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ESCUELA POLITECNICA SUPERIOR DE GANDIA

Grado en Gestión Turística

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# “Hedging options for the tourism sector”

**TRABAJO FINAL DE GRADO**

Autor/a:

**Lda. Mar Parra Carpi**

Tutor/a:

**Dr. Antonio Forés López**

**Dr. Oscar Carchano Alcina**

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Sincerely,

Mar Parra Carpi

# HEDGING OPTIONS FOR THE TOURISM SECTOR

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## **ABSTRACT**

Climate change and financial crisis are affecting in a critical way to tourism companies. Both variables have been proved to be so much volatile and are impacting negatively the economic sector profits, especially in the Spanish case. This put forward the need to take advantage of any financial instruments available in order to face their risks (some of the random) to survive to this environment. Some of the financial assets suitable for this aim can be short positions in stock, futures and options in companies that are related with the risk sector and are quoted on the stock market, in order to face a general economic crisis or to avoid loses produced by weather uncertainly.

In this paper, firstly, we are going to define the different business linked to the tourism sector in Spain. After that, we will put forward the specific risks and future costs that they have to deal with. Thirdly, we will show the different hedging options that financial markets offer in order to protect tourism related companies for some of those specific risks. Finally, we will carry out an empirical analysis where we will compare the evolution of the profits of some representative companies of the sector of both using and without using financial market hedging.

## **KEY WORDS**

Financial Crisis, Climate Change, Weather, Risks, Future, Hedging Options, Market

## **INTRODUCTION**

The tourist boom has had a significant but not wholly beneficial impact on the Spanish economy. Though it was a welcome source of foreign exchange as it created new employment opportunities, it has also diverted capital investment and construction efforts away from more steady economic activities to a sector subject to seasonal fluctuations, the whims of fashion and worldwide economic conditions.

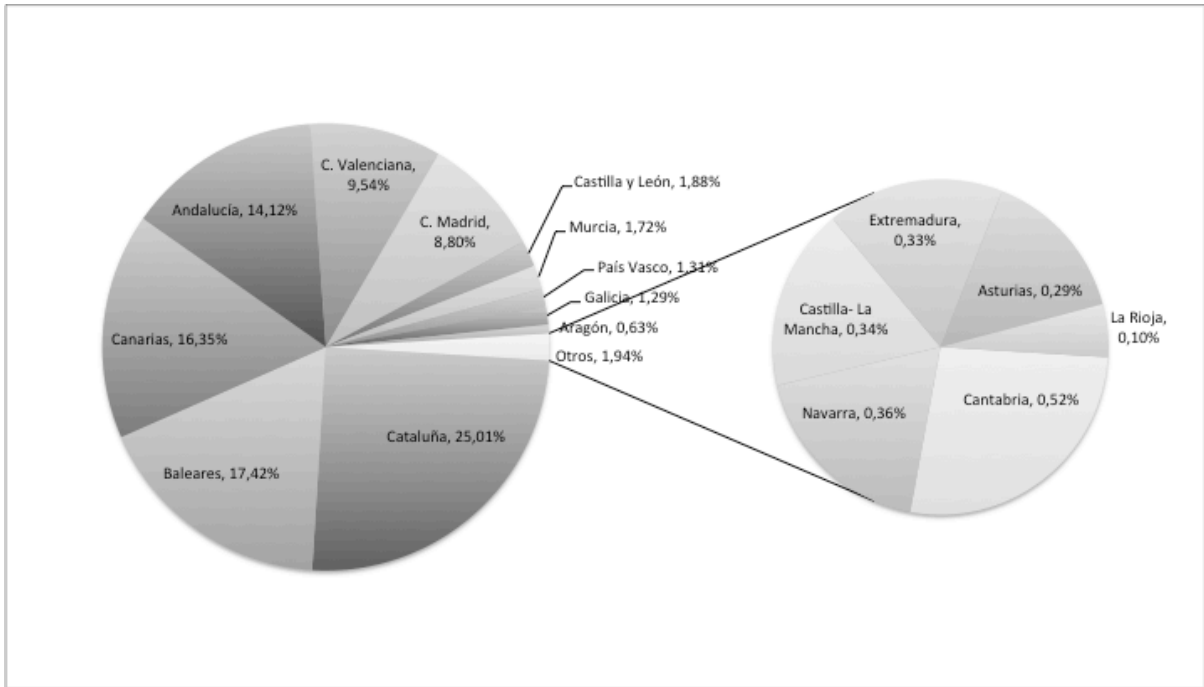
Nonetheless, the importance of tourism to the Spanish economy has always been substantial. According to the Spanish Tourism Satellite Account (TSA) it has been estimated that the weight of tourist activity in Spain (measured by final tourist demand) increased in 2010 its contribution to Gross Domestic Product (GDP) reaching 10.2%, three tenths more than in 2009. In the same year, the final tourist demand reached 106,735 million euros implying an interannual increase of 3.0% at current prices and 1.8% of real growth once deflated. However, the overall growth of the economy for

2010 was estimated at 0.3%. (INE. Press releases. Spanish Tourism Satellite Account. Base 2008. Series 2008-2010.)

Spain is one of the countries with the most important tourist industry in the world and every year it attracts around 50 million tourists from all over the globe, but the global economic crisis has had a negative impact on the tourism movement and has led to a considerable decline in the number of tourists during 2008 and 2009. The top 5 international tourism destinations in 2010 were France, United States, China, Spain and Italy, in that order. However, the order in terms of international tourism receipts is United States first, followed by Spain, France, China and finally, Italy. (UNWTO, May 2012; UNWTO, April 2011; UNWTO, June 2010).

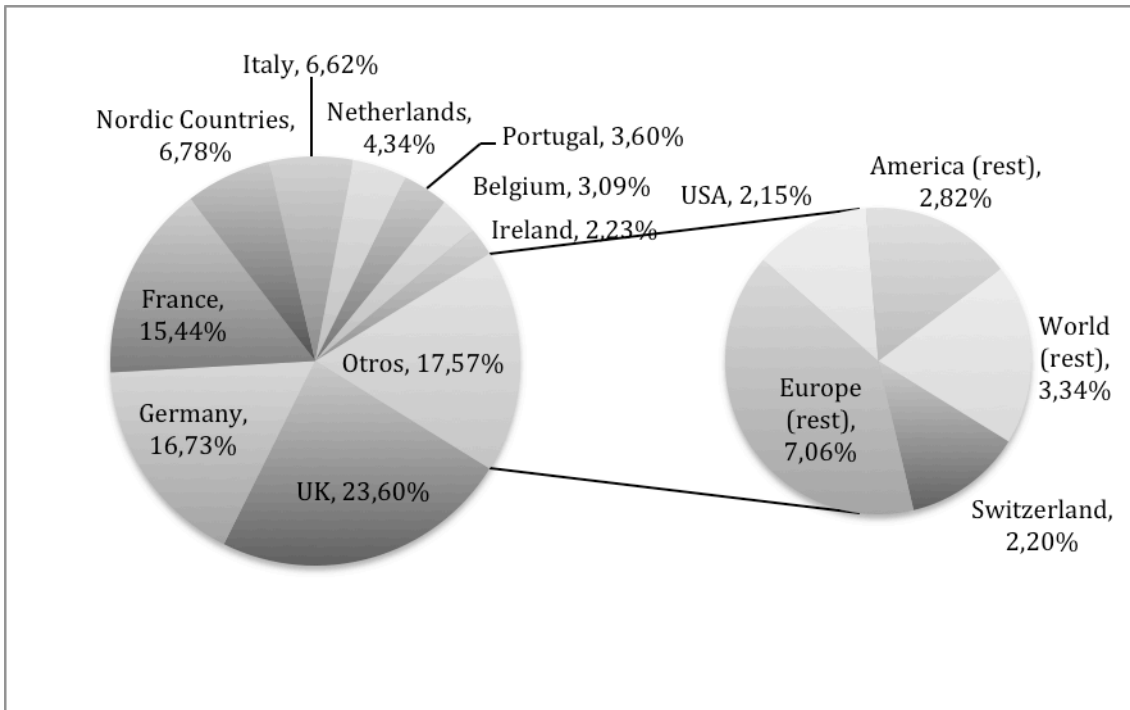
The most popular resort areas have been the Balearic Islands and the Mediterranean coastal areas. The differences in the seasonal pattern of the various autonomous regional governments are notable in the case of inbound tourism. Focusing the observation on the flow of tourists in the third quarter, most Spain Regions have increased their number during this period. The importance of this period varies from nearly 52% in the case of the Balearic Islands to 23.6% in the Canaries, though in both cases this importance has increased with respect to non-resident tourists flows occurred in 2010. Only the Valencian Community has reduced the number of non-resident tourists during the summer, while still maintaining a level of tourists in this period of nearly 38% the same as in Catalonia and Andalusia, that means that the third quarter concentrates over 35% of total arrivals throughout the year whereas the Community of Madrid has a moderate concentration in this period to levels below 30%.

In Figure 1, we can see how six autonomous communities, Catalonia, the Balearic Islands, Canary Islands, Andalusia, Valencia and Madrid, concentrate the greatest number of tourists. Catalonia is the most visited, with 13.2 million tourists. The degree of tourism specialization in the different Spanish regions is very uneven: 11 of the 17 regions do not exceed one million tourists, while the Community of Madrid, the least touristy of the first six, receives nearly 5 million tourists a year. (IET, Frontur).



**Figure 1. Spanish non-resident tourism destinations. 2010**

In figure 2, we can determine that of the 52.7 million tourists who visited Spain in 2010, more than half came from three source markets: UK, Germany and France. The UK was the most substantial, with 12.4 million tourists although it is Germany which has a higher average stay, 10.4 days. Both the U.S. and the rest of America characterized by a high average stay mainly due to the remoteness of these countries.

