Journal of Multidisciplinary Research

Vol. 9, No. 1 Special Issue Spring 2017

Journal of Multidisciplinary Research

ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Contact Information

Professor Hagai Gringarten, Ph.D., Editor-in-Chief, *Journal of Multidisciplinary Research*
c/o O'Mailia Hall, 16401 N.W. 37th Avenue, Miami Gardens, Florida 33054
Telephone +1 (305) 628-6635 E-mail: hgringarten@stu.edu

Journal Web Address

http://www.jmrpublication.org

Journal Indexing & Listing

Indexed in ProQuest, Cabells, EBSCO, Gale-Cengage Learning, CiteFactor, Ulrich's, de Gruyter (Germany), Elektronische Zeitschriftenbibliothek (EZB) (Germany), and Directory of Research Journals Indexing (DRJI) (India).

Listed in *Directory of Open Access Journals*, AcademicKeys, Cision Directory, EconPapers, Gaudeamus, Google Scholar, Isis Current Bibliography, JournalSeek, Journals4Free, MediaFinder, NewJour, Research Papers in Economics (RePEc), COPAC (England), CUFTS Journal Database (Canada), EconBiz (Germany), Edanz (Japan), HEC Paris Journal Finder (France), MIAR (Spain), Mir@bel (France), PhilPapers (Canada), REBIUN-CRUE (Spain), SUDOC (France), ZeitschriftenDatenBank (ZDB) (Germany), and the Open University of Hong Kong Electronic Library (Hong Kong).

Accessible via BASE-Bielefeld Academic Search Engine (Germany), and NIST Research Library (National Institute of Standards and Technology, part of the U.S. Department of Commerce).

Mission Statement

The mission of the *Journal of Multidisciplinary Research* is to promote excellence in leadership practice by providing a venue for academics, students, and practitioners to publish current and significant empirical and conceptual research in the arts; humanities; applied, natural, and social sciences; and other areas that tests, extends, or builds leadership theory.

Journal of Multidisciplinary Research

Vol. 9, No. 1 Spring 2017

Contents

Special Issue:
Insurance Instruments and Cultural Heritage: Between Natural Disasters and Human Made Hazards

Articles

Life Forward

Review

Editors' Choice

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 3-6.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Guest Editorial

Insurance Instruments and Cultural Heritage: Between Natural Disasters and Human Made Hazards

Marilena Vecco
Erasmus University Rotterdam

and

Francesca Imperiale
University of Salento

This special issue presents a selection of papers presented at the international workshop entitled *"Insurance to protect natural and cultural heritage against catastrophe risks: What role and perspectives?"* organized on the 12th December 2016 in Lecce, Italy, by the University of Salento and CNR-IBAM, under the patronage of ENCATC – the European Network on Cultural Management and Policy.

Although the topic of cultural heritage protection against catastrophic risks of natural origin, or technology origin, or both, is not new in the international scientific debate, it started to undergo organic and systematic analysis only in the last two decades. After the Second World War, international organizations such as UNESCO, ICCROM, and ICOMOS, among others, have highlighted the importance of safeguarding cultural heritage from destruction as a result of catastrophic events, which include not only war or human disasters but natural ones as well. These organizations' actions, programs, and measures aimed to promote preventive approaches to reduce risk. This was the assumption as a fundamental requirement to improve cultural heritage sustainability and develop more risk preparedness (Stovel, 1998; Tandon, 2013).

Over time, new topics and approaches had enriched the scientific debate. One important concept is preventive conservation, and its related programmatic interventions, whose main objective was to include cultural heritage in the existing catastrophe risk management programs. Consequently, most of the contributions focused on identifying spoilage agents and conditions and the risk assessment techniques based on specific sectorial-oriented approaches (Michalski, 1990; Staniforth, 2013).

Global trends, related on the one hand to climate change and to terrorism on the other, show that the risk preparedness is still very limited. Most of the countries dealing with cultural and natural heritage catastrophes need urgent risk management policies and tools to ensure a fair trade-off between risk mitigation, value of the damages, and public expenditure used to finance the repair and reconstruction interventions. As well highlighted in the literature (MacKee & Askland, 2014), the restoration or recovery of damaged cultural heritage often is excluded in plans addressed to post-disaster reconstruction and in strategies for disaster mitigation. Facing natural or human catastrophic events, the risk and vulnerabilities of cultural and natural heritage significantly increase (Taboroff, 2003). The risk is not just related to the catastrophic event *per se*, but it can be highly worsened by the fragile nature of ageing structures. Overall, this can lead to a consequent high risk of damage or collapse.

By considering the specific nature of cultural and natural heritage, the relevance of this trade-off becomes even more evident. Catastrophic events involving cultural heritage are frequent. This destruction negatively impacts the present material conditions (loss of human life and worsening of economic conditions as cultural heritage may represent the only economic drive for some communities), and leads to the irreversible loss of collective memory and identity.

The Lecce workshop's main objective was to raise awareness on these issues and challenges, questioning whether and to what extent insurance instruments can play a role in public policies with regard to the catastrophe risk management of cultural and natural heritage.

The Italian context can be considered as an exemplary case study because of its rich cultural and natural heritages and the recent intensification of natural disasters (EM-DAT – The Centre for Research on the Epidemiology of Disasters -CRED International Disaster Database, current time) that damaged and destroyed several sites of inestimable artistic and cultural value. The most recent earthquake swarm in central Italy proved the existing political and management framework for catastrophe risk management to be inadequate. The workshop had an exploratory and multidisciplinary nature. It explored the challenges related to the Italian context, which can be easily extended to other contexts in and beyond Europe. This was functional to define first the conceptual framework to contextualize the problem and its challenges, and second, to set up a future research agenda.

This special issue collects a selection of five articles presented during the Lecce event. Each of them is relevant as it points out a specific aspect of the debated topic: the multidimensional nature of the cultural and natural good exposed to catastrophe risk, in terms of components value-object insurance; the catastrophic risk transfer mechanism to the insurance market, which is analyzed by different disciplinary perspectives -; and the prospects of using insurance as a policy tool for catastrophe risk management. These contributions from different disciplines show that without a holistic approach it can be very hard to gain a clear understanding and address this topic and its related challenges adequately.

