

Promoting resilient economies by exploring insurance potential for facing coastal flooding and erosion: Evidence from Italy, Spain, France and United Kingdom



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ABSTRACT

Insurance against natural perils such as flooding can be considered a significant element in coastal management. It can offer not only much-needed support to accelerate economic and social recovery following a disaster (coastal resilience) but also contribute to impact limitation by using pricing or restrictions on availability of coverage to discourage new development in hazard-prone areas. Insurance can affect the redistribution of damage costs across the population and through time, both in the short and long term. Policies of damage reduction are linked to mitigation measures for the properties (old or new buildings) by changing the depth–damage relationship while the long-run risk impacts could affect the overall damage function by discouraging new buildings in high risk areas. This paper will provide an overview of the main theoretical perspectives on insurance in flood risk management. Four different European contexts will be analysed. Data are derived from surveys and interviews conducted in France, United Kingdom, Italy and Spain.

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1. Introduction

Coastal areas are associated with large concentrations of human population and play a vital role in the wealth of many nations (Small and Nicholls, 2003). Nevertheless, large stretches of the European coasts are already threatened by coastal erosion and flooding. It is anticipated that climate change and sea-level rise will increase the frequency and severity of flooding and erosion events. Coastal protection and water management in lowlands have been the most common responses, and have been concerned to ‘keep water out’, ‘defend property from water’ and ‘live on dry land’. However, there has been a change in attitude towards those measures in response to the growing risk and uncertainty generated by climate change. As traditional technical flood and erosion defences have shown their limits, what society expects from defences is changing. A wider portfolio of structural measures to reduce flood hazard and non-structural measures (e.g. land-use planning, insurance schemes etc. that aim to reduce flood vulnerability) to adapt to

environmental change is needed. Treby et al. (2006) observed that hazard management shifted from physical hazards alone to include the socio-economic, political and behavioural patterns of the affected population. Similarly, Crichton (2008) emphasizes that “risk management must recognise that controlling exposure and vulnerability can be much more cost-effective than simply trying to control the hazard”. The contribution of insurance in flood risk management can be multi-dimensional as it can transfer risk, enhance risk awareness, contribute to the reduction of flood vulnerability, support the rebound of socio-economic systems and hence the resilience of coastal communities. Therefore, insurance might be of critical importance to society since it affects the redistribution of the cost of damage across the population and through time (Clark, 1998). The objective of this paper is to present four European Case studies analysed within the THESEUS Project (FP7.2009-1, Contract 244104, www.theseusproject.eu) and to explore how different societies perceive risk of coastal hazards and insurance schemes. This evidence will provide a complete and updated overview of applications or possible adoption of insurance schemes within the European Union.

Insurance companies collect premiums from several individuals to pay for damage resulting from natural disasters (e.g. flooding), which could be huge for individual households and companies. Thus,

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insurance can diminish individual loss exposure and spread risks. Risk perceptions (intuitive risk judgements) are used when individuals evaluate potential hazards. Understanding such risk perceptions is very important when designing public policies. If individuals are risk-averse and insurance against a risk is offered at an actuarially fair price expected utility theory predicts that individuals would buy it. However, “biases in individual risk judgements and the boundedly rational behaviour could result in a low demand for insurance against low-probability natural disaster risk” (Botzen, 2013).

The Risk Triangle in Fig. 1 is used to explain the effect of flood insurance on the reduction of flood vulnerability. Risk encompasses a combination of hazard, exposure and vulnerability and it is articulated as the area of the triangle, the sides of which represent hazard, vulnerability and exposure. In this framework if any one element (side of the triangle) increases/decreases, then the amount of risk will increase/decrease accordingly (Crichton, 2001).

According to Crichton and Mounsey (1997), vulnerability could indicate the extent to which a given hazard would impact on a property by reason of its materials or its layout. Therefore, insurance could impact on vulnerability by introducing a condition on coverage/policy condition. Insurance arrangements for flood risk may require households to undertake measures that mitigate damage or stimulate households to undertake precautionary measures voluntarily (Kunreuther and Pauly, 2006). These mitigation measures may limit damage during floods and be complementary to traditional flood protection (Bowker et al., 2009). Vulnerability can be decreased by offering lower premiums for properties that take action to reduce their exposure to flood risk. A wide range of construction measures can be used to reduce flooding risk while integrating on site solutions of flood avoidance, flood resistance, flood resilience and flood repairable (Bowker et al., 2007). Moreover, it is possible to undertake ‘resistance measures’ to prevent floodwater reaching the inside of properties (for example door-guards) which can contribute to £10,000–£50,000 cost of avoided damage depending on the flood depth (Bowker, 2007). Hence, if insurance is directly related to measures that change the depth–damage relationship in properties, the possible impact of a flood should be lower and both the repair costs and the time that the properties are uninhabitable should fall.