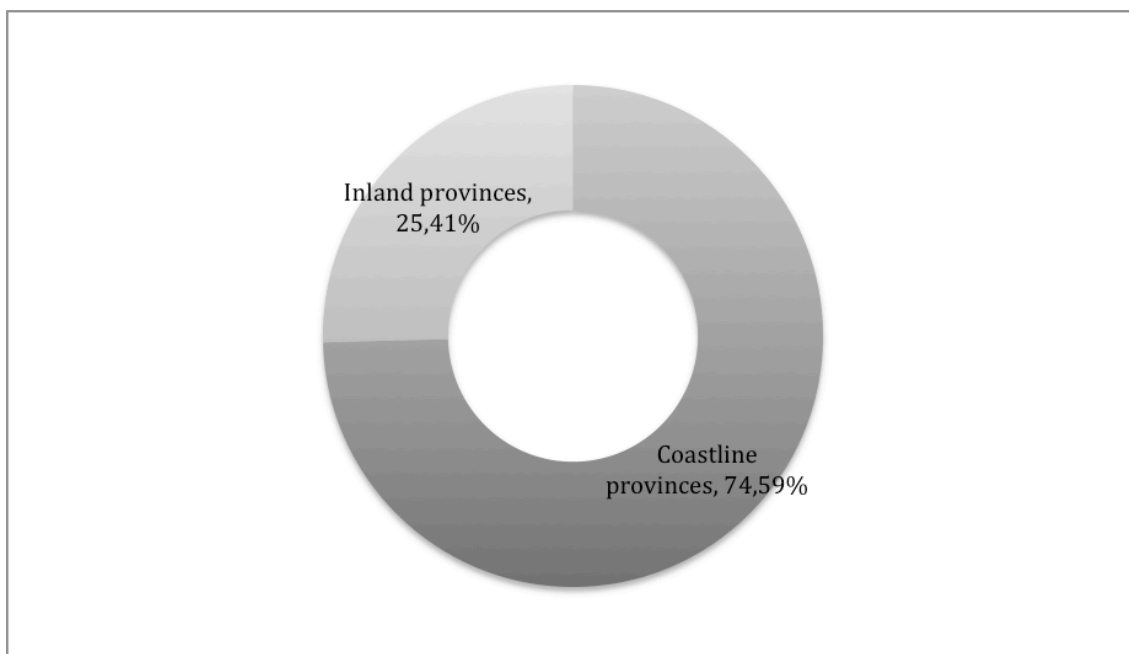


**Figure 2. Largest emitters of tourism to Spain**

If we separate the countries of origin for tourism in Spain between what comes from the Eurozone (countries with € as national currency) and the rest, we note that the first group represents approximately 65%, and almost half comes specifically from Germany and France, while the remaining 35% belongs to the second group, mainly from Britain (66%). This gives us an idea of the level of exposure that the foreign tourist arrival has to changes in the Euro, particularly against the pound sterling.

According to the figures of the World Tourism Organization, the top five biggest spenders on international tourism in 2010 were Germany, United States, (which has climbed to third place), UK (losing one position) and France. This ranking also reflects the emerging markets, especially the BRIC bloc (Brazil, Russia, India and China), which continues to escalate positions, with a growth well above the rest of the countries in terms of spending. Within this block, in the Spanish market Russia comes first, followed by Brazil, with an estimated 40% growth for 2011 (Frontur, 2011).

To know the importance of coastal versus inland tourism, we have performed a general division among provinces which are or not flanked by the coast. In broad terms, we have targeted these two sectors in order to find their own weight in both types of Spanish tourist markets.



**Figure 3: Travel destinations split by Spanish provinces. July, 2012. Based on INE**

The figure 3 shows the results obtained, where coastal provinces are Almería, Cádiz, Granada, Huelva, Málaga, Principado de Asturias, Islas Baleares, Las Palmas, Santa Cruz de Tenerife, Cantabria, Barcelona, Girona, Tarragona, Alicante, Castellón, Valencia, La Coruña, Pontevedra, Región de Murcia, Vizcaya, Ceuta and Melilla. On the other hand, the inland provinces are Córdoba, Jaén, Sevilla, Huesca, Teruel, Zaragoza, Ávila, Burgos, León, Palencia, Salamanca, Segovia, Soria, Valladolid, Zamora, Albacete, Ciudad Real, Cuenca, Guadalajara, Toledo, Lleida, Badajoz, Cáceres, Lugo, Orense, Comunidad de Madrid, Comunidad Foral de Navarra, Álava, Guipuzcoa, La Rioja.

This classification serves only as a reference because some of the provinces with coastal tourism swap it out towards the Inland Tourist Market.

According to the Institute of Tourism Studies, rural tourism in Spain represented 2.8% of GDP in 2007, according to the positions offered by 11% of rural settlements which means an occupancy rate by beds level of 15.1% on average in 2011. (Institute of Tourism Studies, April 2011, Alvaro Moreno, December 2010). (Institute of Community



Development, rural tourism Trends, 2012). Besides rural tourism represented 2.8% of GDP in 2007. (Institute of Community Development, rural tourism Trends, 2012). This would mean that the highest concentration of tourism is set in the coastal zone.

The vast majority (84.3%) of worldwide tourists' travels to Spain are for leisure. The same happens among Spanish residents, but to a lesser extent, due to the high weight that travelling for personal reasons has in this group, especially visits to relatives or friends. Nevertheless there has been a decline (6.8%) over the previous year which can be seen at its peak in the Community of Madrid which alone has absorbed the vast majority of this fall (81.9% of total). On the other hand, the markets that have contributed most to the overall decline in this group were, in order, Portugal, Germany and France.

Like most nations dependent on tourist trade, Spain has been concerned about the underutilization and sometimes overutilization of facilities caused by seasonal variation in weather. These variations have caused market differentials in monthly tourist revenues and international trade receipts. July and August have been the most active months whereas February was the least one, with an average temperature of 22.7, 23 and 9.8 degrees, respectively (AEMET). It must be taking into account that most of tourists come to our country because our climate, although in all Spanish regions does not reach as many people for the climate factor as reaches the coastal areas. Efforts have been made to develop winter sports facilities in order to increase the number of tourists visiting Spain during the colder months. However, the competition from France, Switzerland, and Austria, where snow conditions have always been more reliable, have constituted a huge obstacle to success in this area.

## **Competition**

Looking carefully at the balance sheets submitted by Tourspain in 2011, we have also outlined competition presenting new emerging tourist destinations that are directly affecting the Spanish tourism into these new markets. They are defined as Trend Index Tourism Competitiveness (ITCT). They take into account the evolution of the Spanish offer prices relative to other countries and the relative change of the nominal exchange rate to find the tourist when it comes to Spain.

The countries that have been considered are those which offer similar products such as sun and sand, and should be receiving tourists. Consequently they should be taken into much consideration and have a specific weight in the set of global arrivals.

Following IET balance April 2012, a subdivision into four geographical areas has been made:

- Southern Mediterranean: Turkey, Tunisia, Egypt and Morocco. Our competitiveness has improved gradually. Only it should be noted a worsening of Spain in 2004 and 2009.
- Northern Mediterranean: Croatia, Cyprus, Bulgaria, Greece and Italy. Spanish tourism competitiveness via prices over the northern Mediterranean countries selected barely improved in 2010 over the previous year.
- American Area: R. Dominican, Cuba, Mexico, Brazil and the U.S. In relation to all the countries of the ITCT American Area group shows the following trends: in 2004 Spanish tourism competitiveness worsens compared to the area, while the trend moved to improve in the following years, in 2009 and getting worse to improve in 2010. Besides, for these countries the weight of price variation has a significant influence exchange rate.
- Western Europe: Germany, UK, France and Portugal. Finally, the tourist competitiveness in Spain compared to Western Europe indicates some losses in 2004,

### **Forecasting the future for the tourism sector**

According Exceltur (report number 39 of January, 2012), the macroeconomic environment is subject to important risk factors because tourism in Spain is determined by the market crisis, as well as their relationship in the Euro area countries, plus new emerging destinations have resulted in new competitors such as North Africa, although for this specific case, it has produced in the last years a transfer of international tourists to our country due to the continuing political instability in North Africa.

The estimates presented by Exceltur earlier this year, foretell that the tourism GDP in Spain will maintain similar levels of activity to those recorded in 2011, which represent an increase of 0.2% of GDP. This estimate includes domestic market and abroad (the latter still influenced by competitors in North Africa), and in 2012 values will remain positive but significantly below the rates observed in 2011 records.

## **Implications of the increase in VAT**

Most tourist areas and inner cities, Green Spain and the tourist areas of the Mediterranean coast more dependent on domestic demand, continue the decline of their sales and corporate earnings in the second quarter of 2012

Based mainly on the expected weakness of the Spanish tourism consumption by the lower foreign demand momentum, we have reviewed the estimated variation of tourism GDP from -0.3% in 2012 presented in April to -0.6%. This is a revision of 0.3 additional points in a context of great uncertainty associated with the final normalization of the situation in Egypt in addition to measures that are implemented to solve the problems of the Euro area.

- If the Government implements the measure announced these days of peak season, where many of the last minute shopping are being decided, each point increase in VAT would be a maximum additional drop of -0.45 percentage points in GDP tourism. This means that, if finally the VAT on tourist services is raised in 2 points from 8% to 10%, the decline of tourism GDP in Spain in 2012 would rise to a maximum of -1.5% (this calculation does not include the additional effect from the rise in air taxes, effective July 1).

The increase in VAT would generate a fall in foreign exchange earnings from foreign tourism in Spain up to 674 million euros in 2012, so that tourism would fail to contribute with 2 points to cover the current account deficit of the balance in the Spanish payments (from 45% to 43%), aggravating therefore the funding needs problem of Spain with abroad.

## **CHAPTER 1: DIRECT PATTERNS IN TOURISM ECONOMY**

### 1.1. Statement of the Problem

Tourism is a complex activity with unique and defining features. This complexity makes it difficult to study and understand the changes taking place. Following the definition of the World Tourism Organization, tourism is "the activities carried out by people travelling to and staying outside their usual environment for leisure, business or other reasons for a period less than one year therefore not related to the exercise of a remunerated activity from within the destination". Thus, tourism is a unique activity on demand, as it relates to the consumption that takes place outside the usual environment in which a person lives and works. But it is also very particular from the perspective of supply since the providers of services to tourists vary depending on if they are directly linked with the tourism (such as hotels or restaurants), or not (pharmacies or libraries). That is why it is stated that tourism has a strategic importance for the economy at the destination.

The uniqueness of the tourist market is also related to marketing since, by definition, suppliers and consumers live in different places and hence increase the importance of the role of intermediaries (agencies and tour operators). Although it is also true that the technology has opened the possibility of the direct contact. And last but not least we need to mention that tourist markets cannot be understood apart from the touristic resources and landmarks at the destination point (monuments, museums, climate, beaches, ski slopes...).

Tourism is a product that is consumed at once. And yet it consists on a wide range of goods and services offered by different companies which are combined, in turn, with the tourism resources at the destination. Thus we speak of the dual nature of the tourism product, since it is of a heterogeneous set of goods and services. Tourists do not only consume characteristic products, but also its expense can include virtually all economic activities which sell goods and services to consumers.