The first article, "Cultural heritage: values and measures", by Marilena Vecco and Francesca Imperiale, introduces and explores the procedural and multidimensional nature of

cultural goods. After a review of the main monetary assessment methods existing in the literature, it analyzes the main issues involved in determining the insurance potentially transfer value. The focal point of the discussion is that for the value of a cultural good "reference is made to the judgements of value that have developed over a period in a certain social, cultural and historic context. The creation process of these values depends on a multitude of parameters that are derived from a learning process in society, individual experience and their reactions to specific situations."

The second article, "Liability and reparation of damages catastrophic particular with regard to cultural and environmental heritage" by Marco Rizzuti, focuses on the legal concept of damages caused to a cultural or environmental good by a catastrophic event. It provides relevant arguments to understand how "such extreme events put pressure on the legal infrastructures that regulate ordinary damages and bring them to their limits". Who is the damager? Who is the damaged? How to refund the latter?. These are the main questions that the author discusses to identify the subjective aspects that, according to the current legal perspective in Italy, are involved in the insurance transfer rationale of a cultural or environmental good under looming catastrophic risk.

It is followed by an article by Stefano Adamo and Francesca Imperiale, entitled "Cultural heritage and challenges for catastrophe risk management in Italy." This contribution approaches the subject from the specific insurance market perspective with the aim to highlight the main managerial challenges inherent in the rationale of mutual convenience between insurer and that which is insured against catastrophic risk. The proposed approach is based on the theory of insurance capacity. Within this framework the technical conditions are analyzed to understand to what extent the insurance mechanism can conveniently operate to avert catastrophic risk in Italy, specifically in the Fine Art sector.

Adopting different approaches, the last two articles analyze the use of the insurance mechanism as a public policy tool to protect cultural and natural heritage from catastrophic risks. Precisely, the article "New voluntary-based instruments supporting ecological insurance" by Donatella Valente, Irene Petrosillo and John Petrosillo Zurlini offers an original perspective of the insurance mechanism, using the conceptual assessment framework of ecosystem resilience. Within this context, the authors illustrate two different examples of policies applied to ecosystem services. This application is valuable to understand the implications and usefulness of this perspective to extend the reasoning on insurance to the protection of cultural and natural heritage. Last, the article by Fabrizio Terenzio Gizzi and Donatella Porrini, "Policy choice and insurance system for catastrophic risks: The case of cultural heritage", provides a detailed overview of the major challenges that governments are facing in terms of policy choices to protect cultural heritage from catastrophic risks. The authors discuss insurance instruments as a policy tool by highlighting their present and potential future applications.

References

Mackee, J., & Askland, H. H. (2014). Recovering cultural built heritage after natural disasters: A resilience perspective. *International Journal of Disaster Resilience in the Built Environment, 5*(2), 202-212.

Michalski, S. (1990). *An overall framework for preventive conservation and remedial conservation.* ICOM Committee for Conservation, 9th Triennial Meeting, Dresden, German Democratic Republic, 26-31 August 1990, preprints.

Staniforth, S. (2013). Historical perspectives on preventive conservation. _: Getty Publications.

Stovel, H. (1998). *Risk preparedness: A management manual for world cultural heritage.* Rome, Italy: ICCROM.

Taboroff, J. (2003). Natural disasters and urban cultural heritage: A reassessment. In Kreimer A., Arnold M., Carlin A. (Eds), *Building safer cities: The future of disaster risk,* pp. 233-240. Washington, DC: World Bank.

Tandon, A. (2013). *ICCROM programme on disaster and risk management: A background paper*. Unpublished draft, 30 April 2013. Retrieved from http://www.iccrom.org/wp-content/uploads/RDRM-Background-paper_AT_REV_30-April-2.pdf

About the Editors

Marilena Vecco (vecco@eshcc.eur.nl) is Assistant Professor of Cultural Economics at Erasmus University Rotterdam. In the Department for the Study of the Arts and Culture, she lectures in the M.A. Cultural Economics & Cultural Entrepreneurship. Her research focuses on cultural entrepreneurship, management with a special focus on cultural heritage (tangible and intangible), and art markets. She holds a Ph.D. in Economic Sciences at University Paris 1, Panthéon Sorbonne, a Ph.D. in Economics of Institutions and Creativity at University of Turin (I), and an M.B.A. Executive in International Arts Management from the University of Salzburg Business School in collaboration with Columbia College, Chicago. Between 1999 and 2010, she was head of research of the International Center for Arts Economics (ICARE) and Research Fellow and Adjunct Professor of Cultural Economics and Art Markets at the University Ca' Foscari of Venice. Marilena has more than 14 years of academic and professional experience as a researcher, lecturer, and consultant. She has researched and consulted for several public and private organisations, including the OECD, the Centre for Entrepreneurship, SMEs and Local Development, the World Bank, and The European Commission.

Francesca Imperiale (francesca.imperiale@unisalento.it) is Assistant Professor of Management of Cultural Organizations and Ph.D. in Business Administration at the Department of Management and Economics of the University of Salento (Lecce). Since 2005, she has carried out her research activity at the Cultural and Environmental District Interdisciplinary Research Laboratory of ISUFI School (Lab. Di.CA) as scientific coordinator in the fields of cultural heritage (tangible and intangible) management, participatory governance and public-private partnership, cultural network performance, and heritage asset accounting. She also participates at many national and international projects where her research activities find applications, and she is author of various publications on these themes.

To Cite this Editorial

Vecco, M., & Imperiale, F. (2017, Spring). Guest editorial: Insurance instruments and cultural heritage: Between natural disasters and human made hazards. *Journal of Multidisciplinary Research,* 9(1), 3-6.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 7-22.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Cultural Heritage: Values and Measures. What Insurance Value?

Marilena Vecco
Erasmus University Rotterdam (Netherlands)

and

Francesca Imperiale
University of Salento (Italy)

Abstract

This chapter focuses on the assessment of the cultural heritage value to be transferred though the insurance mechanism, which represents one important activity of the use of insurance instruments to protect cultural heritage against catastrophic risks. To this end, the paper offers a review of the literature in the field of the economic value of cultural heritage and its assessment according to a monetary-analysis approach.

Results show that this approach is inevitably problematic, highlighting the need for a research agenda to develop a coherent framework that pays due attention to the specific nature of cultural heritage.

