the organization’s global billing.

The duty to report has become an essential right when personal data is requested.

The right of cancellation, or right to forget, has been inverted, with the company requesting the data having to explain why they it wants to retain the information.

Consent in terms of gathering data from a third party must be clear and must not be pre-defined.

Tacit consent used to gather data in the past will no longer be legally justified from 2018 onwards.

On February 28, AGERS organized the Forum on the scope and repercussions of the Recommendation of the Council of Europe on the use of genetic testing in private insurance at the Unespa event hall. In attendance at the encounter were representatives from insurance firms, reinsurers, the administration, universities and clinical medicine, amongst others. The workshop was opened by Gonzalo Iturmendi, General Secretary of AGERS, who highlighted the need for an ethical debate in parallel to the technical and legal analysis.
3RD AGERS CONFERENCE IN CATALONIA

On March 22, the AGERS delegation in Catalonia held its highly successful third conference. Almost two hundred attendants came together as part of the third edition of the annual conference of the AGERS delegation in Catalonia, held at Foment del Treball Nacional.

The event was opened by the Chairman of Foment, Mr. Joaquim Gay de Montellà, before its Vice Chairman, Mr. Joan Castells took the floor, introducing the workshop with a short presentation on Risk Management focusing on Catalan business. AGERS Manager Ms. Alicia Soler also dedicated a few emotional words at the start of the day to the recently-deceased former Chairman of AGERS, Mr. Miguel Ángel Zarandona.

Next up were five discussion panels on the 2017 Global Risk report, cyber risk protection at organizations and information security, tax risks and sanctions defined by International Programs, the digital revolution or the fourth industrial revolution before lessons learned by the Risk Management departments as part of the internationalization of companies brought the day to a close.

Concerning this last aspect, Mr. Miguel Muñoz Gaztañaga, Head of International Legal Counsel MAPFRE at the GLOBAL RISKS Unit shared his ideas in response to the question: Is it possible for an Insurance program to be 100% compliant?, stating that it is advisable for a prudent stance to be taken in terms of unknown legislation where the consequences for insurers, brokers and clients can be severe.

The conference was brought to an end by the AGERS Delegate in Catalonia, Mr. José Amézola, who thanked those in attendance.
POSTGRADUATE DEGREE IN EXPERT RISK MANAGEMENT TO OBTAIN THE EUROPEAN RIMAP CERTIFICATION

Collaboration agreement between AGERS and the Riskcenter at the University of Barcelona (UB).

There is no doubt that risk managers are playing a starring role in the current business environment, which calls for integrated risk management.

Risk managers must have financial, legal, technical and commercial knowledge that, combined with their communication skills, allows them to correctly assess risks to control and even transfer them.

The Federation of European Risk Management Associations (FERMA) has developed a risk management project with professional qualification standards that includes a core syllabus, experience, continued professional training and a code of ethics, the result of which is RIMAP certification with the ultimate objective of ensuring that risk managers throughout Europe are equipped with a solid understanding of the field.

Representatives from different FERMA member associations participated in the preparation of the Core Syllabus of the RIMAP certification, coordinated by the Vice Chairwoman of FERMA and representative of the Spanish Association of Risk and Insurance Management (AGERS), Dr. Mª Isabel Martínez Torre-Enciso.

AGERS, with a view to promoting and encouraging the achievement of RIMAP certification amongst Spanish professionals, has signed a collaboration agreement with the Riskcenter at the University of Barcelona (UB) to create a postgraduate university degree which addresses the knowledge required and skills inherent to risk managers covered in the RIMAP certification.

The first edition the Postgraduate Degree in Expert Risk Management will be delivered during the 2017-2018 academic year at the University of Barcelona. The teaching method combines in-person classes, which can be followed online, with individual and group work to analyze and discuss case studies.
On June 1, 2017 Madrid played host to the 28th Conference of the Spanish Risk and Insurance Management Association. Under the title of “Evolving with Risks” this edition of the AGERS annual conference seeks to analyze the five main GLOBAL RISKS: economic, environmental, geopolitical, social and technological.

The AGERS conference is the industry’s main event in Spain, bringing together senior risk and insurance management managers from the main companies and institutions, offering a unique opportunity for the country’s main risk management professionals to connect with one another.

Over the course of the day, the main issues that will define risks faced by organizations in the coming years were addressed by top speakers.

The keynote address was entrusted to Mr. Cesar Molinas, author of ¿Qué hacer con España? (or, What to do with Spain?) based on World Geopolitics and the Risks it entails with a view to provoking a debate on the national and international political climate.

Afterwards, the 2016 AGERS, Distinction was awarded to the Military Emergencies Unit (UME) for its involvement in Risk Management.

Next, AGERS presented its new website and new corporate image with which it seeks to remain at the cutting edge, with a more contemporary and fresh approach taken by the Association.

The new website is also more intuitive, streamlined, offering Associates access to all the manuals and guides presented by the Association, housing all the content developed each year by the Association.

The next panel featured four international figures from the world of Risk Management, who are well aware of the importance of training to professional development. Members of the panel included Ms. Marisa Martínez Torre-Enciso, Vice Chairwoman of FERMA and member of the Board of Directors at AGERS, Mr. Jo Willaert, Chairman of FERMA and recently-appointed Chairman of IFRIMA, Corporate Risk Manager, Agfa-Gevaert
N.V, Mr. Jorge Luzzi, Executive President at Herco Global and Lluís Bermúdez from the RiskCenter at the University of Barcelona. The different positions of Risk Managers in Latin America, Europe and Spain were debated.

Next, the importance of longevity risk was discussed as part of a speech delivered by Mr. Manuel Aguilera Verduzco, General Manager of Economic Research at MAPFRE SA Under the title Demography and ageing.

Another of AGERS’ objectives is to make progress in the field of Conflict Resolution in order to drive and develop dispute resolution. Conflicts are circumstances that entail a difficulty, disputes between two or more people, that can lead to a range of confrontations. These circumstances are attributable to factors such as self interest that clash with the interests of others by means of a mediation procedure between the interested parties. The objective is to contribute to the resolution of conflicts that may arise as part of the operations of the business, insurer, brokerage, appraisal or any other field related to business activities.

Reducing risk with useful Conflict Resolution strategies, was the name of the panel on which renowned speakers from the business world, the insurance industry and the General Council of the Judiciary sat.

Moderated by Leticia García Villaluenga from the Complutense University, Ana Mª Carrascosa, Head of the Mediation Study and Report Section at the General Council of the Judiciary and José Mª Campos as Director of the Internal and Legal System at CEOE, in addition to Miguel Miró-Granada Álvarez, Occupational Legal Advisor at Cepsa participated on the panel, addressing the concerns, benefits and progress offered by conflict resolution in a business environment.

After the coffee break, three sessions were held simultaneously, repeating last year’s successful format, with assistants choosing the topic that most interested them.

This year special emphasis was placed on the idea of consciously addressing the most current topics that would help attendees to boost their knowledge and skills, improve their CVs and immediately put the new experiences shared into practice.

The first addressed cyber risks. The panel was held in two parts: the first saw the presentation of the Terminological Cyber Security Guide developed by AGERS’ Cyber Group, which seeks to offer non-technical training with an overview of commonly used Cyber Security terms and to facilitate the identification of cyber risk. German reinsurer MunichRe presented clusters, incidents, assessment tools, interdependencies of the Cyber world, in figures. This was followed by a roundtable moderated by Board member and member of the AGERS Cyber Commission, Alfredo Zorro. The objective of the professionals invited focused on the need for coordinating the internal audit, MBG, CISO and Risk Management areas. These figures must work in coordination with one another and as a team to obtain appropriate results in their areas and in the identification and prevention of risks at their Companies.

The second simultaneous panel addressed the Sufficiency and Sustainability of Pensions in Spain. In the first block, speakers included Mercedes Ayuso from the University of Barcelona, Fernando Ariza, Deputy Director at Mutualidad de la Abogacía and José A. Herce, Director at Analistas Financieros Internacionales, S.A.
The second block sought to address awareness raising concerning risks that affect companies and awareness as a willingness to listen and analyze risks that affect the company. *The role of companies in controlling personal risk to which its employees are exposed: Development of Corporate Pension Plans*, saw the brilliant involvement of Mr. Alvaro Anguita Alegret, CEO MAPFRE INVERSIONES, SA–Gregorio Gil Rozas from Willis Towers Watson and Fernando Martinez Cue from Martinez-Cue&Asociados.

The third simultaneous panel addressed Tenders and Bids: Fundamental principles. Experts in the field of tenders were present on this panel, laying the essential foundations required by Insurance Directors. What’s more, the Practical Guide: “Template of insurance tender specifications” was presented with a view to facilitating the work of Risk Managers when participating in Insurance Tenders. The panel was divided into two parts, the first focusing on private business and the second on public administrations.

Mostly practical workshops were held in the afternoon on three topics: Real Environmental Incident; Role Play; Conflict Solution and Practical workshop to address business security.

As in previous editions, this year support was offered to Latin American students, establishing a link with Columbia via 25 students from the Universidad Externado Colombiano who have studied for the Master’s in Risk Management at ENAE. Their presence at the Conference made it possible for them to make contact with industry professionals, companies, public and private organizations, research centers and universities committed to the professional development of Risk Management in Spain.

The following day, Risk Managers held an exclusive meeting, at which representatives from different companies in the Spanish insurance industry were offered the opportunity to exchange knowledge and experience on different topics in a private setting.

The session’s agenda features topics such as: digitalization, technology, science and upcoming trends.

Afterwards, AGERS held its Ordinary General Shareholders’ Meeting.
SELF-INSURANCE MANAGEMENT MANUAL

On June 22, 2017, the Spanish Risk and Insurance Management Association (AGERS) presented its “Self-Insurance Management” Manual at the DGS, using a similar format as used previously, with a view to stoking the reader’s interest in the simple matters of a particularly complex world in order to make the best decisions.

“Self-Insurance Management” serves as a starting point for identifying and assessing these matters and is the perfect framework for creating an appropriate prevention policy, whilst producing a strategy for addressing them.
IGREA GENERAL SHAREHOLDERS’ MEETING

On March 29, IGREA held its General Shareholders’ Meeting in Madrid to approve its 2016 accounts, taking the opportunity to address the following topics of interest:

• Roundtable under the heading “D&O insurance conflicts and dilemmas”. Constanza Gállegos (General Manager at QBE), Benedetta Cossarini (General Manager at AIG), Estefanía Taboada (Financial Product Underwriting Manager at XL) and Luis Alfonso Fernández (Partner at Hogan Lovells) all participated, moderated by Augusto Pérez Arbizu (Chairman of IGREA). The difference between cautionary measures, civil and criminal liability bonds in addition to the different ways of posting them were addressed at the event. The special nature of the Spanish legal system was also discussed, as part of which civil liability results in criminal procedures, in addition to trends in recent lawsuits and court rulings. All the above led to an interesting debate, with members discussing conflicts that these matters pose to insurers, policy holders and insured parties.

• Preliminary conclusions of the Board of Directors on “Incident management quality parameters”. The board based its conclusions on a report drafted by IGREA’s Advisory Board.

Ultimately, an agreement was reached to update the “Incident Management Best Practices“ guide, originally edited by IGREA, including parameters that target quality measurements.
OFFICIAL ORGANIZATION OF EVENTS. 2017 WORLD INSURANCE DAY

World insurance celebrated its big day in Santiago with the Premios Galicia Segura (Galicia Insurance Awards)

On May 11, events to celebrate World Insurance Day took place in Santiago de Compostela; the main focus of the event was the Premios Galicia Segura official ceremony that is organized annually by Fundación Inade. These awards recognize the efforts and dedication of persons and institutions, which from different areas contribute to raising the level of the Spanish insurance industry and risk management.

This event is internationally renowned, not only account of the ceremony in itself, but given the attendance of the highest representative of the world’s insurance industry: the Chairwoman of the Business Association for Insurance (UNESPA) and of the Inter-American Federation of Insurance Companies (FIDES), Pilar González de Frutos.

The official ceremony was attended by Juan Viaño, the Rector of the University of Santiago de Compostela; Antón Cobián Varela, Valeriano Martínez, Head of Finance at the Xunta de Galicia; and Jorge Duarte Vázquez, the Second Deputy Mayor of Santiago de Compostela.
FERMA SUCCESSFULLY ACCOMMODATES THE COMMISSION ACTIONS TO IMPROVE THE ROLL OUT OF THE ELD

On March 29, FERMA successfully accommodated the Commission actions to improve the roll out of the EU Directive on Environmental Liability (ELD)

The Federation of European Risk Management Associations (FERMA) has successfully accommodated the European Commission’s publication in terms of a three-yearly plan to improve the roll out of the ELD. The 2017-2020 multi-annual work program is based on the ELD assessment completed in 2016, in which FERMA participated.

THE REGISTRATION PERIOD FOR THE 2017 EXCELLENCE IN EUROPEAN RISK MANAGEMENT AWARDS IS NOW OPEN

Entries opened from 2nd March 2017 for the 2nd Excellence in European Risk Management Awards organized by the Federation of European Risk Management Associations (FERMA). The awards recognize the highest achievers within the European risk management community, who are nominated by their colleagues through their national risk management associations.

The Excellence in European Risk Management Awards are part of the European Risk Management Awards launched in 2016 by FERMA and the publication Commercial Risk Europe. There are four categories: European risk manager of the year; lifetime achievement in risk management; rising star of the year and innovative insurance program of the year. The deadline for entries is 26 May 2017. There will be a gala presentation for the winners in London on 6 November 2017.

FERMA President Jo Willaert said: “We were delighted with the success of the 2016 Excellence in European Risk Management awards and the widespread recognition the winners have received, including within their own enterprises. We encourage our member associations and their members, as well as our colleagues in the wider risk management community, to become involved this year.”

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FERMA will make regular announcements via its website, electronic newsletters and social media.
Emotional eating and occupational stress: towards healthy work habits and environments

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The general objective was to analyze the relationship that exists between occupational stress, emotional eating, abnormal eating patterns, and health by studying 407 workers from the University of Seville. To do this, the survey “Estrés laboral y comer emocional” (Occupational Stress and Emotional Eating) was planned, written, and validated. Its psychometric properties are good.