The attraction of a tourist destination is related to two basic elements: tourism resources (climate, cultural heritage, rich landscape, tranquility) and tourism in the strict sense though in practice it is sometimes difficult to distinguish between both as the tourist facilities in itself can be a pull factor. The tourist offer would allow in itself resources to enjoy tourist attraction. This produces a particularity in tourism in terms of

markets and customer satisfaction, as some of the factors that drive consumption are free (climate, beaches, relax, walks). Thus, satisfaction of tourists will not rely solely on the companies providing services but also on exogenous and uncontrollable factors, such as the weather (Parra and Calero, 2006).

### 1.2. Economy and climatology

As discussed in the previous section, intrinsic elements that give value to the tourism product are closely related to political and economic variables in which it operates the tourists' own decision, related mainly to climatology.

Many tourism businesses are highly dependent on climatic variations such as rainfall, daily sunshine level, temperature or relative humidity, variables suitable for the development of tourist activities that nourish the product and directly related to climate change. An example that helps to understand this concept is the need to adequate sun and temperatures for "Sun and Beach" tourism or the temperatures and rainfall necessary to keep the snow cover on the ski slopes. These concepts do pose the question about how the climate change affects the existing tourism products or how the political-economic changes influence the tourism product. Many destinations, and thus, all the Spanish tourism market needs to know the possible risks that may result in a profit or loss of the offered product.

### 1.3. Objectives

The main objective of this research aims at identifying the different risks in the tourism industry, as well as which of them can be hedged with financial instruments and then analyze the latter.

To attain it we will consider as secondary the following objectives:

- Define the different businesses linked to the tourism sector in Spain
- Identify the specific risks and future costs that they will have to deal with
- Determine which risks can be hedged.
- Carry out an empirical analysis to see what would happen when we apply these tools: Hedging options for a hotel off the Mediterranean coast (i.e. Gandia beach).

#### 1.4. Research justification

Some of the financial assets suitable for this aim can be: short positions in stock, futures and/or options in companies that are related to the risk sector and are quoted on the stock market in order to face a general economic crisis (assets quoted in Madrid Stock Exchange and MEF), insurances covering natural disasters or specific risks linked to special events, long positions in European Union Allowances futures contracts (EUAs) to deal with the needs of “allowances” that permit companies to pollute to a certain level in the future (2003/87/CE Directive and 2004/101/CE Directive), or CME weather products (temperature based index futures and options listed on Chicago Mercantile Exchange) to manage weather uncertainty (for a comprehensive study about this topic for the Spanish case see Canales and Pardo 2011).

First, we are going to define the different businesses linked to the tourism sector in Spain. Second, we will specify necessary risks and future costs. Third, we will show the different hedging options that financial markets offer in order to protect tourism related to companies dealing with some of those specific risks. Finally, we will carry out an empirical analysis where we will compare the evolution of the profits of some representative companies either using or not financial market hedging.

Climate change and financial crisis are critically affecting tourism companies (see Moreno 2010). Both variables have proved to be very volatile, as they have impacted negatively upon the economic sector profits, especially in the Spanish case. This puts forward the need to take advantage of any available financial instruments in order to face risks (some of them random) to survive to this environment.

#### 1.5. Limitations

The limitations found in the realization of this project have been related to the diversity of articles that suggest different relationships in terms of economy-climate topics. We have interrelated two concepts in order to get the best coverage options which can encompass both concepts (economy/climate). On the other hand, not all the risks we find in the tourism market can be faced by financial assets.

## CHAPTER 2: THEORETICAL FRAMEWORK

### 2.1. Background Research

In Spain, the impact of climate change will affect unevenly the types of tourism and various tourism areas. We have a wide variety of resources, products and destinations that have a very pronounced relationship with climate. The areas associated with the coastal environment and the mountain environment have been identified as the most vulnerable, i.e. those related to the sun and beach tourism (SL Perchi-Nielsen, 2009) and snow tourism.

Some of the environmental risks that will directly affect tourism will be temperature increase and water scarcity. These factors show the heavy reliance that other economic sectors, such as agriculture, industry and services have on tourism. (L. Hein et al, 2009).

Risk Management in the Tourism Industry is not new, but it is only recently when it has shown to be more consistent with its importance, developing a set of actions by which the risks that may pose a danger to the company must be precisely identified and quantified as well as the measures they implement to minimize the possible impact on the business. (Impact of Climate Change for Tourism Spanish).

To address this issue many hotel establishments and tour operators try to manage the risk that may cause potential losses due to changes in the weather (Bank and Wiesner, 2010). Thus, managing weather derivatives may reduce uncertainty in the risk of sun and beach or even in the snow level to the ski slopes. An example is the use of derivatives by Chicago Mercantile Exchange (CME), which have temperature records in most of the world, i.e. the records it has of Rome and Barcelona, examples of Mediterranean climate. Thus the paper of P. Canales and A. Pardo, 2011 has used the derivatives market for the Valencian coast, as the correlation is positive. The derivatives used for this case have been the CDD index, HDD and CAT (Future Contracts and put options). Other authors H. S, Australia, ..... have attempted to identify temperature anomalies of UK in order to determine if the extent of the cost of protection may have been rising. The strategy, therefore, is to establish the economic consequences of movements in the GMT (Global Mean Temperature), which have been applied across the complete range of scales; that is, from the global economy down to the smallest company.

Another example of the use of derivatives of Chicago Mercantile Exchange has been used to make an estimate of rainfall in Montana in order to make an approximation of the thickness of snow cover for the ski slopes of Whitefish. (C-H Tang and S. Jang, 2010). The combination of the use of derivatives and insurance for medium / small tourism businesses could lower the risk in case of a bad tourist season, that is, the goal is to find the optimal hedge ratio, which minimizes cash flow volatility.

There are other derivatives that would also help the tourist market indices such as the price of oil that is applicable to air carriers, or the possibility to introduce a fee for tourist to mitigate pollution caused by them. (Offsetting carbon dioxide emission from tourism). Examples are carbon-based markets offsetting (Climate Care, Climate Protection Partnership, Business Enterprises for Sustainable Travel, Future Forests, 500 ppm, Trees for travellers, travel Emissions Biodiversity Exchange (EBEX21) .

But not just climate change has posed the greatest risk to the tourist business. Foreign exchange, sovereign risk or the international market crisis have created the necessity for a thorough study of the risks outstanding the tourism sector.

Finally, we should not leave aside the motivations that the tourist has to travel. For this reason, many stakeholders have made a detailed analysis of the deciding factor in the choice of destination by the tourist. (Summary Ipsos for the Europ Assistance Group, 2012).

### **Non-Stop Tourist Industry Modernization**

In recent years, our country has experienced a major economic and social transformation of economic growth, the level of income and employment, the result of a full incorporation into the global economy and the European area. Participation in the new global space of consumption and production has consequences for all sectors, but certainly its effects have proved particularly strong in tourism, an activity in which Spain has developed a successful model with undoubted contributions to the economy and social welfare.

Tourism is an activity directly embedded in the daily lives of many people, is a dynamic and ongoing process in which Spanish society as a whole is involved. Therefore, building a strategy for tourism, especially from the area of responsibility of the government, should not only be reduced to the creation of a competitive environment from the point of view of policy and services and infrastructure to encourage the creation of wealth but must also look for models in the medium and long term to enable



creative solutions related to social, economic, physical and environmental issues affecting the tourism sector and communities directly related to it.

The tourism industry must meet the challenges arising from the change that has taken place in the structure of production and cost in the country, overcome weaknesses generated in their own development and adapt to an extremely dynamic market environment. In short, the Spanish tourism industry must manage those changes that will allow continued growth in profitability and social value (Tourism 2020. Spanish Tourism Plan Horizon 2020) as well as face financial risks.

## 2.2. Theoretical Bases

Compelling evidence indicates that global climate has changed compared to the preindustrial era and it has been anticipated that the change will continue over the 21st century and beyond. The Intergovernmental Panel on Climate Change (IPCC) declared that 'warming of the climate system is unequivocal.' The global mean temperature increased approximately 0.76°C between 1850–1899 and 2001–2005 and the IPCC concluded that most of the observed increase in global average temperatures since mid- 20th century is 'very likely' (> 90% probability) the result of human activities that are increasing greenhouse gas concentrations in the atmosphere. Discernible human influences now also extend to other aspects of climate, including ocean warming, continental average temperatures, extreme temperatures and wind patterns. Widespread decreases in glaciers and ice caps and warming ocean surface temperature have contributed to a sea level rise of 1.8 mm per year from 1961 to 2003, and approximately 3.1 mm per year from 1993 to 2003. The biological response of ecosystems and individual species has been recorded on every continent.

The IPCC has projected that the pace of climate change is 'very likely' (> 90% probability) to accelerate with continued greenhouse gas (GHG) emissions at or above current rates, with the best estimate that globally averaged surface temperatures will rise by 1.8°C to 4.0°C by the end of the 21st century. Even if atmospheric concentrations of GHGs were stabilized at current levels, the Earth would continue to warm up as a result of past GHG emissions and the thermal inertia of the oceans. The biological response to this continued warming and sea level rise would continue for several centuries.

Future changes in temperatures and other important climate features will manifest themselves differently across the regions of the world. According to the IPCC, it is very likely that hot extremes, heat waves and heavy precipitation events will continue to become more frequent. It is possible that future tropical cyclones (typhoons and hurricanes) will become more intense, with larger peak wind speeds and more heavy precipitation associated with ongoing increases of tropical sea surface temperatures. There is less confidence in projections of a global decrease in numbers of tropical cyclones. The extension of the regions that will be primarily affected by these extreme events with major tourism destinations highlights the need for awareness and preparedness for natural hazards at the local level through systematic capacity building and strategies for disaster risk management. Extratropical storm tracks are expected to shift towards the poles, with consequent changes in wind, precipitation and temperature patterns, continuing the broad pattern of observed trends over the last half century. Observed decreases in snow cover are also predicted to continue. Some risks are managed by hedging options, future and insurance.

The environmental and economic risks of the magnitude of climate change foreseen for the 21st century are considerable and have featured prominently in recent international policy debates. The IPCC was positive about climate change impeding the ability of many nations to achieve sustainable development by mid-century.

The Stern Review on the Economics of Climate Change found that the costs of taking action to reduce GHG emissions now are much smaller than the costs of economic and social disruption from unmitigated climate change. Our lifestyles, economies, health and social wellbeing are all affected by climate change, and although the consequences of climate change will vary on a regional basis, all nations and economic sectors will have to contend with the challenges of climate change through adaptation and mitigation. Tourism is not an exception and in the decades ahead climate change will become an increasingly pivotal issue affecting tourism development and management (World Tourism Organization (UNWTO), the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), in order to provide background information for the Second International Conference on Climate Change and Tourism (Davos, Switzerland, 1-3 October 2007)).