Keywords: cultural heritage, total economic value, economic evaluation, insurance value

Introduction

Tangible cultural heritage can be the subject of different evaluations that are, at times, in conflict with one another. The *cultural significance,*[1] or rather the multiple values linked to a

[1] "Cultural significance is the term that the conservation community has used to encapsulate the multiple values ascribed to objects, buildings, or landscapes" (Avrami, E., Mason, R., & Torre, M. de la, eds (2000), *Values and heritage conservation*, Los Angeles, CA: The Getty Conservation Institute, p. 7).

cultural object – its economic, aesthetic, cultural, political, educational value, etc. – is assessed from the perspective of the numerous stakeholders taking part in the heritage conservation process. Establishing these values when it is time to take decisions regarding an object's conservation and, therefore, meeting the needs of multiple stakeholders is no simple task. What should be preserved? How? For whom? For how long? And so on. (Throsby, 2013, 1997; Benhamou, 2011; Peacock, Rizzo, 2008; Vecco, 2007; Mossetto, Vecco, 2001). These questions have to be answered in the context of each different value system.

This chapter explores the concept of a number of possible values of cultural heritage before analysing the main monetary measurement methods the literature suggests. Its goal is to show how problematic the assessment of interrelated values is when it must be transferred through the insurance (i.e., monetary) mechanism.

Its structure is as follows: We present in Section 1 a review of the typologies of value related to cultural heritage, providing a taxonomy of these values, while in Section 2, we analyze the paradigm of the total economic value within the evaluation process. In Section 3, we present the main measurement methods based on a monetary-approach. Building on this last section, we conclude by hightlighting the main challenges affecting the assessment activity of cultural heritage for insurance purposes.

Values of Cultural Heritage

There exist a vast number of different types of values, and the interactions between them can be highly complex. Any description of the values related to cultural heritage comes up against difficulties of both a conceptual and practical nature that hide the diverse expressions of the values of heritage (cultural, economic, social dimension, etc.). These are expressions of what are essentially the same qualities evaluated from different perspectives. Nevertheless, they are incomparable with one another (Mason, 2008; Vecco, 2007). Furthermore, one also must bear in mind that these values are relative and change in time and space. Values do not exist in themselves, but they are culturally and historically constructed.

The creation of a value typology could facilitate an understanding of the different evaluation processes involved in the preservation process of heritage while, at a later stage, allow a comparative evaluation of diverse heritage projects (see Table 1).

Each value assessment corresponds to the different positions of the stakeholders involved in the process of the decision-taking, organization, and conservation of cultural heritage. If one studies Table 1, which summarises the key value systems in the major literature in reference to heritage, one can observe that the object being described remains the same whilst the approach and at times the descriptive levels change. It must be pointed out that several authors, for example Randall (1987), Allison et al. (1996), or Navrud and Ready (2002), analysed only the purely economic values of the heritage.

In contrast, in the Burra Charter principles (1979, 1998), the economic values are minimized as they are either regarded as derivations of cultural and historic values, or simply from a historic and artistic perspective (Riegl, 1902). Additionally, the focus can be weighted on the social benefits of restoring cultural heritage (Salazar & Marques 2005) or to its sustainable development (Licciardi & Amirtahmasebi, 2012).

Table 1

Comparative Diagram of the Types of Values Recognized in Heritage

Source: Own elaboration.

Later, a classification of the values founded on the distinction between the economic and cultural fields was put forward as it is these dimensions that are considered a semiotic asset of cultural heritage (Barrère & Santagata, 1999). Similarly, one must bear in mind that owing to the existence of cultural values and the fact that these goods produce externalities (that usually lead to the market collapsing), the exchange of cultural goods on the market is problematic.

Table 2
The Typology of Values

Cultural values	**Economic values**	**Communication values**	**Ecosystemic values**
Historical	Usage	Symbolic	of diversity
	- direct		
Social	- indirect		
Artistic	of option		
Aesthetic	of non-use	of information	
Moral	- of existence	of recreation	of durability
Scientific	- of bequest	of community/ national identity	of integrity
Cultural		Use as knowledge	of uniqueness
Spiritual/religious	Intrinsic	capital	of unreplacability
Educational			of authenticity

Source: Own elaboration.

It should be observed that another two categories of values have been introduced (Table 2): the values of communication, which have a cultural matrix, and ecosystemic values (Carter & Brambley, 2002, 175-199).

Given the importance they have acquired in our society as expressions of stakeholder interests, it was decided each of the four values in Table 2 should be treated as independent categories. In particular, the ecological values that play a role in the definition of the sustainability of cultural heritage can play an important role in conservation decisions and, at times, may actually be in conflict with the economic field. This classification proposes values that most often are referred to heritage (via scientific or subjective assessment), but it is important to point out that each cultural heritage asset does not necessarily represent all the values mentioned above.

These four categories represent different ways of valuing heritage; what changes is the conceptual context and the methodology used for its expression.

The Economic Values

The **use value** is the value derived from the possible commercial use of the resource, whether present or future. The (direct and indirect) use values of a constructed heritage asset refer to the goods and services derived from its exploitation. It is easy to give them a price because they can be exchanged on the market. The **option value** is more complex to express in terms of price since it attributes an economic value despite lacking a traditional transaction on

the marketplace. The economic value is assessed according to the value of the future 'option' of consuming the heritage asset, attributed by an individual who does not benefit from cultural or heritage activities, but he or she can in the future.

Some of the values classified above as cultural values are also **non-use values**. If use values usually are categorised as economic values (since individuals are willing to pay to acquire or protect them), non-use values (where existence is known but not used or exploited economically) must be classified in sub-categories to highlight the characteristic that could motivate the economic decision to conserve the heritage.

The existence value. The heritage asset is evaluated for its existence. This is the value given to a site/heritage asset based on an individual's knowledge of it, regardless of comsumption or visitation.

The bequest value. It expresses the desire to protect and make the heritage asset available to future generations, for whom one must guarantee the possibility of "consuming" heritage assets and services. This approach can stand only if one assumes the conservation of cultural heritage is a value felt by all generations and does not change over time. Likewise, in conditions of uncertainty, the present generation may deem its options (between conservation and the other uses of cultural heritage) as less important than the possibility of the option transmitted to future generations. If these two suppositions are removed, conservation, paradoxically, could be a cost for the current generation that sacrifices alternative uses of public resources without producing the expected benefits for future generations.