The most relevant conclusions are:

- There is a significant percentage of overweight and obese people, with a greater portion being obese. This rate is higher for men and for non-teaching staff.
- The most frequently mentioned stressor related to the work environment was the demands of work and how it is organized, with higher percentages among men and teaching staff.
- Negative emotions felt in stressful situations in the work environment tend to affect the eating habits of both men and women, as well as both teaching and non-teaching staff. Those that try and “eat” their negative feelings find that their mood is affected, with emotions associated with anxiety.
- A slightly higher percentage of women eat late at night, almost compulsively eat a food, and snack throughout the day. Men only had a higher percentage when it came to binge eating. Non-teaching staff had a slightly higher percentage for these four types of unhealthy patterns.

The most frequent physical health problems were musculoskeletal, digestive, and cardiovascular problems, as well as being overweight or obese. Organizational and personal measures are laid out for promoting healthy work environments and habits in the university community. These adapted environments and habits would help prevent occupational stress, emotional eating, obesity, and overweight, as well as other associated health problems.

The term occupational stress refers to the imbalance or discomfort that a worker experiences due to factors or demands related to work. This imbalance produces a change in the body that can affect the worker’s physical and mental health in ways both big and small.

Often the work environment is associated with emotions like sadness, worry, frustration, or anger that are provoked by certain conditions in a work context. These sources of stress are considered subjective psychosocial risk factors that can lead to occupational stress, understood to be a psychosocial risk factor itself, with significant effects on the health of workers. Out of health problems that lead to having to take at least two weeks off from work, stress and emotional problems were the cause a quarter of the time. In fact, stress related to work has now become the second most common health problem among workers, as much as 28% of workers experiencing these problems.

From a behavioral point of view, notable consequences or effects of occupational stress include an increased rate of tobacco and alcohol use and changes in eating habits, that is to say “eating poorly”.

The term occupational stress refers to the imbalance or discomfort that a worker experiences due to factors or demands related to work. This imbalance produces a change in the body that can affect the worker’s physical and mental health in ways both big and small.
“Emotional eating” (or emotional hunger) is the tendency to consume food as a response to negative emotions, more as a way to deal with negative feelings rather than as a way to satisfy hunger. Habits of consumption manifest themselves differently between these two forms of hunger (see Table 1).

<table>
<thead>
<tr>
<th>Emotional hunger</th>
<th>Physical hunger</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appears suddenly.</td>
<td>Appears gradually.</td>
</tr>
<tr>
<td>Felt as a need to be satisfied right away.</td>
<td>It can wait.</td>
</tr>
<tr>
<td>Craving for specific foods that provide pleasure.</td>
<td>Open to “tons” of good things.</td>
</tr>
<tr>
<td>Even when the person’s stomach is full, they don’t feel satisfied.</td>
<td>Person stops when they feel full.</td>
</tr>
<tr>
<td>Leads to feelings of guilt, powerlessness, and shame.</td>
<td>Eating to satisfy physical hunger does not make you feel bad about yourself.</td>
</tr>
</tbody>
</table>

People that eat due to negative emotions, compared to people that eat due to positive emotions, tend to show more symptoms related to eating disorders and other psychological disorders, making emotional eating a risk factor for the development of an eating disorder or obesity in the general population. However, in situations of occupational stress, women more frequently tend to resort to eating in an abnormal, uncontrolled manner, often with binges, for emotional reasons, this according to existing scientific research.

Emotions have a powerful effect on the way people eat and the types of food that they eat. Most people at one time or another have eaten an entire bag of potato chips out of worry or nervousness, or have scarfed down chocolate after having to deal with a conflict or a stressful situation. However, when this eating pattern becomes a habit, emotional eating can affect a person’s weight, health, and general well-being.

The most common eating patterns related to unhealthy dietary habits are bingeing, grazing, late-night eating, and food addiction. Maintaining these habits is associated with health problems.

The most relevant aspects of these patterns are the following:

- Bingeing: also called “compulsive over-eating”, “insatiable appetite”, or “uncontrolled eating”. Bingeing involves eating large amounts of food (which are usually “forbidden foods” that are avoided in the person’s normal diet) in a period of time associated with or brought about by emotional factors (such as anxiety, tenseness, dissatisfaction, frustration, etc.), with feelings of lacking self-control, ending when the person “feels
full”. This pattern of consumption is typically done alone because of the shame it makes the person feel. At the same time, the person feels guilt and sadness because of their lack of self-control. Often people who go through binge-eating episodes end up overweight or obese, as well as experiencing other health problems.

- Grazing: an abnormal dietary pattern associated with emotions like anxiety, among others, and at times “just because”, such as out of boredom or “not having anything else to do”. Grazing involves consuming small amounts of food almost constantly, eating a variety of things. Unlike bingeing, where the person feels bad about the way that they’re eating, with grazing the person may experience pleasure and may even enjoy eating more and more over time, as they graze with less anxiety. As such, grazing tends to perpetuate itself as a “healthy” habit.

- Late-night eating: an eating pattern similar to bingeing that affects approximately 1.5% of the population, with similar incidence among both men and women. It involves eating large amounts of food in the middle of the night, with the person resorting to this strategy for two reasons: mainly due to the fear of being discovered and the guilt the person feels for lacking self-control. What’s more, in addition to dietary restriction, a bad mood and stress are risk factors for this eating pattern.

- People with night eating syndrome tend to be obese or overweight, which makes them susceptible to health problems caused by excess weight, including high blood pressure, diabetes, and high cholesterol, similar to the problems that binge eaters face. In the case of obesity, there is a higher risk of heart disease, and obese people often have trouble sleeping.

- Food addiction: this involves eating a specific food almost systematically in an amount that is not planned before the person starts eating. The person eats as if out of compulsion or “temptation”, well beyond typical eating or in an isolated way.

Some of these addictive, “tempting” foods that activate these brain circuits and produce a good feeling are chocolate, french fries, and cookies, among other things. At times of negative emotional impact, these foods tend to become “favorites” for overeating and bingeing episodes.

Clearly, “eating bad” for emotional reasons related to occupational stress can lead to health problems [1]. Anxiety and mood swings act as triggers for unhealthy eating patterns where overeating leads to becoming overweight or obese, and as a consequence, health risks appear like hypertension, cardiovascular problems, and joint pain, among other things.

Given the impact that the work environment has on people, causing stress that affects the health of workers, the World Health Organization [2] defined a healthy workplace in the following terms: “… one in which workers and managers collaborate to use a continual improvement process to protect and promote the health, safety and well-being of all workers and the sustainability of the workplace.” (p. 16). According to the WHO model, there are four areas in which to take action: the physical work environment, the psychosocial work environment, personal health resources, and the enterprise’s community involvement [3].

The university community, in its commitment to being a healthy institution that promotes learning, as well as in application of laws on psychosocial risks (Law 31/1995 of 8 November, on the Prevention of Occupational Hazards), has established objectives including decreasing physical, psychological, and environmental risk factors for students, educators, and non-teaching staff because of the significant impact on people’s learning, success, and work productivity, as well as the effects on health.
Bearing in mind that a significant portion of a person’s life is spent in the workplace, the University has made it a priority to provide the entire university community, and more specifically workers, with healthy environments that encourage improvements in lifestyle and interpersonal relations, greater productivity, and reduce absences, health risks, and spending on health.

With this established, to take action to this end, it is necessary to first identify and evaluate risks that may be associated. According to Article 16 of the previously cited Spanish Occupational Hazard Prevention Law, once this evaluation is complete, if the results show a risky situation, preventive measures necessary for eliminating or reducing and controlling the risks should be taken. Psychosocial intervention actions can be classified according to different criteria. There are different levels of action, separated into primary, secondary, and tertiary interventions.

For this reason, this study is looking at the new subject of “emotional eating” and its relation to occupational stress, a psychosocial risk factor present in the university environment, as has been found in prior studies conducted in our community [4 y 5], with the objective of analyzing the relationship that exists between occupational stress, emotional eating, abnormal eating patterns, and health for university personnel. Lastly, this study aims to help design strategies for intervention to help promote healthy work habits and environments in the university community.

**METHODOLOGY**

The sample was taken from two sources: 1) people going for check-ups at the Medical Office of the Department for the Prevention of Occupational Hazards, and 2) people asking for psychological counseling, either on their own or by recommendation from the Occupational Physician, from the Clinical Psychology Office of the Department for the Prevention of Occupational Hazards.

The study included the participation of 407 workers from the University of Seville, with an average age of 45.05 years (SD=8.57) (range = 23-67 years).

Out of all responses given by participants, 222 were from men (54.5%) and 177 were from women (43.5%), with a higher average age among men than among women (average age=46.36; SD=8.41 and average age=43.51; SD=8.48, respectively).

In regards to the category of profession, out of all responses given by workers, 57.7% (121 men -30%– and 112 women -27.7%) were administration and services personnel (ASP), or non-teaching staff, and 39.5% were teaching and research personnel (TRP) (96 men -23.8%– and 63 women -15.7%).

In regards to health indicators, one of the simplest, most reliable methods was used for determining if weight is at the right point to not pose a health risk. This indicator is known as the body mass index (BMI), which puts weight in proportion to height \[\text{BMI} = \frac{\text{weight (kg)}}{\text{height}^2 (\text{m})}\]. A BMI above 30 is considered to pose a real risk to health.

Out of all responses from participants, the average BMI was 25.23 (SD=4.46) (range: 16.40 – 48.22 kg), being...
higher among men (averageBMI=26.32; SD=4.11) than among women (averageBMI=23.92; SD=4.56). Non-teaching staff (ASP) also had a higher average BMI (averageASP=25.84; SD=4.95) than faculty (TRP) (averageTRP=24.31; SD=3.42).

For evaluation, the research team designed a survey specifically to measure stress and emotional eating in the university community. The survey is made up of five questions that gather different information about the person’s current situation, related to emotional eating, stress in daily life and occupational stress, abnormal eating patterns, and consequences for health associated with the work context (see Appendix 1). Its psychometric properties are good. Reliability analysis using Cronbach’s alpha showed a value of 0.92 for the 12 items, which can be considered a very satisfactory value. With the Emotional Appetite Questionnaire (EMAQ), a satisfactory correlation value of 0.70 was found (p=0.000). As such, one can conclude that there is convergent validity between the two instruments.

RESULTS

In regards to the indicator for health risk, the average BMI for all workers was 25.23 (SD=4.46) (range: 16.40 – 48.22 kg), being higher among men (BMImen=26.32; SD=4.11) than among women (BMIwomen=23.92; SD=4.56). Non-teaching staff (ASP) also had a higher average BMI (averageASP=25.84; SD=4.95) than faculty (TRP) (averageTRP=24.31; SD=3.42). The differences in means among the sexes (men and women) (t358.263=5.424; p=.000) and among profession (ASP and TRP) (t401.76=3.661; p=.000) were statistically significant for both variables.

When categorizing BMI into ranges, including underweight (<18.5), normal weight (18.5-24.9), overweight (25-29.9), and obese (>29.9), the greatest percentage of workers (53.2%) were in the normal weight range, with significant differences (X²=234.965; df=3; p=.000), with a higher percentage of normal weight people among women (69.7%) than among men (39.8%). However, it should be noted that there was a high rate of overweight and obesity (45.8%, or 15.9% and 29.9% respectively), higher among men (60.2%) than among women (28%). In other words, while more than two thirds of women had an appropriate weight in proportion to their height, almost two thirds of men were overweight or obese (see Figure 1).

When looking at BMI according to profession, the non-teaching staff had a higher percentage of overweight and obese people (44.9%) than the teaching staff (35.2%), with a greater percentage of obesity (ASP: 34.6% vs TRP=20.5%) than overweight (ASP: 10.3% vs TRP=14.3%). As such, between 35% and 45% of workers were overweight or obese, with a higher rate of obesity among non-teaching staff (see Figure 2).
The first question on the survey asks if the person currently experiences stress in their daily life, considering various factors or sources of stress (see Figure 3).

As can be seen in Figure 3, nearly half of workers (49.3%) consider the work environment to be a stress factor or a source of stress, with a higher percentage among men (27.1%) compared to women (22.2%) and among faculty (TRP) (28.1%) compared to non-teaching staff (ASP) (21.1%).
Subsequent questions go more in depth about the experience of stress in the work environment. As can be seen in Figure 4, it is worth noting that 40.9% of workers consider the organization and demands of their work to be a stress factor or source of stress related to the work environment. This percentage was higher among men (22.3%) than among women (18.6%) and among faculty (TRP) (18.8%) than among non-teaching staff (ASP) (21.3%).

Additionally, for a moderate percentage of people (26.6%), the future of their career was a current source of occupational stress, with similar percentages between women and men (13.5% vs 13.1%) and between non-teaching staff and faculty (13.4% vs 13.2%).

The survey also attempted to discern if people experience certain negative emotions in their work environment when faced with stressful situations and if, as a consequence, they changed their eating or “ate their feelings” (eating more food or less food). Breaking down the results by sex, one can see that, except when they feel anxious, the women had higher percentages for the different emotions, with a greater difference in the percentages for emotions that reflect mood. To be specific, women tend to eat more when they feel bored (40.2%), depressed (29.2%), frustrated (28.8%), and sad (23.7%). Additionally, they “eat their feelings” when they feel dissatisfied or lacking self-control (30.3% and 18.6% respectively). For both men and women, feeling nervous (30.1% vs 30%) or tense (26.7% vs 27.3%) leads them to eat more with almost identical percentages (see Figure 5).

As such, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both men and women, in such a way that some tend to eat less and others tend to eat more. Those that “eat their feelings” in regards to experienced uneasiness made up a moderate percentage, with a clear trend toward eating more food for emotions related to anxiety than related to depression, especially for women.

When analyzing results based on profession, meaning non-teaching personnel (ASP) versus teaching and research personnel (TRP), one can see that for both ASP and TRP emotions related to anxiety lead people to eat more. These emotions include feeling worried (26.5% vs 28.3% respectively), nervous (31.3% vs 27.4%), tense (26.6%)
vs 27.1%), anxious (25.2% vs 23.1%), or dissatisfied (24.1% vs 26.4%), with fairly similar and slightly higher percentages among TRP, except for nervousness and dissatisfaction. Additionally, for both non-teaching and teaching staff, emotions related to mood affected people’s eating habits, leading them to “eat their feelings”. These emotions include feeling bored (33.8% vs 25.8% respectively), with a higher percentage for ASP; also feeling depressed (23.7% vs 24.4%) and sad (18.7% vs 20%), with almost the same percentages between the groups.