### 2.3. Definition of Terms

In order to understand the content we are considering in the following study, some of the concepts which will be taken into account need extra explanation. The following sections describe two of the terms that give value to the project: climate change and economy.

#### **Concern about global warming**

As climate change is often a normal process in the history of The Earth, the current concern stems from the fact that for the first time climate change processes, regarded as natural, which in this case correspond to a period of warming, are being modified by human activity.

In particular to highlight the increase in emissions of greenhouse gases linked mainly to the burning of fossil fuels, coal, oil, gas from the start of the Industrial Revolution, is growing exponentially every year, adding to emissions from natural processes. (C. Quesada, 2011)

#### **Main effects of climate change. Rainfall and water supplies decrease.**

In Spain, the water problem is an economic problem of allocating water to the wrong activities. Actually, water scarcity in Spain is not due to a physical shortage but socially caused because the activities that consume more water, namely agricultural and tourist, have been located where there is greater physical scarcity of this valuable resource.

From the point of view of sustainability the real problem is that there are too many activities requiring water in areas where there isn't enough. In this sense, one should try to rationalize the use of water in our country, which means, in addition to being more efficient in all applications, transferring water to those economic activities that generate higher social, economic, and environmental welfare.

To end this problem once and for all we should realize that the reduced rainfall caused by climate change must change the valuation of water, as its importance far exceeds its value only as a productive factor. (Sanmartin E. Gonzalez, 2012).

#### **Policy Objectives on Climate Change**

The climate change policy focuses on two main objectives that have been marked internationally, the adjustment of already inevitable effects and mitigation of the causes that are unleashing them. It should be noted that climate change policies can only be accompanied by economic development policies, even though it is difficult for us to evaluate it in the middle of the difficulties caused by the crisis. Any global environmental policy has to do with the livelihood and welfare of thousands of people.

Furthermore, they must be comprehensive policies that not only touch on energy issues, the industrial model, but also the model of society, lifestyles... Still, the current management of the crisis is eroding the ability of political institutions (states, international organizations...) to arbitrate viable solutions and especially ensure policy performance. (J. Del Pino, 2011).

### **Natural disasters**

Other impacts are likely to include flash floods, heat stress following periods of extreme temperatures, and an increased incidence of forest fires. Forest fires constitute a serious problem within the area of the Mediterranean basin. The environmental consequences of these fires have compelled the governments of the Mediterranean coastal countries to make tremendous efforts towards fire prevention and control. The worst situation is precipitated by hot, dry and windy conditions, when fires become enormous and dangerous. In recent years following periods of extreme dryness, there has been a tendency for the annual number of forest fires to increase (LUCC, 1998). As a result, large areas of forest and parkland may be closed off to summer visitors. (D. Viner and M. Agnew, 1999). A clear example is fires produced in the summer of 2012.

### **Futures and Options hedging**

In order to cover potential financial risks there are instruments which allow us to get some assurance the product we market. We have focused our attention on future contracts and options, as they play a vital role in managing potential risks.

It should be noted that futures and options are financial instruments. Simply put, a future is a contract in which a party agrees to buy or sell something at a specified date and price. And option is a contract in which the writer (seller) grants the buyer the right to purchase (call options) or sell (put options) something at a specified price within a specified period of time (Fabozzi 1996; Hull 1993).

With the option we are transferring the risk of loss to another party while retaining our ability to continue to obtain the benefits, if favorable developments in the underlying asset price. For example, to acquire an option to purchase the holder is covered against future declines in the price of the underlying asset, while retaining the possibility of future profits from future rises in the price of the underlying asset. As mentioned above, it functions as an insurance policy. We pay a premium in exchange for covering a risk, if the risk event producer does not materialize, we would continue to enjoy the property insured, losing only the premium paid. In future contracts, this would mean that we would be transferring both our risk of loss, and the possibility of making profits. (M. Blanca Arroyo).

Actually, an option performs as an insurance contract, and could be of more interest to agents not directly related to the tourism industry. (J. I. González et Al. 1999)

### **Insurance**

A promise of compensation for specific potential future losses in exchange for a periodic payment. Insurance is designed to protect the financial well-being of an individual, company or other entity in the case of unexpected loss. Some forms of insurance are required by law, while others are optional. Agreeing to the terms of an insurance policy creates a contract between the insured and the insurer. In exchange for payments from the insured (called premiums), the insurer agrees to pay the policy holder a sum of money upon the occurrence of a specific event. In most cases, the policy holder pays part of the loss (called the deductible), and the insurer pays the rest.

#### 2.4. Types of tourism

This section describes the most important forms of tourism that can be found in Spain, introducing a definition of each. We use this information to identify the main risks that can see the practice of Spanish tourism. To do this, we have relied on the description by Vogueler y Hernández, 2000

### **Sun And Sand Tourism**

Conventional tourism is where tourists fully enjoy themselves in a different atmosphere. This kind of tourism is still by far the one, which produces the largest volume of visitors. The sun and sand product is a unique product of our urban and industrial society whose main features are among other large-scale tourism, concentrated from the point of view of supply and overcrowded from the point of view of demand. Conventional tourism is massive, consumerist and has a high impact on ecosystems and their host culture.

A new feature of the sun and sand tourism is that tourists need further diversification in the activities to be performed as well as extension of the offer in sports, cultural activities and adventure. Consequently the spots, which have not been enriched with this increase in competitive activities, will be penalized.

### **Resort**

A "Resort" is a place designed for tourism activities geared to relaxation and recreation, especially during holidays. A tourist resort is usually characterized by a wide range of activities, including those related to hotel industry (food, drink, accommodation), leisure, sport, entertainment and shopping.

The resort usually refers to two specific but similar locations:

- Cities where tourism on holidays represents the majority of local activity; they are not generally operated by a single company.
- Holiday sites, usually managed by a single company, which attempts to provide what most visitors want while there.

### **Fun and Entertainment Tourism. (Theme Parks And Recreation)**

The theme parks are large manufacturers of leisure. They are based on mobile attractions often installed in large areas outside the cities. They usually operate normally outdoors so it is understandable that they seek areas where the weather is favorable.

Parks generate direct and indirect employment, reduce seasonality and are an excellent attraction for tourists. They buy a single ticket which allows the use of any attraction. Besides, there are many other services to be paid separately inside the park. They include hotels, bars & restaurants, souvenir shops...

### **Contemplative Or Relaxing Tourism**

This type of tourism allows visitors the convenience of being able to relax and enjoy the atmosphere, to relieve stress, or just to enjoy their holiday or free time as well as the wonderful landscape that offers the place you have decided to visit.

### **Ecologic And Environmentally Friendly Tourism**

It is one of the most popular tourism in recent years. In it pure enjoyment comes from observing the landscape, flora and fauna and the environment. Besides, the tourist-prototype is usually concerned about the conservation of natural areas.

Nuclei receptors preferred by the visitor are those, which have hardly been modified and have a certain level of protection. Some examples are the National or Natural Parks.

In Spain there are four levels of protection according to the protected area, as mentioned in the Law 4/1989. These are parks, nature reserves, natural monuments and protected landscapes.

Within this tourist activity we find ecotourism defined as "tourism in the nature that promotes conservation and efforts for sustainable development" (Booquién, ecotourism department Director of the World Union for Nature, WWF)

**Ecotourism** is a new conservative movement based on the tourist trade, defined as responsible traveling that conserves the environment and sustains the well-being of the local community. It is accompanied by ethical codes and a huge group of international travelers, students, scholars and government support of some industrialized countries. This ecotourism can be mountain (sports / rural), green (with scientific interest), river...

### **Rural Tourism**

Rural tourism can be defined as the kind of tourism that develops in small towns inland in which the most important economic activity is agriculture, forestry or livestock. Namely, what rural tourism seeks is meeting the traditional county lifestyle.

It has remarkable similarities to environmental tourism therefore it is sometimes difficult to make a radical distinction between the two types of tourism.

The development of rural tourism in economically depressed areas allows an additional income different from farming activities, which is usually their livelihood.

In addition, it helps to environmental conservation aims and prevent the depopulation of rural areas.

By its very nature, it seems that this type of tourism doesn't produce high revenues for these locations. As a matter of fact, they are usually families or youths (group of friends, clubs), with reduced spending per person and day. Their stay is usually not long, limited to weekends, short breaks and more rarely longer periods. Indeed, in these areas there are no additional travel services where tourists can make a big expense.

For the tourist, this means a chance to get in touch with nature even in the case of areas under intensive production processes, to know the traits of the activity in situ, to bike or horse ride, to eat fresh and healthy products, ... Some subdivisions of this type of tourism is the agricultural tourism and the rural residential tourism.

### **Active Tourism**

This kind of tourism is the traveler who stops being a mere spectator in the places he visits and participates in the experience becoming the protagonist. Among the activities included, sporting or performing adventure tourism stand out.

Adventure travel requires a degree of specialization by the demands of tourists in their personal safety, quality of equipment needed to perform their activities, in their food quality, excellence of natural scenery as they await adventure .

Within the active tourism can be found:

- Adventure Tourism.

- Skiing and other snow sports.
- The Golf.
- Swimming, water skiing, sailing and motor.
- The Equestrian.
- Hunting and fishing.

#### Adventure tourism

Many of them have appeared recently, some are sometimes real extreme sports. They are among others ballooning (balloons), climbing and rappelling, hang gliding or paragliding, parasailing, windsurfing, bungee jumping, rafting, trekking, hiking, orienteering, caving,...

#### Ski

This classification includes the ski resorts, which have become much like the sun and beach facilities, where overcrowding has reached its finest. The ski facilities comprise a set of usually private hotels, restaurants, shops of all kinds and the infrastructure needed for skiing.

#### Golf

Always practiced on golf courses, which require expensive investment for both conditioning the field to perform the activity and the establishment of restaurants, hotels, gardens and other facilities. This tourist is usually wealthy mainly belonging to sport clubs. Golf courses are generally included in resorts. They often require abundant water, being a scarce resource in Spain.

#### Water sports

They are mainly sailing, water skiing and diving. The infrastructure for these sports is obviously the marina.

#### Hunting and fishing

Seasonal Tourism, usually high-end conditioned by the closed season.



## **Cultural Tourism**

It consists of tourism programs for participants interested in learning the customs of a particular town or region. It's the kind of tourism made up of people who move in order to educate themselves and broaden their personal horizons through participation in events or visits of high cultural value. All those trips are made with the desire to get in contact with other cultures and learn more about their identity.