The Cultural Values

The **historic value** is the capacity of the heritage asset to represent or stimulate a relation to the past, its testimonies to a period, and the stratifications of the traces left by time. This value is founded on the norms of antiquity and authenticity. Heritage reflects the culture of a given society; it is the social and cultural expression of a specific period in a specific context. Heritage without social or cultural value cannot exist.[2]

The **aesthetic value** is the result of the pleasure and emotion one feels when looking at a cultural heritage asset – it is a subjective dimension. The artistic value, in contrast, can be regarded as the item's contribution to the development of an artistic movement and, according to set norms, the perfection of its style. It has an objective dimension.

The **spiritual value** refers to the fact that the heritage asset is embued with spiritual or religious meaning. The cognitive or educational value is dependent on the heritage item teaching us something and, therefore, contributing to societal development.

From the Total Economic Value to the Assessment Approach

The economic evaluation of assets and services is a science in continuous evolution. For certain goods, such as a kilo of tomatoes or a litre of petrol, the market fixes the price that expresses its economic value. This operation of determining the price of the good on the market

[2] One also can consider the social value as the capacity to establish and facilitate social relations, ties, and other relations that are not necessarily linked to the historical dimension of the heritage.

is not possible for other categories of assets since this price, if it existed, could only ever be a partial expression of their total value.

As far as the evaluation of cultural heritage is concerned, a total economic value (TEV) approach could be used effectively. The TEV is based on the idea that every asset and service is made up of different attributes: some are easy to assess, others less so. According to Pagiola (1996), the TEV is founded on two main categories: the use value (Uv) and the non-use value (Nuv). The option value is somewhere between the two. The use value, which regards the effective use of the resource, can be divided into the direct use value (Duv), the indirect use value (Iuv), and the option value (Ov). The non-use values are the bequest value (Bv) and the existence value (Ev). The TEV can be expressed by the following equation:

$$\mathbf{TEV} = Uv + Nuv = (Duv + Iuv + Ov) + (Bv + Ev) \quad (1)$$

The use value (Figure 1) can be either indirect or direct. The latter is differentiated into the extractive use value and non-extractive use value (Serageldin, 1999). The extractive use values of an asset are the values that can be derived from a site; Serageldin gives the example of an historic city in which a direct use is made of the buildings such as the houses or commercial premises. In contrast, the non-extractive use values are derived from the heritage site services. If we go back to the previous example of the historic city, people can only walk through it and enjoy it, without paying any price; their use of the city is not determined by any economic or financial transaction (Tirendi, 2003:12). Measuring the non-extractive use value is much more complicated than determining the extractive use value.

In the category of the non-extractive use values (Pagiola, 1996), the most important are the aesthetic and recreational values. The indirect use value concerns benefits that an asset may create and that individuals may experience "unconsciously." For example, the restoration of a monumental complex may contribute to the improvement of the quality of life in the district where it is located.

The option value is linked to the willingness to pay for future use, even if not clearly defined from a temporal perspective. For individuals, this benefit is comparable to an "insurance premium" that they are willing to pay to ensure they will have the asset at their disposal in the future. The idea of the existence of an option asset goes back to Weisbrod who, in 1964, suggested the existence of a use value that was unrelated to the number of actual visits made. In 1967, referring to Weisbrod's idea, Krutilla focussed on the idea of a willingness to pay that was unrelated to the use of the resource but instead, to its simple existence (existence value) or the possibility to guarantee its consumption for future generations (bequest value).

Walsh and Mckean (1998) have claimed that willingness exists to pay for the anticipation of visiting a specific site as well. Anticipation value (Av) expresses the benefit to certain subjects from the anticipation of the visit, for example, by purchasing an informative CD-ROM, thematic maps, or books and magazines.

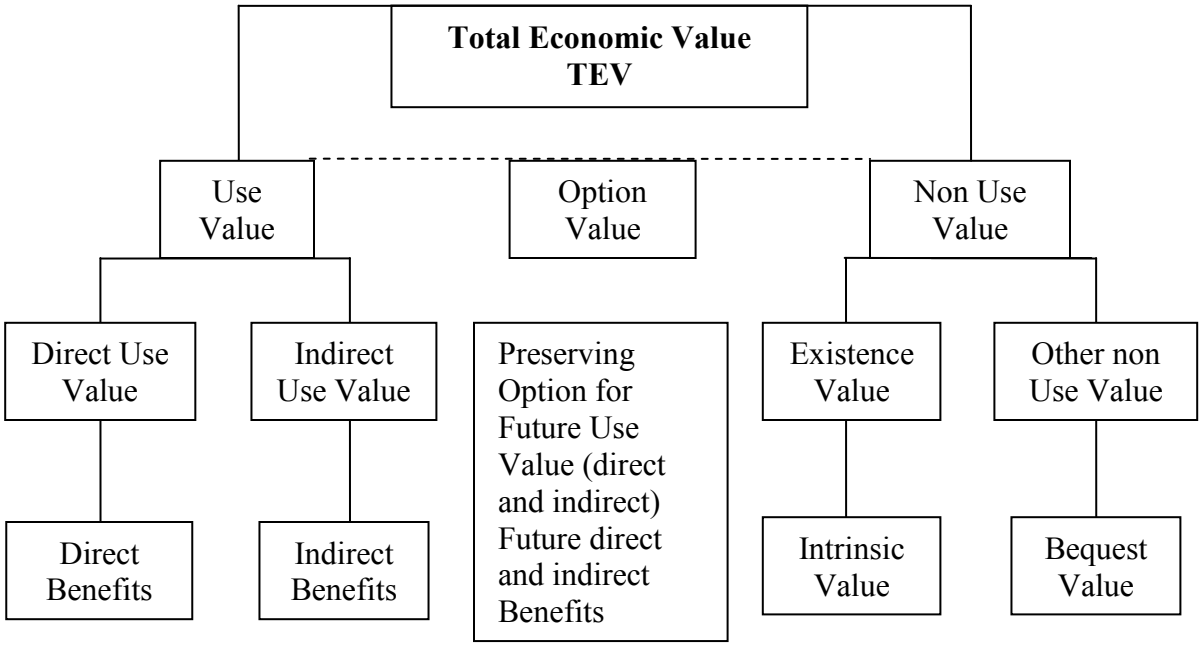


Figure 1. The Total Economic Value (TEV). Source: Adapted from *Very special places: The architecture and economics of intervening in historic cities*, by I. Serageldin, (1999), Washington DC: The World Bank; and "Benefits received by visitors to heritage sites: A case study of Warkworth Castle," by N. Powe & K. Willis, (1996), *Leisure Studies, 15*, p. 27.