One aspect of note is the significant difference between ASP and TRP in the percentage of people saying that they tend to eat more when they perceive that they have little control. For this situation, 19.8% of non-teaching staff said they eat more versus 3.1% for teaching personnel (X²=8.852; p=.012).

As such, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both teaching and non-teaching staff, in such a way that some tend to eat less and others tend to eat more. Those that try and “eat” their negative feelings, about one third of workers, find that they are affected by emotions associated both with anxiety and with mood.

The survey also examines the eating pattern that people use when they change their eating habits or “eat their feelings” as a result of negative emotions caused by the work environment. Of the four unhealthy eating patterns, while in this group of workers there was a significant number of workers “grazing all day”, the habit of “bingeing once or more per day” was the one that reflected a greater effect on health, as seen in the number of people that were overweight or obese (X²=40.768, p=.000). Secondly, there was the tendency to “eat a food almost compulsively” (X²=21.520, p=.000), followed by “grazing all day long” (X²=15.213, p=.000).

One can see that a slightly higher percentage of women compared to men used these unhealthy eating patterns. Such was the case for night eating (3.4% vs 2.3%), almost compulsively eating a food (15.3% vs 10.4%), and grazing all day long (37.5% vs 18.5%), with a significant difference in this last pattern (X²=7.870; p=.005). Men only had a higher percentage when it came to binge eating (9% vs 5.6%) (See Figure 7).

<table>
<thead>
<tr>
<th>Eating Pattern</th>
<th>ASP</th>
<th>TRP</th>
<th>Women</th>
<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost compulsively eating a food</td>
<td>16.5</td>
<td>14.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night eating, including waking up to do so</td>
<td>16.8</td>
<td>18.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binging once or more per day</td>
<td>30.5</td>
<td>30.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grazing all day long</td>
<td>18.5</td>
<td>20.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not affected</td>
<td>55.5</td>
<td>55.8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
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<th>Men</th>
</tr>
</thead>
<tbody>
<tr>
<td>Almost compulsively eating a food</td>
<td>9.5</td>
<td>14.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night eating, including waking up to do so</td>
<td>1.2</td>
<td>3.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Binging once or more per day</td>
<td>4.9</td>
<td>4.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grazing all day long</td>
<td>22.1</td>
<td>25.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I am not affected</td>
<td>54.9</td>
<td>54.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 7. Distribution of participants according to eating pattern and sex.  
Figure 8. Distribution of participants according to eating pattern and profession.
In regards to differences between the profession groups (see Figure 8), one can see that a slightly higher percentage of non-teaching personnel used these unhealthy eating patterns. Such was the case for grazing throughout the day (25.1% vs 22.1%), almost compulsively eating a food (14.5% vs 9.8%), bingeing (15.3% vs 10.4%), and night eating (3.4% vs 1.2%).

The next part of the survey included possible consequences on health from changing one’s eating pattern. Specifically, for weight, a higher percentage of women saw weight gain (25.5%) compared to men (18.2%), representing a significant difference ($X^2=12.514; p=.006$) (See Figure 9).

However, when comparing profession groups, the percentages were virtually the same between ASP and TRP (21.4% vs 20.5%) for people that gained weight as a consequence of changing their eating pattern, with such changes resulting from stress and negative feelings experienced in the work environment (see Figure 10).

Lastly, the survey asked about any physical changes or medical problems. For differences between the sexes, a higher percentage of women complained of musculoskeletal problems (51.4% vs 42.8%) and digestive problems (23.7% vs 16.2%). However, a higher percentage of men were affected by obesity (23.4% vs 18.6%) and cardiovascular problems (16.2% vs 8.5%), and a slightly higher percentage of men had dermatological problems (11.7% vs 10.2%). There was no significant difference between men and women for any of these consequences on health (see Figure 11).

In regards to differences between profession groups, a higher percentage of non-teaching personnel saw their health affected by emotional eating that resulted from stress and negative feelings experienced in the work environment. There was a slightly higher rate of physical problems among ASP, particularly for musculoskeletal problems (48.9% vs 41.7%), digestive problems (21.7% vs 17.2%), and to a lesser extent cardiovascular problems (14% vs 10.4%) and dermatological problems (11.9% vs 9.8%), as well as overweight and obesity (23.4% vs 17.8%) (see Figure 12).
DISCUSSION

In recent decades, various studies have shown that emotional eating generally occurs in reaction to negative emotions [6] and/or stress [7], with emotional eating leading to eating disorders, as well as increasing the risk of obesity when people consume foods in greater amounts or ones that are high in calories [8]. However, other studies have shown that emotional eating is not just a problem for overweight and obese people; rather, it is perceived stress that leads to emotional eating, independent of body mass index (BMI) [9].

Emotional eating is a habit considered to be a dysfunctional strategy for dealing with problems, related to regulation of emotions. On this subject, recent studies have shown that emotional eating is influenced by a combination of genetic, psychological, and emotional factors, including emotional processing, interactions with others, and strategies for dealing with problems [10]. Additionally, it is a risk factor given that, when there are stressful situations or sources of stress and tension, it can lead to the appearance or development of eating disorders such as bulimia nervosa or binge-eating disorder.

For participants in the study, the most common source of stress identified was occupational stress, notably from the organization and demands of work. On this subject, various authors [11] note that work demands are generally the top predictors for variables like emotional exhaustion or psychosomatic health problems.

Among the results of this study, it should be noted that negative emotions that lead workers to change the amount of food that they consume, i.e. eating more food or “eating their feelings”, particularly reflect feelings of anxiety: feeling anxious (42.2%), nervous (29.6%), worried (26.8%), or dissatisfied (24.8%). These results support findings from Lacey [12], who highlights that overeating due to negative moods (anger, depression, anxiety) is meant to reduce the impact of these emotions.

Recent research shows that emotional eating is more common among women, a result that was also found in this research. Specifically, women had higher percentages for the various negative emotions. Women tend to eat
more when they feel bored (40.2%), dissatisfied (30.3%), depressed (29.2%), frustrated (28.8%), sad (23.7%), and to a lesser extent when they feel lacking in self-control (18.6%). However, for both men and women, feeling nervous (30.1% vs 30%) or tense (26.7% vs 27.3%) leads them to eat more with almost identical percentages. As such, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both men and women, in such a way that some tend to eat less and others tend to eat more. These people whose eating habits changed due to negative emotions made up a moderate percentage, with a clear trend toward eating more food for emotions related to anxiety than related to depression, especially for women.

In regards to using emotional eating as an unhealthy coping strategy, there were slightly higher percentages of women compared to men for three of the four unhealthy eating patterns. Such was the case for night eating, almost compulsively eating a food, and grazing all day long. This pattern can be extrapolated to the general population, where we see a greater incidence of eating disorders and/or syndromes among women. In the female population, body image and dissatisfaction with one's figure play an important role, and we see people that lack behavioral control around food. However, in our study, women had a lower percentage of BMIs indicating a health risk, i.e. indicating overweight or obesity, in spite of the fact that they were less likely to exercise or do some sort of physical activity.

In regards to profession, looking at the difference between teaching staff and non-teaching staff, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both teaching and non-teaching staff, in such a way that some tend to eat less and others tend to eat more. Those that try and “eat” their negative feelings, about one third of workers, find that they are affected by emotions associated both with anxiety and with mood. A slightly higher percentage of non-teaching staff engaged in these four unhealthy eating patterns, with grazing all day long and compulsively eating a food being the most common patterns in both groups of staff (ASP: 25.1% and 14.5%; TRP: 22.1% and 9.8%, respectively). Likewise, there was a higher rate of obesity for non-teaching staff (34.6%) than for teaching staff (20.6%). These differences cannot be attributed to people in the TRP group exercising more or engaging more in continuous physical activity. However, the style of work typically done by the ASP group may explain, at least partly, why people had more or less difficulty in expending energy on a daily basis, which helps maintain weight within a stable range, as the set point theory tells us.

In regards to unhealthy eating patterns used by participants, 23.9% of people tend to graze all day long and 12.3% almost compulsively eat a food. There was a lesser incidence of binge eating (7.4%), although binge eating was the abnormal pattern that produced the greatest effect on health, particularly on weight. As a consequence of these unhealthy eating habits, 45.8% of participants were overweight (15.9%) or obese (29.9%), with a markedly higher rate of overweight and obesity among men (24.1% and 36.1% respectively) than among women (5.7% and 22.3% respectively). That is to say, 60.2% for men versus 28% for women. These numbers are different from current figures for the entire Spanish population, where more than half of the adult male population is overweight or obese, as are nearly half of adult women (44.2%).
Emotional eating can be a barrier to losing weight and reducing obesity, associated with health risks such as hypertension, heart disease, digestive problems, and diabetes, among others. In this context, emotions such as sadness or anger can result in health problems like cardiovascular disease or digestive disorders. Additionally, experiencing emotions related to anxiety, such as dissatisfaction, worry, anxiousness, or nervousness, can affect sleep patterns, with a relatively high incidence of insomnia.

Two recent areas of study from scientific research that can help tackle the issues found in this study are, firstly, emotional intelligence as an adaptive coping strategy for stress to help navigate intra- and inter-personal situations [13] and, secondly, intuitive eating, which involves establishing healthy lifestyles, eliminating dieting but maintaining a healthy relationship with food [14].

Given that the team that put together this study, “Emotional eating and occupational stress: towards healthy work habits and environments”, shares this point of view, we considered it relevant, in light of the conclusions from our study that we discuss in the next section, to include the previously-mentioned most recent research with the goal of creating a protocol for intervention to promote healthy environments and habits at the University of Seville. We consider such intervention necessary to support the professions of more than 6,000 workers and 55,000 students, as an institution that is oriented towards learning and that cares about the health and well-being of the entire community, creating healthy environments and fomenting healthy lifestyles.

CONCLUSIONS

The most relevant conclusions from the study are the following:

• In regards to the indicator for health risk, the BMI, there was a significant percentage of overweight and obesity among workers from the U of S, with a higher rate of obesity compared to overweight. This rate is higher for men and for non-teaching staff.
• In regards to the perception of stressors in daily life and in the work environment: Around half of workers perceive the work environment to be a source of stress, with higher percentages for men and teaching staff. Furthermore, a significant percentage of workers named the demands of work and how it is organized as stressors related to the work environment, with higher percentages among men and teaching staff. Additionally, to a lesser extent, the future of one’s career was considered a stressor, with similar percentages between men and women and between teaching and non-teaching staff.
• In regards to the relationship between the presence of negative emotions and change in eating patterns due to stressors in the work environment.

Examining the results by sex, women tend to eat more when they feel bored, depressed, frustrated, and sad. To a lesser extent, they “eat their feelings” when they feel dissatisfied or lacking self-control. As for emotions reflecting a state of anxiety, for both men and women, feeling nervous or tense leads them to eat more, with almost identical percentages. As such, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both men and women, in such a way that some tend to eat less and others tend to eat more. These people whose eating habits changed due to negative emotions made up
a moderate percentage, with a clear trend toward eating more food for emotions related to anxiety than related to depression, especially for women.

In regards to differences between profession groups, it was found that for both teaching and non-teaching staff, emotions related to anxiety, like feeling worried, nervous, tense, anxious, or dissatisfied, led them to eat more, with very fairly similar percentages. Additionally, for both non-teaching and teaching staff, emotions related to mood, like feeling bored, affected people’s eating habits, leading them to “eat their feelings”. For eating due to boredom, the percentage was higher for non-teaching staff. Percentages were virtually the same for feeling both depressed and sad. The ASP group tended to eat more in stressful situations where they perceived themselves as having little control. As such, negative emotions felt in stressful situations related to the work environment tend to affect the eating habits of a significant portion of workers, both teaching and non-teaching staff, in such a way that some tend to eat less and others tend to eat more. Those that try and “eat” their negative feelings, about one third of workers, find that they are affected by emotions associated both with anxiety and with mood.

• In regards to how eating patterns are affected, nearly a quarter of workers tends to graze all day long. To a lesser extent, workers almost compulsively ate a particular food and had one or more binges per day. Of the four unhealthy eating patterns, the habit of “bingeing once or more per day” was the one that reflected a greater effect on health, as seen in the number of people that were overweight or obese. Breaking down the results by sex, there were slightly higher percentages of women compared to men for three of the four unhealthy eating patterns. Such was the case for night eating, almost compulsively eating a food, and grazing all day long. Men only had a higher percentage when it came to binge eating. Breaking down results by profession group, non-teaching staff had a slightly higher percentage for these four types of unhealthy patterns.

• In regards to consequences for health, a higher percentage of women reported weight gain. Breaking down results by profession group, non-teaching staff and teaching staff virtually the same percentages for weight gain. Among women there was a higher percentage of people complaining of musculoskeletal and digestive problems. For men, there were higher percentages of people affected by obesity, musculoskeletal problems, and cardiovascular problems. In regards to profession group, there were slightly higher rates of health problems for the non-teaching group than for the teaching group, in particular for musculoskeletal and digestive problems, and to a lesser extent cardiovascular and dermatological problems, as well as overweight and obesity. However, there was no significant difference between men and women or between teaching and non-teaching staff for any of these health problems.

INTERVENTION PROTOCOL FOR PROMOTING HEALTHY WORK ENvironments AND HABITS

Based on the conclusions of this study, with the goal of minimizing health problems caused by emotional eating resulting from occupational stress at the University, we consider it necessary to create healthy work environments with the following characteristics: a) multifaceted: integrated, meaning that tasks can be completed consecutively, b) stable: providing continuity throughout the year, and c) participatory: enabling interaction with other people.
In these healthy work environments, to promote worker health, we recommend offering, in general, programs that promote a) physical activity, b) healthy eating, c) weight loss, and d) stress management.

In response to the main results found in this study, guidelines from various national and international bodies, as well as the various levels where preventive action can be taken [3], in Figure 13, a series of organizational and personal measures are laid out for promoting healthy work environments and habits that would help prevent occupational stress, emotional eating, obesity, and overweight, as well as other associated health problems. These measures can be added to actions currently in place at our university from the Occupational Hazard Prevention Department [15] (SEPRUS, 2015). In the next section we will elaborate on each of these measures.