They can be classified according to their likes:

- Historic
  - Artistic monumental
  - architectural
  - exhibitions
- Ethnic Folklore
  - Customs and Traditions
- Religious: tourism closely linked to religious places or events of significance with the intention of making a pilgrimage. Religious tourism cores have hotels, restaurants, shopping places... as the pilgrim / tourist behaves as a visitor, with the difference that its ultimate goal is to attend a religious celebration.
- Learning purposes
- From unique events
- Playful / festive
- Literary
- Gourmet.

This kind of tourism usually develops in cities since they offer most of the cultural attractions: museums, festivals, shows, theaters and monuments.

## **Business Tourism**

We refer to business activities, which include conducting lucrative contracts, efforts before administrative agencies, meetings, attendance at such conferences and similar events.

The customer is characterized by belonging to high-level and files an inverted seasonality, since these particular activities may encounter many difficulties to be performed in summer. It is essentially an urban tourism. It usually occurs in large cities that have large administrative, financial and commercial centers.

Business tourism requires accurate and adequate infrastructure facilities and so there are many city hotels that specialize in this type of customers providing all the necessary information and personnel. We can divide this section into:

- Conventions and conferences: Meetings of professional workers, generally organized by companies, to place either commercial or marketing issues in common. Attendants tend to be of various nationalities using mostly cities as host places.

Today, tourist trips and conventions related to national and international conferences are a significant part of the tourism sector. These events require a large network of tourism and hotel contracting, travel, fun activities for companion...

- Incentive trips and familiarization: The Society of Incentive Travel Executives (SITE) defines incentive travel as a means used by the management of modern enterprises to improve efficiency, motivate employees, vendors, consumer representatives or rewarding them with trips. They normally travel in medium-high level groups, in which specialized travel agencies services are used.

### **Tourism For Learning Purposes**

It is a type of tourism closely linked to cultural tourism. Usually refers to the exchange of students among different schools with the intention of learning a new culture and language. Today's experience is highly valued among young students.

In addition to student exchanges there are scientists or professionals travelling to study certain sites, an example of it are expeditionary trips.

### **Health Tourism**

It consists of tourism programs and activities to enhance or balance the physical and spiritual conditions of an individual or group of people.

Among them we can find the thermal tourism or specific treatments. In recent years, doctors have done a renovation of both spas and clinics, adding to its offer products like beauty care, weight loss, stress or sleep treatments, ...

Along with clinics and spas independent hotels, restaurants and other services can be found.

In spas it should be noted that water must emerge having a distinctive composition of minerals dragging inside the earth at a certain temperature. This water is used to cure among others, dermatological, rheumatic, gynecological ailments.

## **Other Kinds Of Tourism**

We can include here visiting casinos, nightclubs, arcades... these nuclei have lots of fun and game rooms which are damaging some tourist sites. An example is the tourism festival "Lloret de Mar and Salou".

### 2.5. Types of Risks

Mainly, Tourist patterns that are perceived as more sensitive and vulnerable to the phenomenon are tourism of snow and tourism of nature. Cultural tourism is seen as a form of shelter and the sun and beach tourism is torn between the benefit that may involve lengthening the season due to changes occurring in the passing from one season to another and the damage which may involve, for some of the respondents, the increase of temperatures in the summer heat wave .

We must understand the definition of risk as the probability of an event to happen, with an adverse impact or effect. It can be understood also as the measure of the likelihood and magnitude of adverse impacts, with the result of the danger, and is related to the frequency with which the event occurs. It is the measure of economic potential loss or damage in terms of the probability of occurrence of an unwanted event along with the magnitude of the impact. (COVENIN 2270:1995).In the table we have displayed the main risks that may affect the practice of tourism and we have included and defined them as:

- **Economy:** In our classification we have bonded economic and financial risk since the types of assets that a company owns and the products or services offered play an important role in servicing its debt.

This financial risk is understood as the uncertainty produced in the ROI due to changes in the economic situation of the sector in which it operates. Thus, by way of example, the risk can come from:

- The management policy of the company,
- The policy of distributing products or services,
- The emergence of new competitors,
- The change in summer tastes.

Financial risk refers to the uncertainties arising from financial operations derived from volatile financial markets and credit. Some financial risks are: credit risk, market risk, liquidity risk, interest rate risk, country risk, sovereign risk, transparency, operational risks, legal Risk, Risk Model. (Rubén Hernández, 2012)

Other concepts introduced in the economy section are due to cause / effect:

- Trendy / Fashionable: Some tourist destinations offer a complete cycle of their product, so they must renew part of tourist destinations to avoid becoming outmoded.
  - Cheaper destinations: These destinations may appear as a result of the previous section
  - Seasonal variation: it will directly affect the economic risks to perceive less revenue than during low season. With climate change these seasonal variations may be affected, such as the high season of sun and sand can change from summer to the spring or even October.
- **Weather:** Climate change is a major global environmental problem humanity faces at the moment. Among many other effects, global warming, extreme weather events multiply-floods and droughts, heat waves and cold, exacerbates desertification and erosion and is a widespread loss of biodiversity. We have taken into account the concepts of:
- Global warming
  - Temperature
  - Precipitation
  - Natural disasters

Then we introduced a dummy table with the main risks considered important in the analysis of the study.(Table 2).

		Risk type							
		Economy			Weather				
		Financial and economic	Trendy/fashionable	Seasonal variation	Global Warming	Temperature	Precipitation	Natural disasters	
Leisure	Break	Sun and sand	Yes	Yes	Yes	Yes	Yes	Yes	
		Contemplative	Yes	Yes	Yes	Yes	Yes	Yes	
		Interior Resorts	Yes	Yes	No	No	No	No	
	Rural and Natural	Rural farm	Yes	Yes	Yes	Yes	Yes	Yes	
		Active in nature	Yes	Yes	Yes	Yes	Yes	Yes	
		Ecotourism	Yes	Yes	No	Yes	Yes	Yes	
		Rest in nature	No	Yes	Yes	Yes	Yes	Yes	
	Cultural	Special Events	Yes	No	No	No	Yes	Yes	
		Understanding	Yes	No	No	No	Yes	Yes	
		Gourmet	Yes	Yes	Yes	No	No	Yes	
		Enology places	Yes	No	Yes	Yes	Yes	Yes	
	Sport	Hunting-risk/fishing	Yes	No	Yes	Yes	Yes	Yes	
		Adventure Sports (skiing, trekking, climbing,...)	Yes	Yes	Yes	Yes	Yes	Yes	
		Golf,...	Yes	No	Yes	Yes	Yes	Yes	
	Diversion	Disco, pub	Yes	Yes	No	No	No	Yes	
Party		Yes	No	No	No	No	No		
Special Occasion (honeymoon, anniversary...)		Yes	Yes	No	No	No	No		
Work	Business	Meetings and conventions business	Yes	No	No	No	No	Yes	
		Meetings inter-business	Yes	No	No	No	No	No	
		Business trips	Yes	Yes	No	Yes	Yes	Yes	
	Studies	Academic Exchange	Yes	Yes	No	No	No	Yes	
Health	Medical	Thermal	Yes	No	No	Yes	No	Yes	
		Treatment	Yes	No	No	No	No	No	

The different hazards in the Spanish Tourism Market are shown in Table 2

## **CHAPTER 3: HEDGING OPTIONS FOR A HOTEL OFF THE MEDITERRANEAN COAST (I.E. GANDIA BEACH).**

Most firms have to deal with the variability of their revenues. This is so as a stable cash flow permits the firm to increase its debt, improve its investment policies and make the firm stronger against unexpected events in the future. In the tourism sector it is harder to obtain this stability because of both the seasonal nature of the incomes and the large number of risks affecting them, as it has already been mentioned in the risk section. The main aim of this survey is first of all to use all the financial instruments to help these firms to obtain a more stable cash flow and secondly, to try to explain how they can be used for that purpose in a particular case. We are going to deal with this issue from the point of view of any hotel off the Mediterranean coast, for example, on Gandia Beach (Valencia, Spain).

### 3.1. Hedging the crisis in a country and/or in the tourism sector

Depending on the risk, one and/or another financial instrument may be used. We are going to explain how a firm can use them and the results of it.

To begin with we are going to analyze how to deal with the economic crisis. The main instrument to start with is the use of the derivative markets and the different instruments they offer (ETFs, CFDs, futures and options, all of them referenced in specific stocks or in general indices). Derivative is secure as its price is derived from one or more underlying assets. They are generally used as an instrument to hedge risk, but they can also be used for speculative purposes. The main feature that can be helpful to our objective is the ability to obtain incomes when the underlying asset is falling. It is then said that a short position is taken, namely the one resulting in a positive economic exposure to a fall of price.

First of all, we are going to identify which underlying assets traded in the financial markets can be of our interest. IBEX 35 is the main benchmark developed by the Spanish stock exchanges and Spanish Markets (BME). It consists of the 35 most liquid companies listed on the Electronic Quotation System (SIBE)<sup>1</sup>. It is considered the main advanced indicator of the evolution in the economy for the next six months/one year in Spain. An important drawdown of the index is forecasting a fall of the economic activity for that period. As we will see, there are some financial instruments which allow an investor to take profit of this negative evolution of the index and, what is more

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<sup>1</sup> As a curiosity, since January 2<sup>nd</sup>, 2012, the IBEX 35 trades temporarily 36 values.

important, to compensate the expected negative general evolution of the economy as well as how it will affect the firm accounts.

In the financial markets we can also observe shares specially related to the tourist trade. Nowadays, Amadeus is quoted inside the IBEX 35. The Amadeus IT Group, a.k.a. Amadeus, is usually known as a provider of technology solutions for the travel industry. The main source of business is the Amadeus travel reservation system. It specializes in creating solutions for airlines, trains, cruises, rental cars, hotels and travel bookings. The Global Distribution System (GDS) Amadeus has the world's largest distribution network and the reservations made through the Amadeus system are larger than through any other booking system.

Moreover, we can also find in Madrid stock exchange continuous market two quoted firms linked to the tourism business, NH Hoteles and Sol Meliá. NH Hoteles is one of the largest Spanish hotel chains, and the third in Europe in the category of business hotels. NH currently works with 400 hotels with over 60,000 rooms in 26 countries in Europe, America and Africa. It has a workforce of 20,000 employees. NH Hoteles has 173 hotels in Spain and 3 in the Valencian region. On the other hand, Meliá Hotels International Inc. is a Spanish hotel company based on the island of Mallorca. In 2010 it had a market share of approximately 23 million visitors and over 36,000 employees. It has been a pioneer in implementing modern management systems, reaching in 2009 a network of more than 350 hotels in 30 countries. Sol Meliá has 179 hotels in Spain and 22 in the Valencian region.