According to Fusco Girard (1994) and Fusco Girard and Nijkamp (2009), the TEV still represents an anthropocentric approach that is slightly bio-eco-centric, in the sense that the TEV refers to individual willingness to pay, excluding all those who do not have this willingness. First and foremost, it excludes future generations, followed by the more marginalized subjects such as the less well off, the natural environment, etc.

The expression of the TEV, therefore, can be written as follows:

$$\mathbf{TEV} = Uv + Nuv + Av = (Duv + Iuv + Ov) + (Bv + Ev) + Av \qquad (2)$$

The problem is understanding whether the TEV makes it possible to "capture" the entire economic value of an asset. According to Margolis (1982) and Etziani (2010; 1988) the individual has two sources of value: the utility and ethics that are expressed via participation in the *polis*. On the one hand, the subject acts according to its interests and personal profit (it is the real "consumer"); on the other, they seek solutions that also can benefit others. According to Page (1991), the evaluation of social foundations, linked to individual behaviour, is of great importance because it is aimed at satisfying not only consumption needs but also social and relational needs, as Maslow (1970) suggested.

As early as 1992, Turner already had spoken of *glue value* as all the values that the TEV does not "capture." According to Turner, the autopoïetic system has a primary value because it is the foundation that allows the system to distribute services and functions that are useful to people. This primary valaue is the value of the latent functions underlying the values that usually

are appreciated; moreover, it expresses the system value as a whole. This primary value underlies the heteropoïetical activities that define the total secondary value (TSV). The premise for the distinction between use and non-use values is the existence of an ecosystem that is in good condition. From this perspective, these values represent secondary values. The TEV includes the differences that make up the TSV (Girard, 1995), but not the primary value of the aggregate system (the glue value).

It is only this total secondary value that can be defined in monetary terms through the total economic value (TEV). A total value (TV) is recognized in an ecosystem and is represented as follows:

$$TV = (TEV, i) \quad (3)$$

where *i* represents the intrinsic value. The total value is annulled only if this value equals zero, but if *i* is different to zero, one gets the following:

$$TV = (TEV, i) > 0 \quad (4)$$

The TV is unable to express the whole value; it has two limits. The first regards the difficulty in expressing all assets and services in economic terms, the second the structural impossibility of expressing the intrinsic value *i* in monetary terms.

Methods to Measure the Economic Value of Cultural Heritage

Cultural heritage can be considered as a consumption good and as an investment good (Mossetto & Vecco, 2001). According to the latter, cultural heritage becomes an asset that needs to be assessed, even if it is not in the market. The existing literature focusing on the assessment of the TEV of heritage as an asset suggests several methods based on a monetary analysis approach. These are methods based on the notion of the consumer surplus and the assessment of the so-called individual's willingness to pay (WTP), or willingness to accept (WTA) some kind of compensation if the asset is not available anymore. These two approaches express individual utility and preference satisfaction for a specific good or service (Nijkamp, 2012, 83-84). Consequently, in this frame, the individual preferences generated in response to hyphotetical scenarios are "converted' into monetary terms. The WTP is the most frequently applied approach, which uses a range of survey formats to generate measurable pseudo-market values.

Under this approach, indeed, in presence of markets for the acquisition of services related to the use of cultural property, the price can be assumed as a more or less fair proxy of its value (e.g., the contribution in the form of *rental value*, when a monument is used for commercial activities; or *entry price*, when for example a museum provides an entry ticket to visit the collections). Conversely, cultural goods are rarely under a market regime. It follows that the measurement methods are based mainly on individual WTP, estimated by referring to alternative markets (so called indirect methods or methods based on revealed preferences) or to specific groups of beneficiaries under hypothetical or real scenarios (so called direct methods or methods based on stated preferences).

Table 3 presents in more detail a classification of the assessment methods applicable to cultural heritage, elaborated by Moreschini (2003, 8) using two criteria:

(a) the method used: direct methods – based on explicit statements of the observed individuals – and indirect methods – based on the analysis of their behavior; and
(b) the scenario: a real or hypothetical scenario.

Table 3
Classification of Assessment Methods Applicable to Cultural Heritage

Method	Indirect (Revealed preferences)	Direct (Stated preferences)
Real Scenario	• Travel cost method • Hedonic price method • Compensation cost method	• Referenda • Experiments
Hypothetical		• Contingent Valuation (CV) • Conjoint analysis (Choice modeling) • Delphi Technique • Focus groups

Source: Adapted and translated from Moreschini (2003, 8).

The travel cost method and the hedonic price method are the most used indirect methods, both of them deriving the value of a cultural asset from the selling price of surrogate markets.

The former analyses the consumer's behavior to capture his or her preferences for a cultural asset by considering the time and the travel costs to visit it. The number of visits per year, the distance travelled as well as the value of time (in terms of opportunity cost) spent in travelling and enjoying the site - commonly valuated by using the hourly wage of the respondent- serve for calculating its value. In absence of clear value, an aggregate of variables is used as a proxy of the recreational value of the cultural asset (Bedate et al., 2004).

The hedonic price method considers the real estate prices as a proxy of the use value of a cultural asset, assuming those prices are affected by characteristics of the environment in which the property is located (Navrud & Ready, 2002). Practically, the total value of a good is broken down into constituent parts to see to what extent individual aspects of the good or service contribute to the overall value (Rosen, 1974). Then, regression techniques are used to develop a model that would explain differences in housing unit prices, aiming to reveal the price variations by comparing properties with same attributes in environments without the equivalent of the cultural asset under evaluation. The resulting price variation is considered as the value that the real estate market attributes to that heritage asset (Moreschini, 2003).

Among the stated preference methods, the contingent valuation method (CV) is the best known and most used, as it is the only one that can estimate the non-use values (Tuan & Navrud, 2008, 326). It constructs a hypothetical market for the goods or services to be valued and then attaches prices to them by asking directly a random sample of people about their maximum WTP (or minimum WTA) for a change in the level of provision of that good or service (Mourato et al., 2000, 89), by means of an appropriately designed questionnaire.