**PREVENTING PSYCHOSOCIAL RISK FACTORS AND PROMOTING HEALTH. FIRST LEVEL**

a) Awareness campaigns.

Directed at the entire university community: we recommend conducting awareness campaigns that inform people about the relationship between occupational stress, emotional eating, and health, focusing on:

- **Promoting healthy eating:** using posters and pamphlets located in the different centers and places of work, as well as next to food and drink vending machines. These posters and pamphlets should inform people of concrete steps they can take to eat healthily in the workplace.
b) Training programs directed at management positions: “Work organization, leadership, and occupational stress: how can we contribute to creating healthy work environments?”.

Given that the main sources of stress reported by participants in our study were the organization and demands of work, the future of one’s career, and recognition of work, these trainings will be directed at university employees that hold management positions. The ideal situation would be for participation in these trainings to be mandatory, depending on how this would fit into the employees’ work schedule.

As a general objective, the trainings will aim to educate managers about the importance of having an appropriate organization of work and a leadership style for preventing and managing occupational stress, as well as about their relation to health problems in their immediate work environment. Additionally, the trainings will provide them with personal and organizational tools to help them contribute to creating healthy environments in the workplace.

The methodology used in these programs will focus on presenting relevant content and creating discussion groups to examine the viability of implementing necessary measures in the workplace.

PREVENTING OCCUPATIONAL STRESS AND PROMOTING HEALTHY HABITS. SECOND LEVEL

a) Organizational measures aimed at promoting healthy eating habits, exercise, and time for rest in the workplace.

These measures can be discussed in the training courses for managers. Some possible measures would be:

- **Providing easy access to healthy food** (fruit, healthy sandwiches, grains, water, and natural fruit juices) in the workplace. This can be done by increasing the number of vending machines in each center or through a system established in each department, office, etc.

- **Healthy schedules**: Active anti-stress breaks that are compatible with healthy eating. We recommend a half hour without work (a rest) at mid-morning for employees that work in the morning and at mid-afternoon for employees that work in the afternoon. This would facilitate workers being able to “have a bite to eat” and do breathing and stretching exercises as recommended in the awareness campaigns.

- **For each center, organize yoga classes or a similar activity** (days according to demand) in the morning and afternoon because of these benefits offered in terms of training one’s breathing, stretching, and toning muscles. However, these classes would bring with them a minimal financial cost for each employee, who would only have access to two classes per week so that all employees can take advantage of these classes.

- **Set up relaxation rooms** for each department or office. If this is not possible due to space limitations, provide
support for buying relaxation chairs in cases where the worker has to spend more than eight hours in the workplace at a time, whether that be because of the type of work that they do or because they cant go home to rest between morning and afternoon shifts due to distance, etc.

b) Training programs aimed at employees in general, particularly for those that may be at risk: “Occupational stress and obesity: what is emotional eating?”

These trainings will be for all university personnel, especially for those workers who feel that occupational stress is affecting their diet and weight.

As a general objective, the courses will aim to educate workers about the relationship between occupational stress and emotional eating, and about how this can affect their health. Additionally, the trainings will provide steps that can be taken to manage or deal with occupational stress and the negative emotions associated with it, as well as steps for establishing healthy lifestyle habits.

The methodology used in these programs will be psychoeducational and practical so that each participant can apply what they have learned to their personal situation.

• At the end of the training programs, participants can respond to the emotional eating survey validated in this study and find out if they would be candidates for the “Intervention program: Managing occupational stress, emotional eating, and healthy lifestyles for people that are overweight or obese”, as well as find out how to access this program.

INTERVENTION FOR HEALTH PROBLEMS CAUSED BY OCCUPATIONAL STRESS AND EMOTIONAL EATING. THIRD LEVEL

a) Intervention program aimed at overweight and obese employees, as well as employees with health problems due to unhealthy eating: “Managing occupational stress, emotional eating, and healthy lifestyles for people that are overweight or obese”.

This program will be aimed at workers that are overweight or obese or that struggle with emotional eating due to occupational stress. Workers will be selected based on the results of the survey validated in this study. If a worker is at risk, they will be eligible for the program.

The general objective of the program will be to teach workers how to manage occupational stress and emotional eating, and how to control their weight with a healthy lifestyle.

Likewise, specific objectives will include: a) reasonably lose weight, b) understand the relationship between stress and emotional eating, as well as with abnormal eating patterns, c) learn to appropriately manage negative emotions that arise from stressful situations, d) reduce negative thoughts associated with stressful situations, negative emotions, and food, e) establish healthy habits, and f) prevent health problems.
Comprehensive treatment for maintaining a healthy weight should include a combination of healthy dieting, increased physical activity, and cognitive-behavioral therapy.

Participants will work with a dietary counselor every week or every two weeks (depending on what’s convenient). This counselor will plan a diet for each participant and follow up on it. Low-calorie diets are recommended for overweight and obese people to lose weight. Each person will get an individually planned diet according to their needs. This dietary counseling and support will be provided by the health personnel from the medical office.

Likewise, it is recommended that physical activity be a part of the overall treatment for losing and maintaining weight because: a) it contributes, though modestly so, to losing weight for overweight and obese adults, b) it can reduce belly fat, c) it increases cardiopulmonary capacities, d) it can help maintain weight after some has been lost, e) it raises self-esteem and feelings of self-efficacy, and f) it prevents the occurrence of medical problems from being overweight.

Initially, participants should be encouraged to take part in moderate physical activity for 30 to 45 minutes, three to five days per week. In the long term, everyone should set the goal of getting 30 min. or more of moderate physical activity most days of the week, and preferably every day.

The psychological intervention will be done in groups (8-10 participants) in close coordination with the intervention conducted by the medical office. However, initial sessions may be conducted individually in order to conduct a more individualized evaluation of medical, psychological, and social aspects to be taken into account for creating groups that are as homogenous as possible for the intervention. Cognitive-behavioral therapy will be a useful tool as part of the treatment for reducing and maintaining weight, in combination with physical activity.

For the third-level intervention, the main techniques proposed would be: psychoeducation, stimulatory control, techniques for emotional self-control, cognitive re-structuring, and problem solving, among others. We estimate that the program can take place over about 12 sessions, occurring weekly, each about ninety minutes long. This will vary according to the development of each participant. When they achieve their set objectives, they will go through sessions for follow-up and prevention of relapses about once per month until they think that their achievements can be maintained in the long term.
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New challenges in Risk Management: Country Risks

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Since the end of the Second World War in 1945, the world has witnessed exceptional and rapid progress in all senses, with widespread interest in researching and devising solutions to all types of human problems and inconveniences. Medicine and pharmaceutics have improved the length and quality of life; industry has been in a state of continual progress in the manufacture of all types of products, reducing costs and increasing accessibility to a large number of consumers; new transport technology has led to time and cost savings and brought markets closer; and finally, the engine of exponential progress over the last 25 years have been the information and communication technologies, which have shifted social, industrial and commercial goalposts.

All of these improvements have been developed within a context of increased market openness in the majority of countries and continents, providing companies with the opportunity to offer their products and services outside of their normal competitive habitat and thereby continue growing and generating profits. Governments in the majority of countries in the world have attempted to support the creation of this global market, through trade agreements of varying ambition, but with the clear objective of facilitating the transport of goods and reducing customs tariffs. This backdrop of openness and agreements, which is currently in force and forms the basis of our way of life, is under threat from various events that could be detrimental to it and even destabilizing. In the extreme case, they could potentially overturn these arrangements which would involve a return to international trade models based on barriers, tariffs and costs.

In recent decades, we have witnessed and suffered the effects of economic and financial crises which have taken place in some countries, but – due to globalization – have affected other countries to a greater or lesser degree. As a result of these crises the focus has turned to the need to identify GLOBAL RISKS which extend beyond borders and would have a similar impact on a large number of countries, both socially as well as in terms of economic expectations and indicators.

Accordingly, public and private companies have added the review of GLOBAL RISKS and their possible impacts to their risk management, so that this information will at least be included in strategic decision making processes, even if there is no effective solution to them. An example is the World Economic Forum, which since 2007 has been analyzing and preparing a scenario which identifies and classifies GLOBAL RISKS into five main groups: Economic, Environmental, Geopolitical, Social and Technological. By way of summary, between 2007 and 2012 the major focus of concern were economic risks, while from 2012 to 2017 the focus has turned toward social and environmental risks, where the probability of occurrence and impact are highly significant. This analysis is subject to some bias, given that the studies are based on the opinion of experts and governments, and they lack a sufficient quantitative baseline. Even so they are undoubtedly useful, since they identify areas of uncertainty by region and country.

Human activity is not the exclusive source of environmental risks. Clearly there are some aspects, such as air pollution from greenhouse gas emissions, where man-made actions and government policies offer countries the ability to manage, prevent and mitigate – including even possibly avoid – directly related hazards (such as floods or natural disasters related to the gradual deterioration of the polar ice caps). However, faced with certain natural disasters – such as volcanoes, earthquakes, hurricanes, floods – which are purely related to the normal course of environmental phenomena in our planet, there is little humanity can do.
The other risk groups are man-made, both in terms of public decisions made by countries’ leaders, as well as the private decisions of companies and citizens. The worst consequences arise from armed conflicts which continue to be a source of destruction, instability, famine and displacement in many regions. These situations cause social alarm at the global level, but, unfortunately, are not easily resolved because of the large number of competing interests between different countries.

Without reaching such dramatic proportions, other events also have a direct impact on the population and its interests and outlook. This is true of events related to the economy and finances, as well as the perception of a general lack of credibility that some societies associate with specific elements of the political sphere when it comes to dealing with and finding solutions to serious problems such as unemployment or the solvency of the public accounts themselves, with increasing levels of indebtedness and its resulting implications for future generations.

COUNTRY RISKS

The global environment is being characterized by an increasing focus on different countries’ decisions, both democratic and authoritarian, aimed at reducing their involvement in global trade models, in order to gain economic and financial independence and to protect local models of production. It is clear that these moves will have a rapid and direct impact on economic expectations, with knock-on medium-term implications for growth and unemployment.

Following Michael E. Porter’s work on “The competitive advantage of nations”, Government intervention in private business activities through investment support, development of key sectors of the country’s economy and even through facilitating the entry of foreign investors, enables strategic sectors or the economy as a whole to benefit against competitors in other countries. An example is the protection of specific sectors, by increasing tariffs on imports of foreign products into the sector, or placing obstacles on manufacturing by other foreign companies with a headquarters in the country.

While up until now the main sources of instability tend to have focused on underdeveloped or developing countries, in recent months western countries have added their own dose of uncertainty. This applies to two specific recent events: Brexit in the United Kingdom and the change of President in the USA. In addition to these two emblematic countries – where in the first case the majority of citizens voted to split from the European Union and in the second case to move toward a much more protectionist-style of government – other counties in Europe are also joining them. Concern among citizens in these countries about their security and safety in the face of terrorist attacks or economic instability are adding ever greater weight to protectionist schools of thought and shaking the foundations of the European Union. And while not at the same level of break-up, Spain itself is not free from an unusual sociopolitical climate: in recent months the level of instability in national governing bodies has reached levels not seen for decades due to the emergence of new political alternatives and secessionist movements.
This scenario is putting an additional element of uncertainty on the table for company owners and directors, especially those whose accounts have significant international exposure. They now have to pay attention to each country’s state of affairs, even those that were not considered to be problematic. A source of uncertainty which could potentially condition or extinguish productive investment and trade activity, or the liquidity of operations, with corresponding negative consequences, chiefly disinvestment and unemployment.

The following diagram shows the main components of Country Risk, which we divide into three: Economic Risks, Sociopolitical Risk and Financial Risks:

*Country risks. (Prepared by the authors)*
Country Risk has traditionally been defined as the possibility of negative consequences impacting on a company’s investments and/or commercial operations in a country, due to government decisions, macroeconomic or competitive disturbances, or political or social changes in the country under analysis (or in neighboring countries that may directly affect it).

Country Risk was initially associated both with the fulfillment of financial obligations by the country itself in paying back its sovereign debt, as well as compliance with obligations to private debtors that import and have to pay in the currency agreed in the contract or in their own currency. But, as we have illustrated in the article, country risks cover a wider spectrum. As such, we divided Country Risk into three headings:

»Economic Risks, which derive both from the country’s macroeconomic structure (outlook for inflation rates, interest rates, balance of payments, GDP, etc.) and policies related to the system of Government. The latter includes the articulation of fiscal policy and therefore affects incentives and benefits for investment, as well as monetary policy, which directly impacts on inflation, interest rates and exchange rates. The economic model and the local market structure are indirectly affected by these decisions.

Risk Management departments are therefore required to assess the effect of possible risks that could emerge, for example, from a major tax hike, the disappearance of support measures underpinning an investment, or changes to legal conditions that have to be followed when setting up in the country.

This gives rise to questions and queries that should be understood by the decision-making bodies: Are local partners required when creating a subsidiary? What labor policy does the company need to adopt to avoid conflicts with the Government? Are there tariff policies which directly affect the investment?

»Sociopolitical Risks. This is possibly the most well-known group of risks with the highest level of awareness and knowledge. Even so, there is no database in existence broad enough to be able to analyze and create hypotheses on these risks enabling them to be solved quantitively.

In the case of social and political stability, the risk originates in social disruption and the lack of governmental stability. These situations can originate from social inequality, religion, ethnic differences, the development of cultural models, historical relations between countries, all of which can lead to the outbreak of disturbances – ranging from relatively peaceful protest and societal boycotts of specific products, to acts of terrorism in extreme cases – which one way or another impact on investment performance. Relations with neighboring countries could also be a source of instability with declaration of war being the ultimate recourse.

The regulatory model refers to the maturity of the legal system and the degree to which it is ingrained in social and business life. This is intimately linked to Legal Security, which involves the guarantee of compliance with the rule of law, regardless of the unilateral actions of Governments: there are very well known examples of forced nationalizations and confiscations of whole subsidiaries in Latin American countries.
However, while not reaching the same level of awareness as these unilateral actions, protectionist policies cause a multitude of lesser negative effects, which emerge in ongoing changes in regulation in specific markets and can directly harm the rights of foreign companies through the enactment of laws. This is the case, for example, of regulation in issues related to food security, health restrictions, technological models and standards, energy sources, people and merchandise transport, which affect both the primary activity but also indirectly impact on the country’s economic and social activities.