On the other hand, we must take into account from which country the main profits come. As the reports for the Spanish tourism sector point out, the largest number of our clients are not only Spaniards, but also Germans, English and French. All these countries have a general futures contract representing their economies. In the case of Germany, it is the DAX 30 futures contract, FTSE 100 futures contract for UK, and finally, the CAC 40 futures contract for France. They work exactly the same way as the IBEX 35 for Spain in their respective countries. Strong falls in the indexes from those countries are forecasting problems in their economies, and that will affect any tourism firm if an important mass of clients comes from there. All these futures contracts have a high level of volume and liquidity, and nowadays it can be traded almost by any broker.

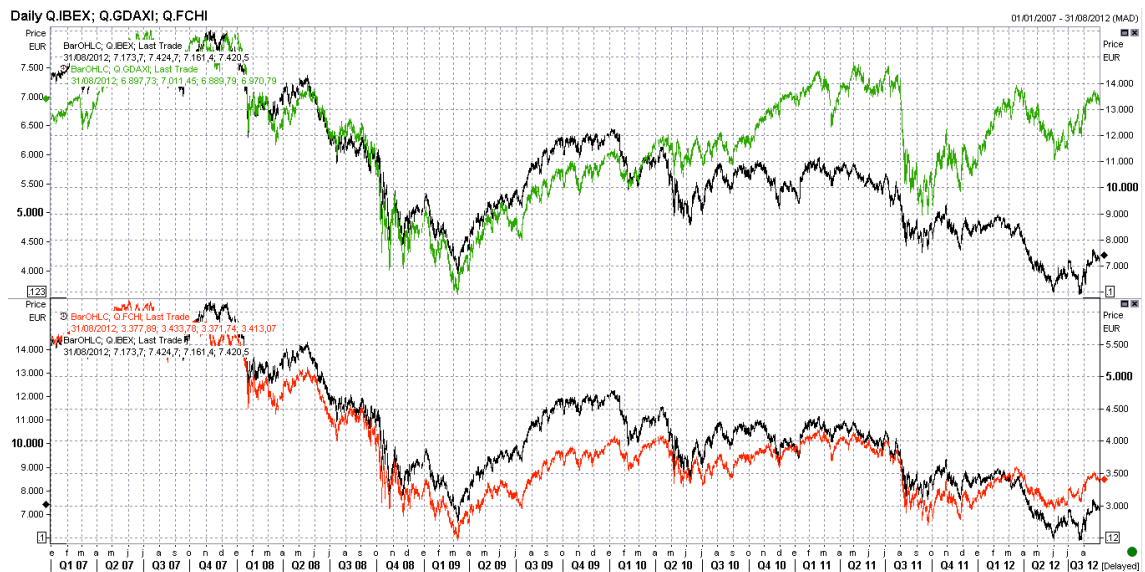


Figure 4. Top: IBEX 35 vs DAX 30. Bottom: IBEX 35 vs CAC 40. Period comprised between January 1<sup>st</sup>, 2007 and August 31<sup>st</sup>, 2012.

In Figure 4, we have compared firstly the evolution of IBEX 35 vs DAX 30, and secondly the evolution of the IBEX 35 vs CAC 40. As we can observe in the graph, the impact of the crisis in the first stage was very similar in the Eurozone countries. But, in a second stage we can notice that the least affected economy has been Germany, followed by France and finally by Spain, which has been the most affected one.

If what we want to cover a general crisis as this one, using related IBEX 35 derivatives can be a good option. If we take a closer look at the tourist industry, our case study, it seems that Sol Meliá is the firm most related to our sector, with a strong presence in the Valencian Region. However, not only the relationship between the businesses that we want to cover and the underlying asset used are important, but also the different financial instruments which are available in order to achieve our goal. Moreover, we are also interested in the level of liquidity of the asset, because it is vital that when the firm wants to close its derivative contract, it gets firstly a counterpart and secondly a good price. Missing any of them can get the firm into serious trouble.



In Table 2, we are going to determine the different derivatives linked to a variety of underlying assets that can help to cover the risk of a downfall in the economy.

	Futures	L	Options	L	ETFs	L	CFDs	L	Warrants	L
<b>IBEX 35</b>	Yes*	H	Yes*	H	Yes*	H	Yes*	H	Yes*	H
<b>DAX 30</b>	Yes	H	Yes	H	Yes	H	Yes	H	Yes	H
<b>CAC 40</b>	Yes	H	Yes	H	Yes	H	Yes	H	Yes	H
<b>FTSE 100</b>	Yes	H	Yes	H	Yes	H	Yes	H	Yes	H
<b>Amadeus</b>	No	-	Yes*	L	No	-	Yes*	M	Yes*	H
<b>NH Hoteles</b>	Yes*	L	Yes*	L	No	-	Yes*	M	Yes*	H
<b>Sol Meliá</b>	No	-	No	-	No	-	Yes*	M	No	-

Table 2. Top: derivatives contracts and the level of Liquidity (L) – H equals High, M equals medium, and L equals Low. Left: Underlying assets. \* With the last communication of the CNMV, it has been banned temporarily (3 months) to take net short positions on stocks admitted for trading in a Spanish regulated market.

In Table 2 we notice the different underlying assets that can be useful to cover economic problems in general and in the tourism sector in particular. We can also see how the most related to our hotel assets have a lower number of derivatives which can be used to hedge risk as well as a lower level of liquidity. Then, the preferred underlying assets would be IBEX 35 and NH Hoteles.

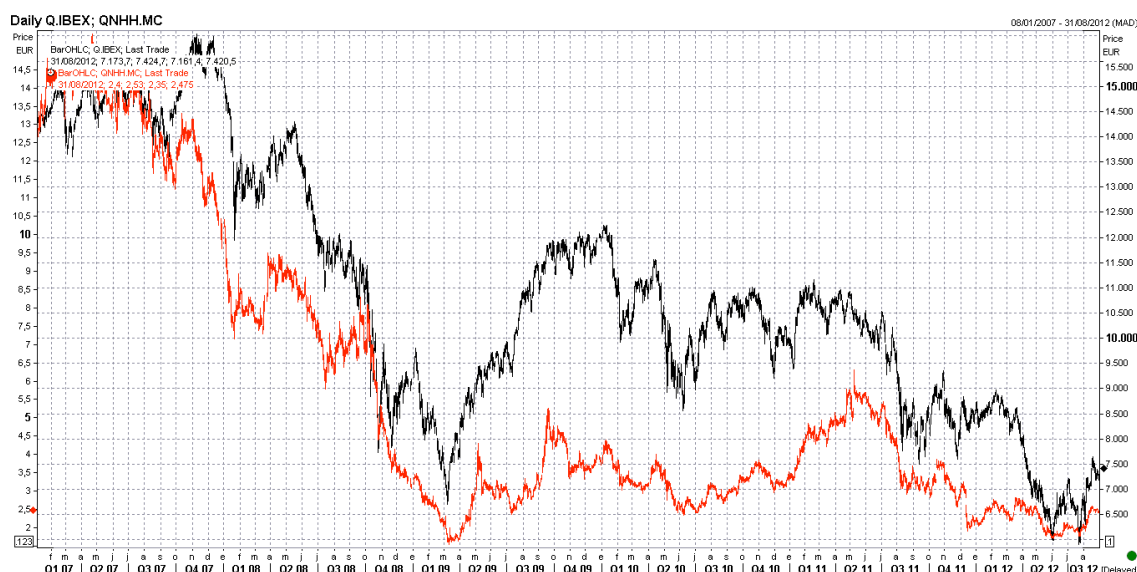


Figure 5. IBEX 35 vs NH Hoteles. Period comprised between January 1, 2007 and August 31, 2012.

In Figures 5, we observe a similar pattern of evolution of IBEX 35 and NH Hoteles over the last years, although it is also true that the crisis has affected more the stock than the index. If you finally cover the risk with the index, then it could be a good idea to increase a little bit our positions, in order to cover this extra fall of the stock.

On the other hand, if a negative evolution of the economy is expected, our options to cover this risk as a tourism related firm are the following strategies:

- Take short positions in IBEX 35/NH Hoteles futures contracts.
- Buy IBEX 35/NH Hoteles put options.
- Sell IBEX 35/NH Hoteles call options.
- Buy IBEX 35 inverse ETF.
- Take short positions in IBEX 35/NH Hoteles CFDs.
- Buy IBEX35/NH Hoteles warrant puts.

All of these strategies will produce a positive exposure to the price fall of the underlying asset.

It is important to notice the impact of the last communication of the Spanish Securities and Exchange Commission (CNMV with the Spanish acronym): "...because the period of extreme volatility..., it might affect to the normal development of financial activity... In order to ensure financial stability... CNMV has agreed to ban... any transactions which might constitute or increase a net short position on stocks admitted to trade in a Spanish regulated market for which CNMV is the competent authority...". This will last 3 months, and it does not affect the previous short positions that have been taken. In other words, with the increase of the volatility we would be able to construct our hedging portfolio, but if we would close it at any moment during these months, we wouldn't be allowed to construct it again. We would have to wait until October 23rd, 2012.

The main provider of futures and options over Spanish firms and indexes is MEFF. These contracts allow taking short positions on a particular underlying asset, but the contract has a maturity. It also implies a high leverage of around 10 times. Depending on the underlying asset it will be more or less liquid, as we have observed in the previous table. Although there are market makers providing liquidity, the bid-ask spread is usually high (they sell you at high prices and buy you at low prices). The profit/loss is applied daily.

Your broker is usually going to be behind the CFDs (Contract For Difference). It replicates one stock or index, but it also allows taking short positions on it. Moreover, it does not have maturity, it is leveraged of 10 times, and its liquidity is the same as the stock. The liquidity of the CFD will depend on the liquidity of the stock. Its costs will imply not only a round trip fee (for buying and selling or the contrary), but also an interest if buy the CFD. It must be noticed that the buyer of the CFD has the rights over the stock, namely as dividends. The profit/loss is applied daily.

The case of the ETF (Exchange Traded Fund) is very similar to the CFD, with the difference that it is only replicating indexes. In this case, you can buy the ETF or Inversed ETF over an index, taking long or short positions on the index, respectively. Another difference is that the fees are normally included in the bid-ask spread (bid: the first price that you can sell the asset; ask: the first price at which you can buy the asset).

Nowadays, the main provider of warrants in Europe is Société Générale, though most of the big banks provide their own warrants for the different assets. It works in the same way as the options but the provider is the only one that can sell warrants. Therefore, the strategy of “selling warrant call/put” is not possible. Moreover, the provider must give the buyer a counterpart at good prices at any moment of time, which gives the warrants high liquidity. That is compensated as they are more expensive than the same option quoted in MEFF (around 20% more expensive).