Exposure, from an insurance perspective, is a function of the value of the asset/property at risk and its cost if damaged or lost. Mitigation can play a critical role in reducing exposure to future floods which translates into lower flood insurance premiums if rates reflect risk (Czajkowski et al., 2012). For example, Bowker et al. (2009) examine the willingness of homeowners in the Netherlands to undertake measures that mitigate flood damage in exchange for benefits on hypothetical flood insurance policies. The results indicate that many homeowners are willing to make investments in mitigation (e.g., water barriers) due to the premium discount on the flood insurance policy, while reductions in (absolute)

flood risk due to mitigation are especially large. In this sense, insurance has the potential for activating an ex-ante mitigation mechanism through policy conditions or by encouraging measures to reduce the occurrence, severity or impact of a natural peril.

The structure and development of economic activity on coastal areas prone to flooding could be influenced as well by insurance in the long run. Dawson et al. 2011 argue that market and planning instruments such as insurance impact on flood plain geography and development preferences. The authors highlight significant increases in the cost of flood insurance result in property blight for buildings in the highest risk areas, determining a different land use. Thus, insurance can increase risk awareness if the premium is linked to the possible risk. Treby et al. (2006) note that if a clear link is established between flood risk and property value, this information might be used to raise awareness and incentive the mitigation actions of home owners. Similarly, Filatova et al. (2011) pinpoint that increased individual coastal flood risk awareness is an important option to decrease flooding risk in coast zones, as knowledge about the probability of disaster does not imply awareness about consequences. Insurance against flooding as a financial mechanism may serve as a measure to communicate this risk and to persuade people to integrate it by making its purchase compulsory in flood prone zones. In particular, housing markets in countries where flood insurance is mandatory reveal a decrease of prices due to insurance pressure on individual budgets. In that way, flood insurance conveys risk information to participants in the coastal housing market.

Natsios (1991 p.111), states that policy makers could use market incentives as a very effective way of changing social behaviour. Financial (dis)incentives can promote risk reduction and mitigation through insurance against flood (Treby et al., 2006). Insurance creates incentives by linking coverage to mitigation actions or by not entering an area to provide coverage. For example, people and business activity will have either to adapt to insurance's prerequisite for mitigation or to bear totally the risk of flooding in case that coverage is not offered.

Insurance can be seen as a catastrophe recovery (promoting socio-economic resilience), cost limitation and management tool (Clark, 1998) by sharing risk and lowering the burden on tax-supported disaster relief programs, influencing decisions to locate in the floodplain and by encouraging the use of measures to minimize damage (Arnell, 2000; Doornkamp, 1995). Insurance can further reduce susceptibility to flooding by encouraging communities to adopt a broad range of flood loss reduction strategies. For example, in the United States the Federal Emergency Management Agency promotes the Community Rating System or CRS¹ program. It is voluntary and designed to give flood insurance premium rate reductions as an incentive in communities that implement comprehensive flood damage reduction programs. The three main goals of the CRS are to reduce flood losses, facilitate accurate insurance rating, and promote the awareness of flood insurance.

The rest of the document is organised as follows: Section 2.1 presents the Italian case study (Cesenatico and Bellocchio), the survey design and the main results. Section 2.2 presents the Spanish case study (Santander). It starts with a brief description of the insurance market, presents the methodology used to conduct the focus groups and discusses its results. Section 2.3 presents the French case study (Gironde Estuary). The first part introduces its socio-economic profile of the region, then discusses the survey methodology and results. Section 2.4 presents the UK case study (South Devon). The general insurance context is presented, then the methods used and results. The last section presents conclusions and policy recommendations.

2. Case study areas

Semi-structured interviews were conducted in Spain, France and the UK. A survey was implemented in Italy. This heterogeneity is due to the

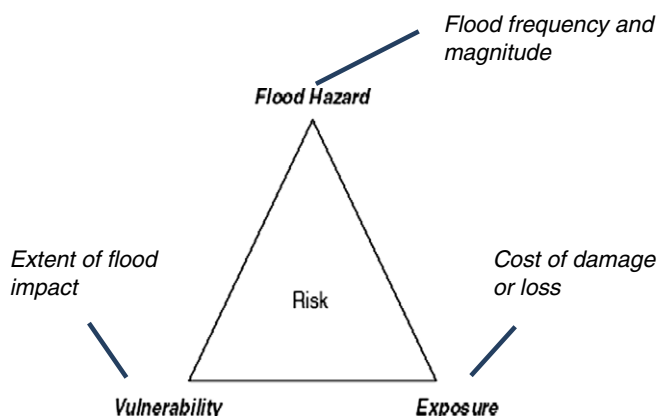


Fig. 1. The Risk Triangle.
Source Crichton and Mounsey, 1997.

¹ More information is available in the following link: <http://www.fema.gov/business/nfip/crs.shtm>.

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