Finally, social development itself and the adoption or rejection of new cultural developments from other countries, highlight social sensitivity and fragility, which are the basis for change in future generations.

»Financial Risks, which are crucial to ensuring planned operations deliver a good outcome. When foreign companies acquire public debt, the risk is in non-payment of the principal and/or interest, which also applies to private debt. In the case of a lack of liquidity and debt repayment, the creditor will be exposed to this default risk. These can also be classified as Sovereign, when the debtor or guarantor is the State, and Transfer in the case of a private local company.

On many occasions, the country’s authorities where the company is seeking to operate, propose the acquisition of fixed income securities or equities issued by local institutions, or suggest that the company offer credit to local entities. These can impose a direct extra cost if they have not been taken into account when negotiating the operations, as well as an additional default risk.

It is also important to mention payment block in this section, both in foreign and local currencies, due to government decisions motivated by various factors. This has important consequences for the company’s cashflow, frequently involving the need to seek new finance and increasing the cost of operations. Therefore, questions rapidly arise such as: what is the regulation in regard to capital repatriation?

A prior analysis of the country’s political and macroeconomic situation in finance issues and the existence of a track record are necessary and crucial for anticipating these types of scenarios.

In light of the above, a proper analysis and assessment of risks is crucial to protecting our interests.
ANALYSIS AND RISK MANAGEMENT

Various companies provide Country Risk analysis services; these are specialized consultancy companies whose work goes into a high degree of detail. Among other factors, their studies focus on analysis of historical data, short, medium and long-term forecasts for political and economic scenarios and their social repercussions, as well as the impact on foreign operations and investments. There are also institutions who analyze the issue of interest to us: global organizations, such as the World Economic Forum, dedicate significant resources to preparing and publishing annual reports focused on Political Risk.

Without aiming to reach the same level of depth as these studies, Risk Management departments should ensure they have an assessment of Country Risk insofar as it affects the operations that their companies carry out overseas. By way of example, we propose considering the factors set out in the next section, which include questions that we should ask ourselves when assessing the Country Risk to which our investments and operations are exposed.

RELATIONSHIP OF FACTORS FOR ASSESSING COUNTRY RISK

When responding to the following questions, a simple five step scale can be used to express the analyst’s opinion and/or risk appetite:

<table>
<thead>
<tr>
<th>Category</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very low/Bad</td>
<td>1</td>
</tr>
<tr>
<td>Low/Bad</td>
<td>2</td>
</tr>
<tr>
<td>Medium</td>
<td>3</td>
</tr>
<tr>
<td>High/Good</td>
<td>4</td>
</tr>
<tr>
<td>Very High/Good</td>
<td>5</td>
</tr>
</tbody>
</table>

Finally, the study need not be carried out by an analyst, this task could be done by a Risk Manager, executive or any person with the right knowledge and qualifications. Therefore each question will have a score and summing the overall score should give us an initial idea of the analyst’s opinion of the country.
### ECONOMIC RISK

#### 1. Development of macroeconomic factors

The progress of the country’s economy will be the first point of analysis and it will provide us with an initial quantitative perspective which will determine our decision on investing in the country.

<table>
<thead>
<tr>
<th>What has the country’s macroeconomic performance been like and what is the short, medium and long-term outlook?</th>
<th>Analysis of accessible data (GDP per capita, GDP growth, annual inflation rate, country current account as a proportion of GDP, exchange rates, etc.) should provide the basis for decision making according to the local economic environment.</th>
</tr>
</thead>
</table>

#### 2. Fiscal and monetary policy

The government’s decisions on fiscal support or monetary policy stimulus, although aimed at stimulating the economy and investment climate, may be detrimental over the medium-term if they are excessively expansionary and can lead to risks of uncontrolled inflation and economic disorder.

<table>
<thead>
<tr>
<th>What is the effect of fiscal and monetary policies?</th>
<th>The results of these actions can be disparate, ranging from improvements in the tax burden or the exchange rate to detrimental increases in expenditures. Exchange rate fluctuations in the country have a very significant impact on multinational companies, which could be the result of expansionary monetary policy. They significantly impact on final results in the groups’ consolidated accounts. It is a risk that is inherent to international activity.</th>
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</thead>
</table>

#### 3. Economic protectionism

It is a well-known fact that governments try to protect national industry from foreign competition. However, this effort can clearly hamper foreign investment, with the imposition of import and export trade barriers in the form of tariffs and other measures. There is also the risk of sustaining unprofitable sectors with strong investment, only to maintain jobs and, on occasions, for political motives. This can constitute a long-term opportunity cost with resources being dedicated to obsolete sectors instead of cutting edge sectors.
What level of protectionism does the country have and what measures does the Government impose which could negatively affect foreign companies?

It is important to point out that there are also opportunities here, given that import limits usually also involve measures to create subsidiaries, especially in underdeveloped local sectors, giving rise to capital and knowledge inflows.

**SOCIOPOLITIC RISK**

<table>
<thead>
<tr>
<th>4. Level of political interference in the economy</th>
<th>This can be reviewed by assessing private property rights, existing regulation, the impartiality of the legal system and the quality of the country’s administrative system.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is it possible that a government intervention could take place which negatively affects investment? Does the country have a history of these types of actions (confiscations, expropriations, forced nationalizations)?</td>
<td>History may weigh on the analyst’s option, but remember that risk and return go together.</td>
</tr>
<tr>
<td>5. Country political stability</td>
<td>On the basis of measurable factors, such as government legal and regulatory effectiveness, the implementation of the rule of law, and the degree of popular support for it.</td>
</tr>
<tr>
<td>What capacity does the government have to apply policies that benefit investment and avoid social conflict?</td>
<td>We should also be mindful of local corruption indicators, given that they can be clearly detrimental to operations in the country, creating a system based on cronyism and an absence of medium to long-term certainty, as well as contributing to social discontent and the black economy.</td>
</tr>
<tr>
<td>What is the level of corruption within the institutions?</td>
<td>This is an endemic problem in many countries, including developed economies, where events are regularly reported by the media which damage opinion of the institutions.</td>
</tr>
<tr>
<td>What level of military intervention is there in the country’s political life? What is the country’s track record in this regard?</td>
<td>Finally, although this focuses more on specific cases, we should not forget to assess the possibility for military intervention in the country’s government.</td>
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<td>---</td>
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<tr>
<td>6. Assessment of social unrest</td>
<td>Here it is necessary to analyze the factors leading to popular discontent and disruption to public order, which can harm investment.</td>
</tr>
<tr>
<td>What is the potential for social disturbances and strikes?</td>
<td>A way of getting an initial handle on this question is to use the human development index and its constituent parts (establishment of welfare state, unemployment rate, poverty level, quality of public services).</td>
</tr>
<tr>
<td>7. Political instability</td>
<td>Going into more detail on the previous point, we will assess the level of social harmony and sociopolitical stability, gauging factors such as religious and ethnic tensions and the existence of armed groups, separatist movements and the penetration of organized crime.</td>
</tr>
<tr>
<td>What is the level of political violence in the country and how does it affect governability?</td>
<td>We understand political instability as events such as civil commotion, acts of sabotage and terrorism, war or civil war, rebellion, revolution, revolt, hostile actions by a belligerent power, riots or coups d’etats.</td>
</tr>
<tr>
<td>8. Assessment of international relations</td>
<td>It is very important to frame the country within its regional context and analyze the relationships it has with neighboring and non-neighboring countries, as well as with international organizations which are influential on economic issues.</td>
</tr>
<tr>
<td>Is there potential for violent (cross-border conflict, war) or non-violent action (trade restrictions, sanctions and withdrawal of aid, etc.) by external agents?</td>
<td>This point should be carefully assessed given its importance for political stability and social unrest.</td>
</tr>
<tr>
<td>9. Regulatory and cultural factors affecting establishment and operation</td>
<td>At the initial point of drawing up the company strategy, we should consider the following questions.</td>
</tr>
</tbody>
</table>
What regulatory controls are there on setting up the company?  
It is possible that formation of Joint Ventures with local partners could be an essential requirement, or in other instances it will not be possible to acquire 100 percent of a subsidiary in a country. It will also be necessary to know the timeframe, costs and modes of finance for establishment.

Is the company able to comply with labor policy and regulation? Will compliance have a negative impact on the operation?  
Once the operations have been consolidated, new risk factors will also emerge in the next step of the company’s life. This time they will focus on labor regulation, cultural factors and human resources policies. Limits on the hiring of foreign personnel or very significant cultural differences (such as restrictions on women occupying management positions) could lead to reputational or operational damage which must be considered by the parent company.

FINANCIAL RISK

<table>
<thead>
<tr>
<th>10. Deuda externa respecto al volumen de la economía nacional</th>
<th>¿Están preparadas las instituciones públicas y privadas para hacer frente a sus obligaciones en los pagos?</th>
</tr>
</thead>
<tbody>
<tr>
<td>11. Políticas gubernamentales y la situación financiera nacional</td>
<td>¿Los pagos a los acreedores extranjeros se realizan en plazo?</td>
</tr>
<tr>
<td>12. Restricciones en la repatriación de fondos. Políticas gubernamentales y la situación financiera nacional</td>
<td>¿Cuál es la regulación oficial y las prácticas no oficiales en la repatriación de beneficios, dividendos y capitales de inversión?</td>
</tr>
<tr>
<td>13. Políticas discriminatorias/imposiciones en la búsqueda de financiación</td>
<td>¿Es obligatorio que las empresas extranjeras adquieran títulos de renta fija o variable emitidas por entidades locales, o que la empresa conceda créditos a figuras locales?</td>
</tr>
<tr>
<td>14. Evaluación de fuentes de financiación local</td>
<td>¿Cuál es el nivel de vulnerabilidad del sector bancario local? Un análisis de la solvencia y capitalización del mismo será fundamental para determinar la viabilidad de la concesión de créditos.</td>
</tr>
</tbody>
</table>
RISK MANAGEMENT IN THE COMPANY

Risk Management is already a very common practice due to its usefulness and the benefits that it offers, primarily in preventing impact from risks facing the company or institution, which can ultimately jeopardize the achievement of objectives.

Without wishing to reproduce the risk management methodology, and as a reminder of the work typically involved, we emphasize that all the analysis involved in assessing country risks should be aligned with other risk management work, setting out a declaration of risk appetite and tolerance and developing a risk map which serves as a basis for decision making.

The assessment method used for placing Country Risk within the risk map (and therefore the scoring of factors) should also take account of the type of operations the company performs. The same analysis does not apply to a mutual fund or a company offering financial consultancy services as it does to a manufacturing company: factors such as restrictions on access to raw materials for foreign companies or a discriminatory tax regime will have different impacts depending on the company’s activity.

In order to help risk managers dive into these issues and correctly assess the importance for the company and its interests of risks arising from overseas operations, the insurance market offers specialized solutions and various resources to companies to ensure a correct analysis of the Country Risk to which their investments are exposed. The Political Risk maps published by insurer and brokers are well known. Export Credit Insurance companies also develop and publish such reports. Finally, in the public realm, it is also worth mentioning ICEX Spain Export and Investment (previously known as the External Trade Institute), which is a national public company whose goal is to promote the internationalization of Spanish companies.

This shows once again how the insurance industry is not just limited to only offering solutions based on risk transfer, but also to supporting companies throughout the process of analysis and assessment, helping to design prevention and mitigation measures and ensuring companies take the best decisions to protect their interests. The role played by insurance companies as a travel companion throughout the risk management cycle is crucial in a continually evolving global environment, which is currently showing signs of moving toward protectionism and political extremes.
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A new threat to your company: Ransomware

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On 12 May 2017, a ransomware called Wannacry infected the IT system of companies in over 70 countries, affecting banks, hospitals, insurance companies, governmental organizations and top-level IT corporates worldwide, in what comes to be the largest cyber attack known to date.
WHAT IS RANSOMWARE AND WHY SHOULD I BE CONCERNED?

Last year, 2016, we saw Ransomware become the main threat to users, and this trend is continuing in 2017. Ransomware infections are reaching global pandemic rates, and rapid monetization of the attack and the resulting profitability suggest that the phenomenon will grow, becoming ever more difficult to combat, and that it will be aimed at higher-level profiles, even coming to affect large corporations and governments (as predicted by Mr. Robot).

But, what is Ransomware? How does it affect users? The explanation seems to go back almost to the beginnings of home computers: A virus that does not allow the user to access the system and/or its files and that – and here lies its main threat – asks us to pay an amount in exchange for access (hence the term “ransom”). The price for restoring access varies between 300 and 1500 euros, and payment does not always guarantee that it will be restored. The key to its success lies in the lower complexity needed to develop the infrastructure to start a campaign and the ease and speed of monetizing such attacks.

To understand the effects of this malware it is useful to understand its history. First, there were “lockers”. These were a type of virus that locked a user’s operating system or browser until the victim paid a ransom, using SMSs or transfers to electronic purses. In Spain, the “police virus“, which tricked users into thinking they had to pay a fine for some infraction they had committed, was well known. This type of virus took a big hit when the law on electronic payments was changed to make it very difficult to collect ransoms.

Then came the ciphers, which involved two basic and essential changes. Here, the proliferation of virtual currency (Bitcoin), allows payments to be made in a practically undetectable way, meaning the rules of the game change once again and a rise in scams of this type. In this case, instead of locking access to the computer, which could be solved by removing the virus or reinstalling the operating system, the malware encrypts all the private files on the computer. These are unique and cannot be recovered by reinstalling. If the ciphers are sufficiently robust it becomes technically impossible to recover the information without the criminals facilitating the operation.

Lastly, in 2014 the existence of a constantly growing number of “ciphers” started to be detected in mobile devices with Android operating systems. They operate in a very similar way to that described above, with the applications that perform this “hijack” encrypting images, videos, music, and documents in the device.

A figure indicative of the scale of the problem we are attempting to explain: the FBI estimates the losses caused by Ransomware in the first quarter of 2016 to be worth 206 million dollars.
HOW CAN RANSOMWARE ATTACK ME?

Once the threat to us as users, as well as the possible impact of being infected by a Ransomware virus, is understood, we must ask, how can we be infected?