Carson (2012) offers a comprehensive bibliography on the history, application, and evolution of this method, and several case studies in the cultural sector can be found in Noonan (2003) and Srakar and Vecco (2017) papers.

Conjoint analysis or choice modelling is an attribute-based method (Holmes & Adamowicz, 2003). As with the contingent valuation method, it is based on extensive surveys. It requires describing different ensembles of scenarios expressing policy options regarding attributes and characteristics of a good or service. Individuals are requested to rank them in order of preference (Pearce & Ozdemiroglu, 2002, 54). Rather than directly asking how much individuals want to pay to preserve a cultural asset, they are asked to choose among clear options, avoiding many of the technical and practical criticisms of the contingent valuation method (Tuan & Navrud, 2008; Snowball, 2008).

Unlike other methods discussed above, the Delphi Technique and focus groups use the opinions of a panel of experts and non-experts respectively as primary data (Sackman, 1975).

Compensation methods base the final results on the assumption that the economic value of a cultural good can be estimated by observing a real consumer's behavior in relation to alternative choices. According to this approach, individuals express their willingness to pay for a good or service (that is no longer available) through the purchase of alternative (available) goods. The selling price of those alternative goods can be considered as the proxy of the economic value recognized for the cultural good under evaluation (Klamer & Zuidhof, 1999). Substantially, they seek to find the sacrifices and revenues involved with a change in the availability or quality of a cultural asset (Nijkamp, 2012, 89). Among others, the most used methods are those based on a cost compensation approach, assuming that the value of cultural goods or services is equal to costs of replacing, substituting, or restoring goods or services (Vecvagars, 2006, 34).

All the above methods are characterized by important biases in capturing the economic value of a heritage asset. Even if contingent valuation seems to be the best method to translate total economic value in monetary terms, literature (Srakar & Vecco, 2017; Seaman, 2003; Throsby 2003; Mitchell & Carson, 1989; among others) has discussed the numerous biases affecting the data validity of this method. The main biases are related to the underlying assumptions and choices on how the method is applied. Practically, we have to mention that it is costly as it requires significant expertise, without which can lead to misleading results (Pearce & Ozdemiroglu, 2002, 29).

Moreover, the travel cost and the hedonic price methods (indirect methods) present two main limitations. Firstly, they are not able to capture and measure the non-use values; secondly, the results strongly depend on the quality of statistical data processing and mining.

Assuming the substitutability of the goods concerned, compensation methods are rarely used in the field of cultural heritage assessment as the main feature of cultural assets is usually their exclusivity or uniqueness. However, unlike the previous direct and indirect methods, these are considered less expensive and time consuming and can be more easily applied for very approximate estimates (Vecvagars, 2006, 34).

What Insurance Value? Some Remarks for not Concluding

Within the debate of the opportunity-possibility to use insurance as a instrument to protect cultural heritage against catastrophic risks, this chapter had the aim to introduce to the reader a critical aspect of the whole insurance workflow process applied to tangible heritage

assets. This workflow may be complex as it includes the assessment of the insurance amount required for the purpose of establishing an insurance cover.

The assessment represents a crucial component of the insurance mechanism as this activity has to set up the monetary value actually insured against the occurrence of a risky event. This monetary value defines the basis to calculate both the counterpart insurance premium and the maximum refundable amount to the insured in case of partial damages or full loss of the good insured.

In other words, when we subscribe to an insurance policy – of course, considering the non-life insurance field – it means we pay annual premiums to an insurance company that will pay us back in case of damaged incurred because of a specific risk. This sum paid back by the insurance company is meant as compensation to repair, or rebuild, or both, from the damage or loss suffered. Clearly, the insurance mechanism rationale is based on a compensation approach, helping the insured to reinstate the damaged property (repairing, rebuilding, restoring, replacing, etc., in a condition equal to, but not better or more extensive than, its condition when new, according to the value that has been assessed); or settling an equivalent cash reimbursement if the insured will not reinstate.

Therefore, the insurance mechanism involves an *ex-ante* and an *ex-post* monetary evaluation of the insured object/damage/loss and assumes each insured object is replaceable with an object having similar features. This perspective refers to the *value to the owner*, assuming that the economic value under appraisal is measurable in terms of the total cost suffered by the owner as consequence of a total or partial loss of the object concerned, in turn being estimated according to market/selling prices of substitute goods. In other terms, the use values of the insured items are the main object of the monetary estimation process.

This process can be applied without challenge to a range of goods, but it can face some limitations with regard to cultural goods. As we have pointed out, cultural and economic values, and a non-market nature position, essentially make cultural goods somewhat irreplaceable.

If we consider the insurance mechanism presently in use, the TEV evaluation process as described in section 3, and the main bias affecting its monetary estimation (section 4), we could conclude that it can be feasible to transfer under an insurance policy only the direct use values of a cultural asset, namely the extractive use ones, which relate to service potential easily exchangeable on the market.

Based on the intergenerational argumentations and the relevance of the option and non-use values, we are not in the position to accept such a kind of conclusion. The debate should be about the use of insurance as a tool to protect cultural heritage against any risks for total or partial loss, not to commodify cultural goods. We can affirm that the loss assessment approaches in use for ordinary goods in the insurance market are not suitable for cultural or natural heritage as they do not take into consideration the specific nature of these goods. More research is needed in this field in order to develop a suitable and consistent framework with specifically cultural and natural good focused approaches.

References

Avrami, E., Mason, R., & de la Torre, M. (2000). *Values and heritage conservation* (Research report). Los Angeles, CA: The J. Paul Getty Trust.

Baer, N. S., & Snickars, F. (2001). *Rational decision-making in the preservation of cultural property*. Berlin, Germany: Dahlem University Press.

Barrère, C., & Santagata, W. (1999). Defining art. From the Brancusi trial to the economics of artistic semiotic goods. *International Journal of Arts Management, 1*(2), 28-38.

Bedate, A., Herrero, L. C., & Sanz, J. A. (2004, January). Economic valuation of the cultural heritage: Application to four case studies in Spain. *Journal of Cultural Heritage, 5*(1), 101-111.

Benedikt, M. (Ed.). (1997). *Center 10/value*. Austin, TX: Centre for Architecture and Design, School of Architecture, University of Texas.

Bok, S. (1995). *Common values*. Columbia, MO: University of Missouri Press.