### 3.2. Hedging evolution of the Euro

As we have been analyzing in a previous section, the positive evolution of the Euro will affect the demand of European goods, including tourism related goods services. With the increase of the value of the Euro, Europeans and non-European citizens could choose non-European destinations, such as North Africa, UK or USA, before European ones, like France or Spain, because a rise of the Euro value would imply a relatively higher cost of the European goods and services compared to the non-European ones.

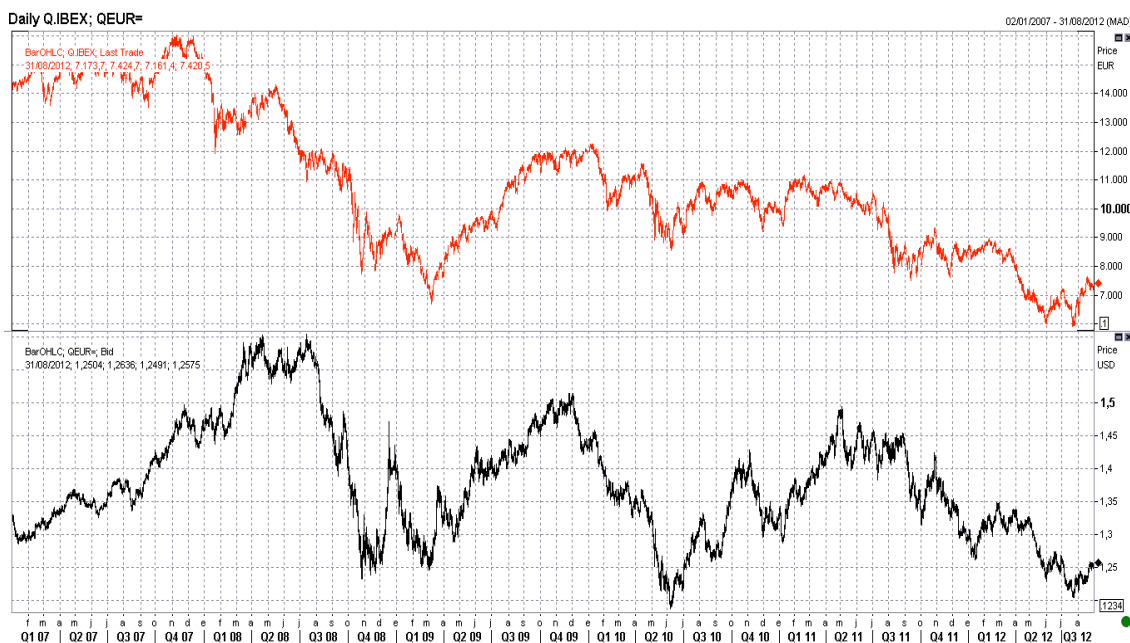


Figure 6. IBEX 35 vs Euro\_Dollar. Period from January 1, 2007 until August 31, 2012.

On the other hand, in Figure 6, we have compared the evolution of the Euro and the IBEX 35 during the period comprised between January 1<sup>st</sup>, 2007 and August 31<sup>st</sup>, 2012. It can be observed that when the economy falls, the Euro follows. It implies that in periods of crisis, although a lower level of demand comes from a lower level of European wealth (the main clients), Spaniards, Germans and French prefer to travel to European countries because of the increase in prices in the rest of the countries. However non-European, mainly British citizens prefer to travel to European countries because it is cheaper for them derived from the increase in value of their own currency.



Figure 7. Euro\_Pound. Period from January 1, 2007 until August 31, 2012.

As we see in Figure 7, we have moved from the almost parity between Euro and Pound at the end of 2008, to a 1 Euro = 0.80 Pounds at the moment. That means that the Euro has become weaker compared to the Pound during the crisis, and therefore, the Spanish tourist industry has increased its competitiveness.

There is a trade-off between lower classes of European tourists and a higher level of competitiveness in European products and services derived from the loss of value of the Euro. Therefore we believe that it must not be the main risk to be covered, though it is also true that it could be a useful instrument in the case that one or several non-European tourism destinations were a big threat to our tourism sector, and, in particular to our hotel.

There are several derivative contracts that can be used to cover a problematic increase of the value of the Euro. We have futures, options and CFDs. The strategies that would be helpful to our main objective (to cover the increase of the Euro value because it implies a lower level of competitiveness) would be:

- Take long positions in futures over Euro-Dollar/ Euro-Pound.
- Buy call options of Euro-Dollar/ Euro-Pound.
- Sell put options of Euro-Dollar/ Euro-Pound.
- Take long positions in CFDs over Euro-Dollar/ Euro-Pound.

Taking positions over Euro-Dollar or Euro-Pound would depend on the degree of exposition of the tourism firm to English clients.

### 3.3. Evolution of the interest rates

Whenever a firm has loans or debts that have adjustable rates, an increase on the interest rates will imply higher financial costs (it will affect in the same way all kinds of companies and sectors). These debts are usually linked to the evolution of the Euribor plus a premium measured in basic points. This risk can be covered using interest rates insurances. This policy function is to cover the volatility of the interest rate variable. The derivatives used for that aim are Swaps and CAPs. The strategies used to cover increments of interest rates are:

- To enter in a Swap as a fix payer.
- To contract a CAP.

As a fix payer in a swap of interest rates, the risk of rising interest rates is covered. It sets a fixed amount and a fixed rate (the value for which we do not want our interest to rise, and therefore, our financial costs); if interest rates decrease, the fix payer bears the cost of the difference, but if interest rates increase the variable payer pays the difference. Basically, what the swap does is to convert the loan or debt with adjustable rates into a fixed rate.

Contracting a CAP implies to agree to a maximum interest rate paying a premium, so that it protects the firm when the interest rate rises above the originally agreed one. If interest increases above the agreed maximum then a financial institution assumes the difference. It allows the debtor to obtain the benefits from a fall of the interest rates with the derived lower financial costs (it works like an option or warrant).

### 3.4. Covering the increase of the cost of reducing CO2 emissions

In order to achieve the reduction objectives for greenhouse gases emissions, the European Union decided that a big part of that reduction would have to be directly assumed by the companies of the most polluting sectors. Since 2005, the companies of these sectors, included in the 2003/87/CE Directive, have received entitlements to emit one tonne of carbon dioxide equivalent gas each year, which is denominated European Union Allowances (EUAs). At the end of the period of control, the firms covered by the environmental regulations have to give a sufficient number of allowances to cover their verified real emissions. If these companies emit more CO2 than the allowances they

own, they will have to go to the European Union Emission Trading Scheme (EU ETS) and buy the difference. The sectors included in the 2003/87/CE Directive are: energy (electricity, co-generation), refining petroleum, iron and steel industry, mineral products, cement, lime, glass, ceramics (roofing tiles, bricks, floor tiles, etc.), cardboard, pulp and paper. (Medina and Pardo, 2012).

In July 2008, the European Parliament decided to include the aviation sector in the EU ETS. The calculation of Brussels is that airlines should reduce their emissions by 3% of CO<sub>2</sub> into the atmosphere by 2012, relative to the average of the years 2004-2006, and 5% in 2013. The first year of the new airline will get 85% of the allowances applying for free, and the remaining 15% will be awarded by auction. It affects all flights within Europe, as well as those entering or leaving the European airspace.

At the end of each compliance year each operator in the EU ETS must surrender enough allowances to cover all its emissions, otherwise heavy fines will be imposed. This operation will cost European airlines about 4,800 million per year, but this is far less ambitious than the original which suggested they should pay up to 25% of their allowances. That means that the expected cost of the air companies is going to increase during the following years (included of course, the low cost companies).

Although this policy is not directly affecting the tourism related firms at the moment, it is going to affect them indirectly. In Spain around 10% of tourism that comes by plane makes up around 90% of the receipts. Air companies affected by this policy will partially translate the costs to the final clients. One way to hold the final cost to the client is to cover that expected increase using the correspondent EUAs.

It is important to highlight that not only the polluting companies participate in the EU ETS, but also external agents can trade in it. Therefore, they can be also used for risk management purposes. There are futures and options linked to EUAs available for the Aviation Sector. If the air companies pollute more than expected, they will have to buy more EUAs, which will increase their price. It can be proved that there is a positive correlation between stock indexes and EUAs (Medina and Pardo, 2012). With the economic growth firms pollute more and the price of EUAs increases because it is foreboded that more firms will need to buy more EUAs. In the same way, the economic crisis implies a reduction on the economic activity at all levels. The less the companies pollute the bigger the reduction in EUAs will be.

Cost is expected to be higher for higher level of profits, and lower for lower profit. If the main target of the tourism business is to obtain a more stable cash flow, then there is no need to trade with EUAs futures and/or option contracts, or at least, it is not considered the main priority.

As before, the strategies to cover possible increments of the cost at the airlines companies, and the impact over the tourist clients are:

- Take long positions in futures over EUAs futures for the aviation sector.
- Buy call options over EUAs futures for the aviation sector.
- Sell put options over EUAs futures for the aviation sector.

### 3.5. Hedging changes in the temperature

With the climate change, extreme variations in the temperature are more possible than ever. Temperature is one of the main determinants for tourists to visit and stay in a particular region. But, if the temperature is not as expected, they can decide to stay at home or visit another place with a more suitable temperature. Therefore, changes in the temperature in the wrong direction (i.e. high temperatures in ski resorts, low temperatures at the beach) may produce a negative effect on tourist industry incomes.

Canales and Pardo (2011) study the impact climate change has on the tourism demand at the Costa de Valencia (Spain) destination, whose main attraction is mild temperatures. Analyzing the weather data from 1937-2009, it is seen a slow but steady increase in temperatures and a higher frequency of extreme weather events. The effects of temperature on tourism have also been studied and proved that the number of both resident and non-resident tourists is positively related to temperature. Furthermore, the number of stays of residents does not change in cold months but it increases in hot months, and the number of stays of non-residents decreases in cold months but it does not change in hot months.

At the end of the paper, based on the results obtained, the authors proposed some alternatives that allow sun and sand destinations manage their weather-related risk. The alternatives we discuss are based on weather derivatives that can be traded on both over-the-counter markets and/or standardized derivatives markets, such as the Chicago Mercantile Exchange exposure (CME). CME weather products are



temperature based index futures and options that are geared to seasonal and monthly weather in different cities in the world. Among the list of European cities, there are only two Mediterranean cities: Rome and Barcelona. Moreover, it can be proved that the cross correlation coefficients between the monthly weather indices at Barcelona airport and Valencia airport are higher than 97%. Therefore, lodging establishments located on the Costa de Valencia destination could use Barcelona weather derivatives with a small tracking error.