Although there are many methods, and variants thereof, of infecting us, the main one is Trojans on malicious web pages or on legitimate web pages that have been compromised by criminals for the sole purpose of infecting their users. Anomalous behavior is often not detected nor does it affect our browsing experience; the virus simply installs itself in the background, going unnoticed by the user.

The second most widespread method of propagation is to send links in massive mails to compromised websites (spam), and even instant messaging, social networks, or sharing files on P2P networks (torrent, etc.).

Attacks targeting companies, although they are less common for users, include attacks aimed at servers exploiting known vulnerabilities in the remote desktop protocol (RDP) used by the systems administrators to access organizations’ servers.

Since we have talked about the growth of attacks detected on mobile devices, it is important to know how a virus can be introduced into our devices. The form is similar, based on deceptions published on malicious web pages causing the user to access copies of the Google Play Store with malicious content, where the user ends up installing a malicious application that executes the “hijack” of the device. Interestingly, many of these deceptions are based on making users believe they have a virus on their device and to access and download a supposed antivirus.
WHAT CAN I DO TO AVOID BECOMING INFECTED AND/OR MINIMIZE THE IMPACT?

Having understood how these types of programs work and the most common ways of being attacked, what should be done to prevent an attack?

- Making backups of our files regularly is definitely the most effective way of combating them. Unfortunately, in most cases affected files or computers cannot be recovered, so recovering through backups is almost always the only way possible.
- Use of antivirus systems in devices. As we have seen, one of the most common ways is to execute certain files on our computers. With a recognized, updated antivirus it will be easier to repel attacks.
- In order to reduce the chances of being attacked, both our equipment’s applications and operating system must be updated to the latest available version and have all the security patches installed. Web browsers (Chrome, Firefox, Internet Explorer, Safari, etc.) are especially important, because infections sometimes occur when browsing certain web pages (either because they have been created for this purpose or because they have been compromised previously).
- Use common sense and, as a general rule, do not trust strange or unknown websites, files or links. If for example, a link is sent to your email address regarding an order you do not expect, ignore it, or, in case of doubt, inform us before accessing it. Often, a simple Google search on the subject or body of the email message will be sufficient for us to find that what we thought to be legitimate is actually a threat.
- Having file extensions enabled can help us to identify better an attempted attack. If for example, we expect to receive an image in an email but we receive a compressed file (a “.zip” for example) this may indicate that something is wrong.
- If we suspect that a recently received file may be some kind of virus, the first thing we should do is disconnect the computer from the network. This will mitigate the risk, especially in business environments, of it extending to other computers in the network.

WHAT TO DO IN CASE OF INFECTION?
If, unfortunately, we have not been able to implement the controls mentioned, and infection occurs, what should we do? First, **it is recommended not to pay the ransom** asked for by the cybercriminals, since doing so does not guarantee that the files will be recovered and it foments this criminal practice. According to recent studies by the anti-virus company Kaspersky, one in three users pay the ransom for their files and approximately 20 percent fail to recover them. Instead, depending on the scale of the incident, it is recommended first to assess the possibility of informing the State Security Forces, especially if certain fundamental rights are considered to be violated or people’s safety is in any way jeopardized. In the particular case of public bodies and companies of strategic interest to the country, this communication should be channeled through the **National Cryptologic Center – CERT**, a public body reporting to the National Intelligence Center with a mission to ensure the security of information systems in public administration.

En este caso, la estrategia de recuperación debe de ser, primero la eliminación del archivo que produce el cifrado de los archivos en nuestro dispositivo y segundo la obtención de la clave, la llave, con la que han sido cifrados. Por suerte para nosotros, existen organismos y entidades privadas que trabajan activamente en esta tarea ofreciendo aplicaciones y recursos gratuitos que pueden servirnos para tal fin. Especialmente conocido en el mundo de la ciberseguridad es el proyecto “**No More Ransom**”, liderado por Europol y la unidad de crimen tecnológico de la policía holandesa junto con alguna de las empresas privadas más importantes del sector. A través de esta organización, se ofrecen un conjunto de herramientas gratuitas que permiten descifrar los archivos atacados por una gran mayoría de Ransomware, así como consejos o guías para abordar un incidente de esta naturaleza.

**IS THERE ANY WAY TO INSURE AGAINST POSSIBLE COMPUTER INCIDENTS?**

The increased incidence of new cyber threats has led to a proliferation of **insurance products** in our markets to provide cover to companies. A recent report from the PwC consultancy says that about 30 percent of American organizations currently have some form of coverage to protect themselves against the consequences of cyberattacks (mostly in the health, technology and retail sectors). In Spain the figure is lower, and currently it is only Ibex 35 companies that seem to be aware of the problem, about half of them already having, or being in the process of taking out, some kind of policy. It should be noted that policies of this kind are often not standardized, but individually adapted to allow the companies to customize the coverage to be applied, so they can choose the coverage most appropriate to the specific needs of their business.

Since cyber attacks often have a direct impact on company operations, cyber risk insurance should be prepared to cover potential financial losses, along with expenses related to forensic investigation or the process of communication to clients (it should be noted that the future European Union regulation 2016/679 will oblige companies to report security breaches and notify third parties of breaches of their data). Particularly in the case of Ransomware attacks, the main aspect distinguishing the type of policy to be applied from others is coverage related to extortion costs.
MAPFRE now offers a Cyber Risk Insurance to protect its clients, SMEs and self-employed, against this new type of threat:

- Image restoration costs.
- Fines and penalties as a result of the attack.
- Legal defense expenses.
- Theft of confidential information.
- Damage to IT systems.
- Financial losses due to business interruption.

You can get more information via the following link: [https://www.mapfre.es/seguros/empresas/seguros-de-responsabilidad-civil/seguro-ciberriesgos/](https://www.mapfre.es/seguros/empresas/seguros-de-responsabilidad-civil/seguro-ciberriesgos/)

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**RELATED BIBLIOGRAPHY**

Since Ransomware on mobile devices is one of the vectors in which growth is predicted to be exponential, if you are interested in learning about and exploring the world of cybersecurity on mobile devices, we recommend, as a basic bibliography, the book “Mobile Hacking” published by ANAYA, which looks at questions of this type. [http://www.anayamultimedia.es/libro.php?id=4312499](http://www.anayamultimedia.es/libro.php?id=4312499)
During Q4 2016 global activity continued its upward trend reporting quarterly growth in the neighborhood of 1%. Although there is a certain degree of disagreement between the surveys and the “hard” data, namely the Purchasing Managers Index (PMI) and the global production and trade figures (IP and WFI), anticipating a sound economic pulse during 1Q 2017 can be forecast.
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In annual terms, global growth throughout 2017 is expected to stand at around 3.1%. This represents a slight increase compared to the previous year, but is a long way off the figures reported before the global recession. The economic activity in 2017 will be largely sustained on better performance of developed markets, growth of China’s economy and is expected to be more resilient when compared to the figures initially reported for the emerging markets. Hence, it is estimated that this year the developed markets will grow by around 1.9% whereas the emerging markets will report growth of 4.6%.

In so far as the global insurance industry is concerned, an acceleration over the coming two years is expected (in line with the general forecasts for economic activity), with the emerging markets heading up this growth, which is in line with the positive relationship between the increase in global premiums and rising interest rates and inflation.

Although the global insurance business forecasts are for an upward trend, it has been confirmed that both Life insurance and Non-Life insurance performance will continue to be higher in emerging markets compared to developed economies, owing to the higher sensitivity to economic growth because of the existence of a significant gap in insurance protection.

**SECTOR OUTLOOK**

1. The economic environment and its impact on insurance demand: upgrading and forecasts
Several factors of a macroeconomic nature condition activity and the dynamics of the insurance industry. Hence, aspects such as the economic activity rate, the level and development of interest rates, the behavior of exchange rates and the degree of financial volatility all have an impact on the level of demand for insurance products, on the income and structure of costs, on the value of assets of the insurance industry, and on the capacity of managing these assets in relation to their liabilities. Even factors like the behavior and level of interest rates could have a determining impact on the viability of a certain part of the business model in Life insurance. This has been seen in those regions of the world, which have faced prolonged periods of low interest rates.

This highly conditioned insurance industry with respect to the main economic and financial variables, can be explained by the links that the insurance industry has on practically all areas of economic operation. Firstly, protection and risk compensation undertaken by the insurance sector, supports the operation of different sectors of the real economy (primary activities, industry and services), through a wide range of damage insurance and against liability. Similarly, insurance provides stability and continuity of the economic process against the occurrence of events of a catastrophic nature (characterized for being low frequency and high severity). This helps the economy to normalize operations in relatively short periods of time. Insurance also stimulates and enables multiple activities and trade transactions to be undertaken, both at domestic level and foreign trade level, through protection, provided by credit insurance. From the viewpoint of individuals and families, the insurance activity provides stability to personal and family income, through the protection and compensation offered by risk, life, accident, health home and motor insurance, among others (see Box 1.1-a).

Nevertheless, one of the basic functions of insurance in the economy concerns the savings-investment process. Essentially through life insurance with saving components, the insurance industry contributes to the creation of internal savings in the economy,
and with this, to the process of capital formation. In this sense, the insurance industry is one of the main institutional investors at global level. Through this function, it not only channels savings to financing productive activities, but also (through the characteristics of its business model and its implicit investment function), it provides the economic system with an element of countercyclical stabilization (see Box 1.1.1-b).
Apart from the function of risk compensation and dispersion performed by the insurance sector, which supports and boosts the operation of the real economy, the insurance sector undertakes a significant function in the financial circuit of transforming saving into investment.

The insurance sector is one of the main institutional investors at global level. By carrying out this function, in 2015 it contributed 22,838 billion dollars to support financing of productive activities at international level (see Graph R-1.1.1-a). Out of this total, 48.4% came from European insurance entities (30.2% considering the Eurozone only), 24.2% from insurance entities of the United States, 14.4% from Japanese entities and 8.6% from insurance entities operating in China.

Unlike what occurs with other institutional investors, it is important to highlight that the investment function made by the insurance sector has several significant characteristics:

1. Firstly, it is a stable flow of resources inasmuch as, owing to its business model, investment decisions of insurance entities follow the characteristics of their liabilities. This means that, it is a subsidiary and dependent function of the particularities of the liability driven structure, which is modified only in relatively long intervals.

2. Secondly, inasmuch as the major part of these investments sustain obligations of life insurance, it is the long-term investments (and in a high percentage of fixed income) that enable investment projects to be supported, which could find greater difficulties through traditional mechanisms of funding.

3. Thirdly, owing to the characteristics indicated above, investment flows from the insurance sector have the feature that they do not suffer significant variations in the lower part of the economic cycle, providing the economic system with a countercyclical stabilization element.
1.1 Global Markets

The moderate acceleration of global growth, with a contribution from emerging countries above the initially forecast figure, forms a favorable environment for the development of the insurance market at global level. In accordance with the basic scenario forecast in this report, it is estimated that premiums of the Life market segment in developed markets, could grow to an average of around 1.7% in 2017 and slightly fall to 1.4% in 2018, in nominal terms (see Graph 1.1.1-a).

On the other hand, it is forecast that nominal growth of Life business premia will be higher than in emerging markets, with rates varying in values of around 11.7% and 11.2% in 2017-2018 respectively (see Graph 1.1.1-b). These growth values amply surpass inflation forecasts, and are coherent with greater flexibility of insurance premiums, in view of growth in the income of emerging markets, in which the insurance protection gap is even wider.

With regard to the Non-Life market segment, in accordance with the central scenario of this report, the growth levels forecast for developed markets are around 4.9% in 2017, decreasing to 3.6% in 2018. In types of insurance, the motor business will grow by 1.4% in 2017, moderating its growth to 1.2% in 2018. Accident and health business will be positioned at rates of 3.7% in 2017, reducing to around 3.1% in 2018 (see Graph 1.1.1-c).

Following the same line as Life Insurance, improved behavior is expected in the Non-Life segment in emerging markets, with annual growth slightly above 9% in the 2017-2018 period. Rates in motor insurance are forecast for 13.4% and 14.1% during the same period, and 10.9% and 10.5% for the accident and health business (see Graph 1.1.1-d).
As can be seen from the previous analysis, improvements introduced in the pension model (see Box 1.1.1-c), together with a greater contribution to growth from emerging countries than initially foreseen, result in an upward revision of the estimates included in the previous report.

1.2 Eurozone

Improvement in expectations for the Eurozone, with growth forecasts in terms of the GDP of around 1.5% in 2017 and 2018, allow us to think of a more favorable environment for the development of the insurance sector. This is particularly true in the Non-Life and Life risk market segments, highly correlated with the economic cycle.

It is estimated that insurance premiums of the Non-Life sector could experience nominal growth of around 4.9% in 2017, decreasing to a rate of 3.7% in 2018. In motor insurance, growth would be placed at around 1.7% for 2017 and 2018, whilst in accident and health insurance, expected growth would be 3.3% in 2017 and 2.6% in 2018.

Likewise, the upturn of inflation in the Eurozone could lead to reconsidering the monetary policy of the ECB in the future. However, this is not expected to materialize before the end of 2018. Nevertheless, in the risk-free euro curves, calculated by the European Insurance Occupational Pensions Authority (EIOPA) for valuation purposes of the technical provisions, an increase in rates can be seen, compared to the minimum levels of July 2016 (see Graph 1.2 which shows the minimum, medium and maximum levels reached in 2016, along with the level of the last curve published by the EIOPA corresponding to 31 March 2017).

Graph 1.2.
Eurozone: risk-free interest rate curve (%)
As can be observed, the increase is greater in the long sections of the curve, around 50 bps in the ten-year interest rate, compared to the minimum level in the month of July. For longer sections, the increase is even higher, above 60 bps for maturities over seventeen years.

In spite of still being in an environment of low-interest rates, this increase in rates and the slope of the curve appear to indicate the start of a favorable period for the development of Life savings and annuity income products. In this sense, it is estimated that premiums of the Life business could grow to rates of 1.4 in 2017 and 1.3% in 2018.