Carson, R. T. (2012). *Contingent valuation: A comprehensive bibliography and history.* Cheltenham, UK, and Northhampton, MA: Edward Elgar Publishing.

Carter, R. W., & Brambley R. (2002). Defining heritage values and significance for improved resource management: An application to Australian tourism. *International Journal of Heritage Studies, 8*(3), 175-199.

Coccossis, H., & Nijkamp, P. (1995). *Planning for our heritage.* Aldershot, England; Brookfield, VT; Hong Kong; Sydney, Australia: Avebury.

De La Torre, M. (Ed.). (2002). *Assessing the values of cultural heritage* (Research report). Los Angeles, CA.: The Getty Conservation Institute.

Del Saz Salazar, S., & Marques, J. M. (2005). Valuing cultural heritage: The social benefits of restoring an old Arab tower. *Journal of Cultural Heritage, 6*(1), 69-77.

Etzioni, A. (2010). *Moral dimension: Toward a new economics*. New York, NY: The Free Press.

Fladmark, J. M. (Ed.). (1993). *Heritage. Conservation, interpretation, enterprise*. Shaftesbury, UK: Donehead Publishing Ltd.

Fusco Girard, L. (1987). *Risorse architettoniche e culturali: valutazioni e strategie di conservazione. Un'analisi introduttiva*. Milano, Italia: F. Angeli.

Fusco Girard, L. (1994). I beni ambientali: Valutazioni e strategie di conservazione, tra conflitto e cooperazione. *Genio rurale - Estimo e Territorio, 5*, 35-44.

Fusco Girard, L., & Nijkamp, P. (2004). *Energia, bellezza, partecipazione: La sfida della sostenibilità*. Milano, Italia: F. Angeli.

Fusco Girard, L., & Nijkamp, P. (Eds.). (2009). *Cultural tourism and sustainable local development*. Furnham, Surrey, UK: Ashgate Publishing.

Greffe, X. (1999). *La gestion du patrimoine culturel*. Paris, France: Anthropos.

Greffe, X. (2001). Les activités culturelles: Un levier de développent et d'emploi pour les territoires. In *3e Jornadas sobre Iniciativa Privada y Sector Publico en la Gestion de la Cultura, Malatzaren, 23-25 de mayo de 2001* (pp. 149-166). Vitoria Gasteiz, España: Xabide Sociedad Cooperativa.

Greffe, X. (2003). *La valorisation économique du patrimoine.* Paris, France: Ministère de la culture et de la communication, Département des études et de la perspective.

Holmes, T. P., & Adamowicz, W. L. (2003). *Attribute-based methods*. In P. Champ, K. Boyle & T. Brown (Eds.), *A primer on non-market valuation* (pp. 171-219). Dordrecht, Germany: Kluwer Publishing.

Howe, C. W. (1993). Le frontiere nella valutazione di risorse prive di mercato: problemi e prospettive. In L. Fusco Girard (a cura di), *Estimo ed economia ambientale: Le nuove frontiere nel campo della valutazione. Studi in onore di Carlo Forte* (pp. 57-83). Milano, Italia: F. Angeli.

Hutter, M., & Rizzo, I. (Eds.). (1997). *Economic perspectives on cultural heritage*. London, UK: MacMillan Press.

Ingarden, R. (1983). *Man and value*. Washington, DC: Catholic University of America Press.

Johnston, Ch. (1992). *What is social value? A discussion paper*. Canberra, Australia: Australian Government Publishing Service.

Kermal, S., & Gaskell, I. (1993). *Explanation and value in the arts*. Cambridge, England: Cambridge University Press.

Kermode, F. (1988). *History and value*. Oxford, England: Clarendon Press.

Klamer, A. (Ed.). (1996). *The value of culture: On the relationship between economics and arts*. Amsterdam, The Netherlands: Amsterdam University Press.

Klamer, A., & Zuidhof, P. W. (1998). The value of cultural heritage: Merging economic and cultural appraisals. In Getty Conservation Institute, *Economics and heritage conservation* (pp. 23-61). Los Angeles, CA: The Getty Conservation Institute.

Mason, R. (2008). Be interested and beware: Joining economic valuation and heritage conservation. *International Journal for Heritage Studies, 14*(4), 303-318.

Meynell, H. A. (1986). *The nature of aesthetic value*. Albany, NY: State University of New York Press.

Mitchell, R. C., & Carson R. T. (1989). *Using surveys to value public goods: The contingent valuation method*. Washington, DC: Resources for the Future.

Moreschini, L. (2003). Metodi di valutazione economica di beni pubblici culturali (Working paper No. 01). Torino, Italia: Dipartimento di Economia "S. Cognetti de Martiis," International Centre for Research on the Economics of Culture, Institutions, and Creativity (EBLA).

Mossetto, G., & Vecco, M. (2001). *Economia del patrimonio monumentale*. Milan, Italia: F. Angeli.

Mourato, S., & Mazzanti, M. (2002). Economic valuation of cultural heritage: Evidence and prospects. In M. de la Torre (Ed.), *Assessing the values of cultural heritage* (pp. 51-76). Los Angeles, CA: The Getty Conservation Institute.

Mourato, S., Pearce, D., Ozedemiroglu, E., & Howarth, A. (2000). Beyond 'Dusty Archives': The economics of preserving recorded heritage. *Cultural Trends, 39*, 87-121.

Navrud, S., & Ready R. C. (Eds.). (2002). *Valuing cultural heritage: Applying environmental valuation techniques to historic buildings, monuments and artifacts*. Cheltenham, UK, and Northhampton, MA: Edward Elgar Publishing.

Nijkamp, P. (1993). Lo sviluppo sostenibile e la valutazione socio-economica ed ambientale. In L. Fusco Girard (a cura di), *Estimo ed economia ambientale: Le nuove frontiere nel campo della valutazione. Studi in onore di Carlo Forte* (pp. 281-304). Milano, Italia: F. Angeli.

Niikamp, P. (2012). Economic valuation of cultural heritage. In G. Licciardi & R. Amirtahmasebi (Eds.), *The economics of uniqueness: Investing in historic city cores and cultural heritage assets for sustainable development* (pp. 75-106). Washington, DC: International Bank for Reconstruction and Development/The World Bank.

Noonan, D. S. (2003, November). Contingent valuation and cultural resources: A meta-analytic review of the literature. *Journal of Cultural Economics, 27*(3), 159-176.