Specifically, CME weather products quantify weather in terms of degrees above or below monthly or seasonal average temperatures. There are quoted three monthly weather indices derived from the daily average temperature: the heating degree-days (HDD) index, the cooling degree-days (CDD) index and the cumulative average temperature (CAT) index.

For a hotel on the Mediterranean coast, a cold summer can have a negative effect on its revenue. To hedge against the potential risk of a colder than normal month in August, with fewer cooling degrees days than the average (around 25.5 degrees) some possibilities can be undertaken:

- Take short positions over CDD futures contracts at 25.5 degrees.
- Buy CDD put options at a strike price of 25.5 degrees.

Depending on business mainly focused on residents, non-residents or both, Canales and Pardo (2011) proposed the following strategies based on their results:

Business mainly focused on:

- Residents: Sell contracts based on CDD index and/or Buy CDD put options.
- Non-residents: Buy contracts based on HDD index and/or Buy HDD call options.
- Both residents and non-residents: Buy contracts based on CAT index and/or Buy CAT call options.

### 3.6. Lost profit insurance (or lucrum cesans)

This is one of the most effective financial instruments to protect a regular cash flow of a company. It is applied when there is a stoppage following an accident such as a fire, a flood, a broken machine or a group address, which makes the company halt industrial activity for more or less time.

This kind of financial instrument takes more relevance nowadays because climate change is making natural extreme events more likely to happen.

Depending on the event, the loss will be covered either by the Insurance Compensation Consortium (CCS, in the Spanish acronym) or by the insurance company.

For business interruption insurance the insurer undertakes to indemnify the insured for the loss of economic return. This insurance can be arranged in a separate policy, or can be an additional warranty on a different policy.

For the insurance premium, we need to define the items to be ensured:

- Net income: Net income is the result of the insured business.
- Permanent expenses: Fixed expenses are holding: rent, salaries, etc.
- Gross Profit: result of adding to net ongoing costs.
- Turnover: the sum of the amounts paid or due to the insured for the goods or services offered.

Insurance coverage can protect net income and/or permanent expenditure or even identify those permanent expenses that you want to secure. In addition, it must set an indemnity period, which begins with the occurrence of the accident, continues whilst the company is affected and ends when the company has recovered or maximum duration is reached when previously contracted.

## REFERENCES

Ayala-Carcedp, F.J.: La realidad del cambio climático en España y sus principales impactos ecológicos y socioeconómicos. *Tecnoambiente*, 2004; Año XIV (143) PP. 37-41.

Bank, M., and Wiesner, R. (2011). Determinants of weather derivatives usage in the Austrian winter tourism industry, *Tourism Management*, 32 (1), pp. 62-68.

Canales, P. y Pardo, A. (2011): Assessing weather risk in sun and sand destinations. *Environmental Economics*, 2(1): 50-61.

CNMV (July 2012): Temporary ban of short positions on stocks admitted to trading in a Spanish regulated market. *CNMV Communication*, July 23, 2012. Available at: <http://www.cnmv.es/portal/Aldia/Comunicaciones.aspx>

EXCELTUR, Perspectivas turísticas. Valoración empresarial del año 2011 y perspectivas para 2012. N°39. Enero 2012

EXCELTUR, Perspectivas turísticas. Balance empresarial del Segundo trimestre de 2012 y perspectivas para el verano (tercer trimestre) y el conjunto del año 2012. N° 41. Julio 2012

Fabozzi, F.J. (1996): *Bond Markets, Analysis and Strategies* (3rd. Ed.). Englewood Cliffs NJ: Prentice Hall.

FRONTUR (2011): Ránking de mercados emisores: los 23 países que más turistas envían a España. *Encuesta Frontur 2011. IET (Instituto de Estudios Turísticos)*. [www.iet.es](http://www.iet.es)

González, J.I., Morini, S., Calatayud F. P. (1999): How to Cover Risk in the Hotel Sector. *Annals of Tourism Research*, Vol. 26, No. 3, pp. 709-712. Pergamon.

Gössling, S. (2002): Global environmental consequences of tourism. *Global Environ. Change* 12(4):283-302.

Hart, P., Becken, S. And Turney I.: Offsetting Carbon Dioxide Emissions From Tourism. Available at <http://www.urbanclimate.net/cctr/ws2/report/hartbeckenturney.pdf>

Hein, L., Metzger M.J. Moreno, A. (2009): Potential impacts of climate change on tourism; a case study for Spain. *ScienceDirect*. 1:170-178.

Hull, J. C. (1993): *Options, Futures, and other Derivative securities* (2nd. Ed.) Toronto: Prentice-Hall.

INE. Press releases. Spanish Tourism Satellite Account. Base 2008. Series 2008-2010

Ipsos/Europ Assistance Group Barometer: Europeans' Plans and Concerns for the 2012 Holidays- Summary- May 24th 2012.

ISTAS (2005): El cambio climático. Efectos sobre el turismo. Instituto Sindical de Trabajo, Ambiente y Salud.

Ki Lee, S, Jang S. (2010): Internationalization and exposure to foreign currency risk: An examination of lodging firms. *International Journal of Hospitality Management* 29. 701-710.

Medina, V. and Pardo, A. (2011): Is the EUA a New Asset Classe. Available at SSRN: <http://ssrn.com/abstract=1948753>.

Moreno, A. (2010): Climate change and tourism: Impacts and vulnerability in coastal Europe. Promotors: Martens, P. and Amelung, B. Doctoral dissertation. Pers-Maastricht University, International Centre for Integrated assessment and Sustainable development (ICIS).

Moreno, A. (2010): Turismo y Cambio Climático en España. Evaluación de la Vulnerabilidad del Turismo de Interior frente a los Impactos del Cambio Climático. Available at: [http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/informe\\_turismo\\_tcm7-197792.pdf](http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/informe_turismo_tcm7-197792.pdf)

Moreno, A. (2010): Impactos en la Costa Española por Efecto del Cambio Climático. Fase 1, Fase 2 y Fase 3. Available at [http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/Z\\_costeras.aspx](http://www.magrama.gob.es/es/cambio-climatico/temas/impactos-vulnerabilidad-y-adaptacion/plan-nacional-adaptacion-cambio-climatico/Z_costeras.aspx)

Lluc (1998): The Earth's Changing Land. Open Science conference on Global Change.

Parra, E. y Calero, F. (2006): Gestión y dirección de empresas turísticas, McGraw-Hill Interamericana, Madrid.

Perch- Nielsen S..L. (2009): The vulnerability of beach tourism to climate change- an index approach. *Climate Change* 100:579-606.

Perry, A.: Impacts of climate Change on Tourism in the Mediterranean: Adaptive Responses. Fondazione Eni Enrico Mattei. Nota di lavoro 35.2000

Stern, H. (2004): Evaluating the cost of protecting against global climate change: Options Pricing Theory and Weather Derivates. Bureau of Metereology.

Tang, C-H., Jang SC (2010): Hedging Weather Risk in Nature-Based Tourism Business: An Example of Ski Resorts. *Journal of Hospitality and Tourism Research* published online 18 Novembre 2010. DOI: 10.1177/1096348010388655.

Tkaczynski, A., Rundle-Thiele, S.R., Beaumont, N. (2009): Segmentation: A tourism stakeholder view. *Tourism Management* 30 169-175.

UNWTO (May 2012): International tourism receipts surpass US\$ trillion in 2011. *Press release, UNWTO World Tourism Barometer.*

UNWTO (April 2011): Interim Update. *UNWTO World Tourism Barometer.*

UNWTO (June 2011): 2011 Highlights. *UNWTO World Tourism Highlights.*

Viner D., and Maureen A. (1999): Climate Change and its Impacts on Tourism. Report Prepared for WWF-UK. Available at [http://assets.wwf.org.uk/downloads/tourism\\_and\\_cc\\_full.pdf](http://assets.wwf.org.uk/downloads/tourism_and_cc_full.pdf)

Vogueler Ruiz, C., Hernandez Armand, E. (2003): El Mercado turístico. Estructura, operaciones y procesos de producción. Ed. Centro de estudios Ramón Areces, SA. ISBN: 84-8004-435-7

**Web addresses of interest:**

**<http://www.>**

EXCELTUR	<a href="http://www.exceltur.org">exceltur.org</a>
Agencia estatal de meteorología (AEMET)	<a href="http://www.aemet.es">aemet.es</a>
Wikipedia	<a href="http://es.wikipedia.org">http://es.wikipedia.org</a>
MEFF	<a href="http://www.meff.es">meff.es</a>
Comisión Nacional del Mercado de Valores (CNMV)	<a href="http://www.cnmv.es">cnmv.es</a>
Reuters 3000 Xtra	<a href="https://portal.hpd.global.reuters.com">https://portal.hpd.global.reuters.com</a>
INE	<a href="http://www.ine.es">Ine.es</a>
Société Générale - Warrants	<a href="https://es.warrants.com">https://es.warrants.com</a>
PESETA Project	<a href="http://peseta.jrc.ec.europa.eu/docs/Tourism.html">http://peseta.jrc.ec.europa.eu/docs/Tourism.html</a>
DAVOS Conference on Climate CHange and Tourism. Tough CHallenges and Major Opportunities	<a href="http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=517&amp;ArticleID=5676&amp;I=en">http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=517&amp;ArticleID=5676&amp;I=en</a>
Ministerior de Agricultura, Alimentación y Medio Ambiente	<a href="http://www.Magrama.gob.es">Magrama.gob.es</a>
Investopedia	<a href="http://www.Investopedia.com">Investopedia.com</a>

**Others:**

Blanca Arroyo, M. “Las Opciones como instrumentos de cobertura de riesgos. (Profesor Titular de Economía de la Universidad Rey Juan Carlos de Madrid).

Begazo, D. O.: Tipos de riesgos y ejemplos. Arequipa. Perú

Booquién. Ecoturorism department Director of the World Union for Nature, WWF.

Hernández, R. : Análisis comparativo de las volatididades de los mercados bursátiles. Available at: <http://www.stockssite.com/rh/03marcoteorico.html>

Quesada, C. Geólogo del Instituto Geológico y Minero de España. Colaborador de la UNED. Respuestas de la ciencia. 14.10.2011

Mascareñas, J. : Riesgos económico y financiero. UCM. Available at: [http://www.euroresidentes.com/empresa\\_empresas/diccionario\\_de\\_empresa/finanzas/r/riesgo-financiero.htm](http://www.euroresidentes.com/empresa_empresas/diccionario_de_empresa/finanzas/r/riesgo-financiero.htm)

Sanmartín González, E. Profesor Investigador de la UNED. Respuestas de la ciencia. 12.10.2012

Pino del, J. Profesor de sociología de la UNED. Respuestas de la ciencia 07.05.2012.