Box 1.1.1-c: Premium growth forecast model: Methodological aspects

Construction of the database and dependent variables

As part of this report, an empirical model has been proposed of the estimate in premium growth of the insurance market, based on the macroeconomical theory of consumption and permanent income. For these purposes, annual data are collected of premiums per each main type of insurance (Life, Non-Life, Motor and Accidents and Health), to be used as endogenous variables. With regard to the sample period, the model addresses the period between 1980 and 2016, with forecasts for the 2017-2018 period. To record the short-term predictive capacity, quarterly data are used. To do this, the annual premiums of each class were calculated at a quarterly rate, using data interpolation (characterized by a seasonal pattern). Variables of premiums are processed in logarithms and transformed into the first differences to attain their seasonality. Likewise, to obtain premiums in regions, the median of premiums was used of countries corresponding to each region.

In order to construct a model with a high explanatory capacity, each insurance type has been analyzed by regions which are the main interest. On the one hand, developed markets which encompass a set of 14 countries: 8 of the European Union (Austria, France, Germany, Italy, Malta, the Netherlands, Portugal and Spain); 4 not belonging to the European Union (Australia, Canada, United Kingdom and Denmark), and the United States and Japan. And on the other hand, emerging markets, which encompass a set of 24 countries: 14 Latin American countries (Argentina, Brazil, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Dominican Republic, Uruguay and Venezuela), 5 from emerging Asia (China, Thailand, Philippines, Hong Kong, South Korea), 3 countries from emerging Europe (Russia, Poland and Turkey), and Saudi Arabia and South Africa.

Target of the model and explanatory variables

The macroeconomic background of the model is based on the analysis of the joint dynamics of variables linked to income and wealth, with consumption and saving. Hence, the model is able to observe the interrelation between insurance premiums and their GDP, risk aversion and risk premias or certain financial variables, associated to interest rates. The explanatory part of the model is thus composed of the following variables: GDP, interest rates, exchange rates, inflation, risk premias, employment, price of oil. It also includes dummy variables in the regression, in order to capture the incremental effect of belonging to one region or another. The analysis, for which the model uses as a base, is mainly focused on the dynamics between premiums and macroeconomic...
and financial variables. Information is also provided on the explanatory capacity of the premiums themselves.

For this purpose a Panel VAR (Vector Autoregression with Panel Data) model is used. Owing to the pursued target and to data obtained, an unbalanced panel data structure is applied with fixed effects. Firstly, the model is unbalanced, as not all regions can be observed in all the periods. Moreover, on seeking the individual effect of each region on the premiums, and considering that these individual effects are independent, the use of fixed effects appears trivial. However, beyond the methodology applied, the main justification of the model in panel data is to provide information on the different and temporary populations, meaning information on a joint dynamic of variables.

Lastly, the use of a Panel VAR gives the analysis a flexible, dynamic structure between macroeconomic variables. It also enables estimating the individual effect of each population. Other studies, such as the Xin Shen study (2015), provide the effect of household wealth on consumption and its impact in the short and long term.

### 1.3 Spain

Growth forecasts of the Spanish GDP in 2017 of around 2.5% (with a slight slowdown compared to 2016, when it was at 3.2%) lead us to think of a correlative moderation in the growth of Non-Life and Life risk market segments. However, the greatest dynamism perceived in the residential sector could offset the effect of moderation forecast in consumption. In this environment, it is estimated that Non-Life insurance premiums could experience nominal growth above the average forecast for countries of the Eurozone.

On the other hand, in spite of the improvement experienced in 2016, the persistence of low interest rates in the environment continues, weighing on the traditional Life savings and annuities market segment. However, the upward turn in risk-free interest rates in long terms of the curve (see Graph 1.2) may favor their marketing (in line with what occurred in 2016), helped by the zero profitability of deposits in credit institutions, which are still facing a marginal facility of negative deposits.

### 1.4 Turkey

Economic growth for Turkey in 2016 of 2.9%, continues a long way from its potential and the growth of 6% reached in 2015. Together with the deceleration forecast for 2017 (with values of around 2.3%), owing to less growth forecast in the domestic demand, this situation could limit the dynamics of growth in the insurance business in Non-Life and Life risk insurance types, if the high correlation with the economic cycle is considered.

Likewise, the high uncertainty owing to domestic and geopolitical tensions, is being transferred to a volatile and inverted interest rate curve (see Graph 1.4). This could hinder the development of Life savings and annuities business, in spite of risk-free rates still being positive in all sections of the curve. This volatility of interest rates increases the likelihood of increased surrenders. Similarly, the upturn of inflation, along with the deterioration of real salaries and its currency, could be a factor that undermines the suitable technical performance of the insurance business.
1.5 United States

In accordance with our previous report, in the United States, the growth expectations of the GDP of 1.6% materialized in 2016. Although with certain caution owing to the fact that expansive fiscal policies promised by the Trump Administration, were not fully specified, the growth forecast for 2017 is maintained at around 2.3%. This is a favorable environment for the development of the insurance sector in Non-Life and Life risk segments.

It is estimated that Non-Life business premiums could experience growth above 2.7% in the 2017-2018 period, although in an asymmetrical form for different insurance types. Thus, the forecast for the motor segment is that growth rates could moderate in 2017 and 2018, while the forecast growth for accident and health insurance would be 4.7% in 2017, to reach 5.1% in 2018.

Likewise, the materialization of gradual increases in long-term interest rates will favor the development of the Life saving and annuities insurance segment. This is because higher guaranteed rates can be offered, and the situation of entities in terms of appropriate matching of durations in portfolios can be improved. In risk-free interest rate curves for the United States dollar, calculated by the EIOPA (see Graph 1.5), the rise of rates compared to the level in 2016, can be observed. It is estimated that these increases could lead to growth in the Life business segment of around 1.2% in 2017 and 4.5% in 2018.
1.6 Brazil
A decrease of -3.6% in the Brazil economy is confirmed for 2016, with an estimate of 0.3% for 2017. Expansive fiscal and monetary policies could lead to a change of tendency and achieve positive growth rates in coming years, which would be favorable for the performance of the insurance sector. However, the environment is still complicated bearing in mind the weakness of the economic performance.

Interest rates are at values under the minimum rates of 2016 and continue to fall, with a flattening of the curve, which even has a slight negative slope in its long section (see Graph 1.6). This will create a complex environment for the development of Life saving and annuities products, in spite of the fact that rates continue to be positive at all points of the curve.

On the other hand, the expansive fiscal and monetary policies could lead to a deterioration of the real, with the consequential negative impact on the insurance business results, by transferring the impact to the costs structure. This situation could improve in the medium term, if forecasts are finally consolidated and later return to growth in 2018. However, there is still uncertainty in this sense.
1.7 Mexico

The weakness of the economic growth process foreseen for Mexico in 2017, along with the erosion of real income, owing to the the growth in inflation, forecasts a weak performance and growth of Non-Life and Life risk insurance types, although above the growth of the general economic activity.

The outlook for Life saving and annuities insurance could be favorable, given the forecast increases in the interest rates by the Central Bank, and the perspectives to sustain a restrictive monetary policy, which has raised the interest rates in the short section of the curve (see Graph 1.7). Nevertheless, the volatility observed continues to be high, which could also have an adverse effect on the indicated business. This is because similarly to other emerging economies, it hinders marketing of these products, and leads to potential risks of surrenders.
1.8 China

The forecast of a favorable economic environment in China is positive for the perspectives of its insurance sector. This is owing to its still reduced insurance penetration rate (inherent to emerging economies), which leads to greater flexibility in the growth of premiums in view of GDP growth.

It should be underlined that the Chinese government includes explicit targets for the insurance activity, to increase the penetration rate (premiums/GDP). Thus, the growth of economic activity in 2016 of 6.7%, together with growth expectations of around 6.3% in 2017, will form a favorable environment for the development of Non-Life and Life risk insurance segments, also considering that the weight of residential investment and in capital goods is significant in these growth expectations. However, the forecast of possible tightening of conditions to access home purchase, could also have a negative effect on the growth forecasts for the insurance sector.

In this sense, it is estimated that growth rates of the Non-Life insurance segment could have two-digit values during the 2017-2018 period. Motor insurance will experience growth of around 15.5%, while health and accident insurance could reach rates above 25% in the same period.

On the other hand, the forecast of implementing monetary policies by the central bank, in an attempt to avoid more depreciations of the currency, mark out a favorable outlook for Life saving and annuity insurance business.

In the EIOPA curves (see Graph 1.8) this effect can be observed, particularly in the long-term of the curve, with a rise in long-term interest rates and a curve that gains slope, which is positive for marketing Life saving and annuity products. In this way, it is estimated that the growth rates of Life business premiums during the 2017-2018 period, could reach values of almost 20%.
1.9 Reinsurance

In general terms, estimated data point towards an increase in the accident rate owing to catastrophic events. The economic damage of these events in 2016 exceeded by around 86% the figures for 2015, and in terms of insured damage, around 42%. This is the worst figure since 2012, which in any event was a period that reported low catastrophe rates. The insurance protection gap against this type of risk continues to be substantial and asymmetrical by different regions [1]. This upturn is expected to push reinsurance premiums upwards.

2. REGULATORY TRENDS

Global trends

At the beginning of March, the International Association of Insurance Supervisors (IAIS) launched a consultation to revise the core principles for the supervision of insurance, an integral part of the so-called “ComFrame”, for the supervision of Internationally Active Insurance Groups (IAIGs). Analysis for revision refers to some aspects regarding the introduction of principles, assessment methodology, system of governance, supervision, cooperation, measures to be adopted by supervisors and the resolution of these groups. The deadline to send comments ends on 1 June 2017.

On the other hand, the insurance project between the United States and the European Union on the so-called Cyber Risk should be highlighted. On 9 March 2017, an agreement was reached on the nomination of experts of both jurisdictions to discuss cybersecurity issues and the transatlantic coordination of this and other related matters. Participants included members of the European Commission, the National Association of Insurance Commissioners (NAIC), the Federal Insurance Office (FIO) of the...
Department of the Treasury, and the United States Federal Reserve Bank (FRB) [2].

**United States**

On 15 March 2017, the NAIC sent to the United States Department of the Treasury a letter indicating its position referring to the bilateral Agreement reached on 13 January, in terms of insurance and reinsurance with the European Union. Ratification is now pending from the United States Congress [3].

In its letter [4], the NAIC underlined the confusion, which it believes exists, regarding the nature of rights and obligations derived from the Agreement between the current government officials, who negotiated the Agreement at the time, regulators and the industry itself. For this reason, it presents a list of clarifications on the interpretation of the terms of the Agreement, in order for the Department of the Treasury to seek written confirmation from the European Union in this sense. It is understood that this clarification is required to assess whether the Agreement has been made in the best interest for the United States, and for its suitable implementation.

On the other hand, President Donald Trump remains firm in his promise to reform regulations that affect the financial sector, particularly the “Dodd- Frank Act”, in order to eliminate regulations considered inefficient. However, it is still early days to anticipate how these possible reforms are to be specified, and the effects they may eventually have on the financial sector, particularly on the insurance sector.

**European Union**

**European Supervisory Authorities**

On 21 March, the European Commission launched a public consultation [5] on the operation of the European Supervisory Authorities (EBA, ESMA and EIOPA). The aim was to identify areas which could be improved and reinforced, as they are an important element in the development and integration of financial markets of the European Union. This consultation is held in the context of a general revision planned by the Supervisory Authorities this year, as established in its founding rules. The deadline to send comments ends on 16 May 2017.

**Solvency II**

On 9 February 2017, the European Insurance and Occupational Pensions Authority (EIOPA) published the risks chart, to which it is understood that the insurance industry of the European Union (EU) is exposed [6]. Information was supplied on the solvency ratio of samples of insurance companies at individual and group level, together with their comparison with ratios presented under the previous system (see Graphs 2-a and 2-b).
On 5 April, the EIOPA published the methodology to derive the ultimate forward rate (UFR) for extrapolating risk-free interest rate curves, to be used in the valuation of technical provisions to determine the solvency ratio [7]. As a result of this new methodology, the UFR for the euro curve is decreased from 4.2% to 4.05% in 2018, with additional reductions in later years until reaching 3.65%, according to the value estimated by the EIOPA. Annual reductions may not be higher than 15 bps.

Lastly, it should be underlined, that the deadline ended on 3 March to send comments regarding the document for discussion on the reform of some specific elements of the standard formula. This was part of the process to draw-up technical advice, requested by the European Commission, which should be sent on 31 October. The EIOPA is now in the process of analyzing the comments received [8].

**Private pension funds**

The new revised text of the Directive of Institutions for Occupational Retirement Provision (IORP II) was published in the Official Journal of the European Union on 23 December 2016. This Directive pursues a minimum harmonization between different national legislations, regarding the regulation of pension funds linked to an occupational relation. It attempts to guarantee minimum levels regarding transparency, governance and risk management. This Directive should be transposed at the latest by 13 January 2019.

The EIOPA underlines the high level of heterogeneity of this type of fund in the European Union, and is developing various initiatives that may contribute to the efforts to reduce market fragmentation. In this sense, a survey is underway to collect the opinions of different significant stakeholders. The deadline ends on 4 April. The EIOPA also intends to launch the Pension Stress Test 2017 next May.

Lastly, it should be highlighted that the European Commission continues to work on a legislative proposal regarding an individual pan-European pension product, based on the technical advice given by the EIPOA in July 2016, and the public consultation undertaken by the Commission itself at the end of 2016. This was on the possible measures related to this type of instrument, to face demographic challenges, innovation and the development of markets, along with the mobility of funds at European Union level, among other aspects.

**Distribution of insurance**

On 1 February, the EIOPA published technical advice [9] sent to the European Commission, on possible delegated acts planned by the Directive [10] on the Distribution of Insurance. The purpose was to facilitate a common framework for better governance and supervision of processes concerning the launch and follow-up of products by insurance companies, focusing on consumer protection. It also draws-up legislative proposals regarding the distribution of investment products, based on insurance, management of conflicts of interests, incentives and suitability and adaptation of products acquired by insurance consumers.

At the beginning of February, the EIOPA sent to the European Commission its proposal of the Technical Implementation Standard [11] on the harmonized contents of the pre-contractual information document, which should be handed to Non-Life insurance consumers (Insurance Product Information Document, IPID). At the same time, work is continued by the member States regarding the transposition of the Insurance Distribution Directive, the deadline of which is 23 February 2018.

**Consumer protection**

On 23 March, the European Commission announced an Action Plan for consumers [12] to improve the
possibility of choice and access to financial products from the whole Union. This is a horizontal initiative focused on the use of digital instruments, which covers a wide range of financial products, such as bank accounts, car insurance and money transfers.

In relation to financial innovation and consumer protection, on 17 March 2017, the deadline ended to reply to the document drawn-up by the EBA-ESMA-EIOPA Joint Committee, on the use of “Big Data” by financial institutions, which has had reactions from financial institutions, supervisors and other stakeholders [13]. The Committee is now analyzing these answers.

[1] Swiss RE “Natural catastrophes and anthropogenic losses in 2016: a year of extensive damage”.
[4] Carta de la NAIC al Departamento del Tesoro
The Latin American insurance market in 2015

The report drafted by MAPFRE Economic Research deals, among other matters, with the main magnitudes and trends in Latin America and its insurance markets. It contains the total life and non-life rankings for each market, along with the main changes in regulations.

Life insurance recorded premium revenue of nearly $139,000 million in 2015, accounting for 2.86 percent of regional GDP.

The insurance protection gap (IPG), the difference between insurance coverage that is considered optimal for each economy and what it really has, has dropped in most Latin American countries in the last decade with respect to the size of its insurance markets.
The report, which analyzes the **development of the insurance industry since 2005** in the 18 Latin American countries, reveals that this gap in insurance coverage is closely related to **market growth**. Quantitatively, IPG is falling as the penetration index (premiums over gross domestic product) rises. Moreover, from a qualitative standpoint, it also tends to drop as markets become more sophisticated and mature. The insurance penetration index in the region (premiums over gross domestic product) rose to **2.86 percent** in 2015, which reflects a rise of 1.02 percentage points over the last ten years.

Generally speaking, the **sustained economic growth** of most markets in a low inflation context throughout the decade, the **increase in personal disposable income**, the **development of the financial systems**, the **improvements in the regulatory framework**, and the active policies geared toward boosting the financial culture, are factors that have contributed to insurance industry growth and to increasing insurance coverage in the region over the last decade (2005-2015).

Drafted by MAPFRE Economic Research, the report also calculates the **Market Development Index (MDI)** for each of the countries in the region. This indicator reflects the interaction of a group of factors that affect the conducting of insurance activities: the **penetration** index, the **depth** index (life insurance premiums over total market premiums), as well as the **magnitude of the IPG** at both general market and life insurance segment levels. According to the figures, since 2005, the MDI has grown by **51.3 percent** for the countries in the region as a whole, which attests to the progress and consolidation of the insurance industry in Latin America.

**Insurance will grow in most Latin American countries**

Despite the slowdown in some economies, the insurance industry in Latin America recorded **premium revenue of $138,700 million for 2015**. Based on International Monetary Fund (IMF) forecasts for the next three years, along with other economic variables, MAPFRE Economic Research has created growth estimate models for the insurance market in local currencies for each country in the region for 2016. **Growth** is expected in all of the countries, except for Ecuador, the economy of which will enter into recession over the next the three years according to IMF estimates.

For the insurance industry, growth level estimates are a valuable factor within the market infrastructure that can help both **business planning** and the **design of public policies**, which together facilitate and drive the development of this industry. Accordingly, MAPFRE Economic Research will be publishing these estimates regularly as an added tool to contribute effectively to the **conducting of insurance activities**.
BRAZIL

Responsible for 18.5% of the premiums issued and 15.6% of the results of MAPFRE S.A., MAPFRE BRAZIL is the main operation of the MAPFRE Group outside Spain. In 2016, the volume of premiums issued by that Regional Area totaled R$17.4 billion, with a net profit of R$546.6 million.

MAPFRE BRAZIL maintains multichannel participation in the segments of Insurance, Investment, Consortia, Capitalization, Social Security and Redeemable Life Insurance, Healthcare, Support and Research and Development, with business distributed in two different businesses.

MAPFRE BRAZIL IN NUMBERS

- **5 K** cities benefit from their services
- **12 MILL** insured cliente
- **6,928** collaborators
- **118** branches
- **20,898** brokers
- **7.1 %** market share
In the Insurance segment, it acts in partnership with the country’s main banking institution through the BANK OF BRAZIL AND MAPFRE INSURANCE GROUP, which guarantees it the distribution of insurance throughout Brazil from the thousands of agencies and banking points-of-service, in addition to brokers, branches and partners (retailers, dealers, financial institutions and cooperatives.

In the other segments, the Brazil Regional Area participates through MAPFRE, offering solutions in financial accumulation and services in the segments of Investment, Consortia, Capitalization, Social Security and Redeemable Life Insurance, and global support solutions, management of services and specialty risks for companies in the segments of insurance, finance, automobile, tourism and affinities. CESVI Brazil, the only research center in the automotive sector, has also been in the Region since 1994.

The size and importance of the Brazilian operation to the MAPFRE Group can be demonstrated with other significant numbers. In total, MAPFRE BRAZIL has 6,928 collaborators and a wide distribution network, made up of 28,184 points-of-service, which are 5,430 agencies, 1,738 electronic points-of-service, 838 loyal brokers (“Mais” (Plus) Brokers), 20,060 brokers and 118 branches, which make it possible to provide service to the more than 12 million policyholders throughout Brazil.

In the Insurance segment, MAPFRE BRAZIL holds 16.2% of market share, with a prominent position in the segments in which it participates:

With expertise in managing mutual funds that serve the private individual, legal and institutional segments, it showed growth of 38% in volume in 2016, closing the year with R$9.4 billion in assets under management. In the Social Security and Redeemable Life Insurance segment, it has 3.4 billion in managed assets; in Asistencia, it has 15,621 active service providers and 470 dedicated points-of-service for providing service to 40 corporate clients and 17.5 million beneficiaries with an 86% rate of satisfaction. In Healthcare, its operation is based on offering a new model of providing service focused on active participation in the daily life of beneficiaries, with an increase of 15,000 lives in the Healthcare portfolio and 35,000 lives in the dental plan in 2016.
Nowcasting Disaster Damage

From the “Friendship Paradox” to the Assessment of Hurricane Impact using Twitter data

MANUEL CEBRIÁN
Computational Social Scientist
The story behind this project started in 2010 when I was based at UC San Diego. These were the early days of research using social media datasets. UCSD was a fascinating place to start doing this type of work for a young scholar like me. James Fowler, one of the brightest minds in my field, computational social science, was based on campus. James and Nicholas Christakis—known as the dynamic duo who uncovered the link between obesity and social relationships—had published one of my favorite papers in the field. In it, they have shown that the Friendship Paradox—the phenomenon by which your friends have more friends that you do, first discovered by Scott Feld in 1991—could be used to detect flu outbreaks earlier than just by observing the general population.

I had been very interested in a while in testing out if this “Friendship Paradox,” in the new social structures afforded by digital social media. Esteban Moro was visiting UC San Diego for the summer (from UC3M, Spain), and together with another fellow Spaniard on campus, Manuel Garcia-Herranz (who was visiting from UAM, Spain), we started to scrap some Twitter data and test it out. The preliminary results were promising: yes, the friendship paradox held on Twitter as well. But so what, we also wondered? Is this just another version of the friendship paradox phenomenon on the Internet? We decided to take this to James and Nicholas. They suggested that in the same way that the flu spread from person to person on the Harvard Campus, information also spread online and that perhaps the friendship paradox could also be used to detect global contagion on the Internet. We set out to do look into it, and after a lot of work, we demonstrated that, yes, we could use Friends as Sensors to Detect Global/Scale Contagious Outbreaks, also on the Internet.

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Current methods for the detection of contagious outbreaks give contemporaneous information about the course of an epidemic at best. It is known that individuals near the center of a social network are likely to be infected sooner during the course of an outbreak, on average, than those at the periphery. Unfortunately, mapping a whole network to identify central individuals who might be monitored for infection is typically very difficult. We propose an alternative strategy that does not require ascertainment of global network structure, namely, simply monitoring the friends of randomly selected individuals. Such individuals are known to be more central. To evaluate whether such a friend group could indeed provide early detection, we studied a flu outbreak at Harvard College in late 2009. We followed 744 students who were either members of a group of randomly chosen individuals or a group of their friends. Based on clinical diagnoses, the progression of the epidemic in the friend group occurred 13.9 days (95% C.I. 9.9–16.6) in advance of the randomly chosen group (i.e., the population as a whole). The friend group also showed a significant lead time (p<0.05) on day 16 of the epidemic, a full 46 days before the peak in daily incidence in the population as a whole. This sensor method could provide significant additional time to react to epidemics in small or large populations under surveillance.

Christakis NA, Fowler JH (2010)
Social Network Sensors for Early Detection of Contagious Outbreaks.
PLoS ONE 5(9): e12948. doi:10.1371/ journal.pone.0012948

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Recent research has focused on the monitoring of global-scale online data for improved detection of epidemics, mood patterns, movements in the stock market political revolutions, boxoffice revenues, consumer behavior and many other important phenomena. However, privacy considerations and the sheer scale of data available online are quickly making global monitoring infeasible, and existing methods do not take full advantage of local network structure to identify critical nodes for monitoring. Here, we develop a model of the epidemic spread of information in a global scale, publicly articulated social network and show that a simple method can yield not just early detection, but warning of infectious outbreaks. In this approach, we randomly choose a small fraction of nodes in the network and then we randomly choose a friend of each node to include in a group for local monitoring. Using six months of data from most of the full Twittersphere, we show that this friend group is more central in the network and it helps us to detect viral outbreaks of the use of novel hashtags about 7 days earlier than we could with an equal sized randomly chosen group. Moreover, the method actually works better than expected due to network structure alone because highly central actors are both more active and exhibit increased diversity in the information they transmit to others. These results suggest that local monitoring is not just more efficient, but also more effective, and it may be applied to monitor contagious processes in global scale networks.


This finding generated a significant burst of academic research on online applications of the friendship paradox (by Kristina Lerman et al. at University of Southern California, by Kay Axhausen et al. at ETH Zurich, by Y. H. Eom et al. at the University of Toulouse). Their studies, like ours, showed that they were able to detect viral spreading the Internet, “informational spread,” but how about the real world? Could we use the friendship paradox to detect something happening in the physical sphere?

This quest restarted in 2012, when I was in my new post with NICTA (now Data61, after the merger of NICTA and CSIRO) the peak data science research body of Australia. I had joined Pascal Van Hentenryck (now at University of Michigan) who was an expert in real-time disaster management and mitigation. Pascal had recruited me to work together and explore if the real time information produced by social media was informative enough to improve the computational evacuation plans that he had been working on for years. As we were discussing this, Hurricane Sandy hit the US, and seeing the tremendous amount of devastation happening; we asked: could we use the friendship paradox again to detect early the destruction is going on the US East Coast? We embarked two talented postdoctoral associates in this mission: Caron Chen, a recent PhD in GIS, who set out to obtain as much data as possible from the Hurricane from Twitter; and Yury Kryvasheyeu, a recent PhD in Physics (Computational Modelling), who set out to see if the most connected individuals would ‘tweet’ earlier than the others as the Hurricane hit them. And, again, it worked, Social Network Sensors were able to deliver early warnings during Hurricane Hurricane Sandy:
By this time (2014-2015) it was well established that Twitter is a platform that is quite useful during natural and technological disasters. Researchers thoroughly studied the role of online services in facilitating the flow of emergency related information, detecting events online, and crowdsourcing relief efforts. Still, with rare exception (Guan and Chen, 2014, Using social media data to understand and assess disasters), most of the studies up to this point were information related and shaped the field of what is now called crisis informatics. Now, the next step was not only detecting information about the disaster but could we infer how much damage was happening to the geographical communities using just Twitter data? Our next move was a long shot, as we thought this would be beyond what could be extracted from Twitter. One thing is information, at which we know social media is good, but real world damage? That was a much higher level of impact, and we were not sure at all that the statistical links survive the noise present on Twitter.

So we set out on the course of analyzing the geospatial distribution of tweets during Superstorm Sandy. Yury’s preliminary results indicated that normalized online activity (political messages on the topic per capita) are in direct relationship with proximity to the disaster zone, with a sharp increase closer to the landfall location. This gave us hope that the driving force behind tweeting was a combination of factors that make tweeting relevant: how dangerous the event, how close it is, how obvious its manifestations (winds, storm surge, etc.) and how severe the consequences? We felt that the relationship between virtual activity and real life damage could be detected. Measures of real world damage are difficult to obtain. Fortunately for us, Yury Kryvasheyeu developed a relationship with local disaster damage, particularly Colleen O’Dea (from NJ Spotlight) who was incredibly helpful in providing advice on obtaining data for Hurricane Sandy damage from multiple agencies (FEMA, the New Jersey State Department of Banking and Insurance, and the New York State Department of Financial Services).

We decided to recruit some former teammates (Esteban Moro, James Fowler) to aid in assessing the statistical analyses, which we considered more severe than those in the previous papers. To crunch the data, James also brought on board a brilliant young climate scientist, Nick Obradovich, who was pursuing his Ph.D. at the Scripps Institution of Oceanography.

Having all the ingredients at hand, we compared two spatial distributions: the normalized online activity against per capita hurricane damage. And, proving our intuitive guess, the correlation was quite significant (Pearson’s correlation reaching 0.6). The results were nuanced for instance, postdisaster activity is more predictive of damage than the flurry of tweeting during the peak of the disaster. Also, a spatial resolution of the analysis affects the strength of the observed correlations. Finally, the methodology of damage assessment (what is taken into account) matters as well.FEMA individual grants are moderately correlated with online activity, but together with insurance data, the relationship is much stronger (suggesting that the more complete the picture of the monetary damage, the more stable relationship is). Importantly, we verified our findings for other events throughout the US and found similar result across spatial scales and types of threats: largescale storms and tornadoes, floods, mudslides, landslides, and earthquakes.

In summary, finer details aside, the major result is exciting virtually zero cost solution for “nowcasting” disaster damage! Not only that: our method could also help in the expost evaluation of the catastrophe, by matching official reports and predictive tools (based on, say, the hurricane path and fragility simulations) with social media data and assessing the impact, management, and effectiveness of the implemented measures during the disaster. By monitoring the Hurricane using social media, emergency managers can take action on those areas where social media displayed abnormally high activity. In some countries with less disaster preparedness, there is considerable interest in exploring the social media in emergency response. Our studies are positive steps in this direction: They indicate that social media captures some elements that are hard to obtain by traditional means.