Page, T. (1992). Intergenerational justice as opportunità. In D. Maclean & P. Brown (Eds.), *Energy and the future* (pp. 34-49). Totowa, NJ: Rowman and Littlefield.

Pagiola, S. (1996). Economic analysis of investment in cultural heritage: Insights from environmental economics (paper). Washington, DC: Environment Department, World Bank.

Peacock, A., & Rizzo I. (2008). *The heritage game: Economics, policy, and practice*. Oxford, UK: Oxford University Press.

Pearce, D., Maddison, D., & Pollicino, M. (2001). *Economics and cultural heritage. Toward an economic approach to valuing and conserving cultural assets*. London, England: University College.

Pearce, D., & Ozdemiroglu, E. (2002). *Economic valuation with stated preference techniques: Summary guide*. London, England: Department for Transport, Local Government and the Regions (DTLR).

Riegl, A. (1903). *Der moderne Denkmalkultus (Entwurf einer gesetzlichen Organisation der Denkmalpflege in Österreich)*. Wien, Deutschland: Zentral Kommission.

Riegl, A., & Bacher, E. (1995). *Kunstwerk oder Denkmal?* Wien, Köhl, Weimar, Deutchsland: Böhlan Verlag.

Rosen, S. (1974). Hedonic prices and implicit markets: Product differentiation in pure competition. *Journal of Political Economy, 82*, 34-55.

Sackman, H. (1975). *Delphi critique: Expert opinion, forecasting, and group process*. Lexington, MA: D.C. Heath.

Scarrocchia, S. (a cura di). (1995). *Alois riegl: Teoria e prassi della conservazione dei monumenti. Antologia di scritti, discorsi, rapporti 1898-1905, con una scelta di saggi critici*. Saggi, Studi, Ricerche/Accademia Clementina di Bologna, 4. Bologna, Italia: CLUEB.

Seaman, B. A. (2003). Economic impact of the arts. In R. Towse (Ed.), *A handbook of cultural economics* (pp. 224-31). Cheltenham, UK, and Northampton, MA: Edward Elgar Publishing.

Seaman, B. A. (2006). *The relationship among regional economic impact models: Contingent valuation versus economic impact in the case of cultural assets* (Working paper). Atlanta, GA: Georgia State University.

Seaman, B. A. (2012). *Economic impact in the arts: An updated methodological assessment*. PowerPoint presentation presented at the International Conference Culture – Potentials for Development? Maribor 2012, Maribor, Slovenia.

Serageldin, I. (1999). *Very special places: The architecture and economics of intervening in historic cities*. Culture in Sustainable Development Series. Washington, DC: The World Bank.

Snowball, J. (2008). *Measuring the value of culture: Methods and examples in cultural economics*. Berlin, Germany: Springer-Verlag.

Srakar, A., & Vecco, M. (2017, May). Ex-ante vs. ex-post: Comparison of the effects of the European Capital of Culture Maribor 2012 on tourism and employment. *Journal of Cultural Economics, 41*, 197-214. doi: 10.1007/s10824-017-9294-0.

Throsby, D. (1997). Seven questions in the economics of cultural heritage. In M. Hutter & I. Rizzo (Eds.), *Economic perspectives of cultural heritage* (pp. 13-30). New York, NY: St. Martin Press.

Throsby, D. (1999). Cultural capital. *Journal of Cultural Economics, 23*(1-2), 3-12.

Throsby, D. (2001). *Economics and culture.* Cambridge, England: Cambridge University Press.

Throsby, D. (2003). Determining the value of cultural goods: How much (or how little) does contingent valuation tell us? *Journal of Cultural Economics, 27,* 275-285.

Throsby, D. (2013). Assessment of value in heritage regulation. In I. Rizzo & A. Mignosa (Eds.), *Handbook on the economics of cultural heritage* (pp. 456-469). Cheltenham, UK, and Northhampton, MA: Edward Elgar Publishing.

Tighman, B. R. (1984). *But is it art? The value of art and the temptation of theory*. New York, NY: Basil Blackwell.

Tirendi, D. (2003). Valutazione di contingenza per la stima delle risorse culturali ed ambientali. *Genio rurale - Estimo e territorio, Il Sole 24 Ore*, *LXVI*(5), 12-22.

Tuan, T. H., & Navrud, S. (2008). Capturing the benefits of preserving cultural heritage. *Journal of Cultural Heritage, 9*(3), 326-337.

Vecco, M. (2007). *Economie du patrimoine monumental*. Paris, France: Economica.

Vecvagars, K. (2006). Valuing damage and losses in cultural assets after a disaster: Concept paper and research options. *Serie estudios y perspectivas*, 56. Ciudad México, México: United Nations Publication.

Walsh, R. G., & Mckean, J. R. (1998). Option and anticipatory values of US wilderness. Unpublished mimeograph.

Zuidhof, I. P. W. (1999). The values of cultural heritage. Paper presented at ICARE Summer School, *The Economics of Built Heritage*, 11-17 July 1999, Venice, Italy.

About the Authors

Marilena Vecco (vecco@eshcc.eur.nl) is Assistant Professor of Cultural Economics at Erasmus University Rotterdam. In the Department for the Study of the Arts and Culture, she lectures in the M.A. Cultural Economics & Cultural Entrepreneurship.

Francesca Imperiale (francesca.imperiale@unisalento.it) is Assistant Professor of Management of Cultural Organizations and Ph.D. in Business Administration at the Department of Management and Economics of the University of Salento (Lecce), Italy.

Discussion Questions

1. What are the values of cultural heritage to be protected against the catastrophic risks?

2. Are the assessment methods presently in use for insurance purposes suitable to measure cultural heritage?

3. What insurance value for cultural heritage?

To Cite this Article

Vecco, M., & Imperiale, F. (2017, Spring). Cultural heritage: Values and measures. What insurance value? *Journal of Multidisciplinary Research, 9*(1), 7-22.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 23-31.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Liability and Reparation of Catastrophic Damages with particular regard to Cultural and Environmental Heritage

Marco Rizzuti
University of Florence (Italy)

Abstract

The article takes into consideration the issues concerning how we can construe, from a legal point of view, the consequences of catastrophic events on environmental and cultural goods as damages and how we can manage legal instruments in order to compensate or insure these peculiar damages.

Keywords: cultural heritage, environmental heritage, catastrophic events, damages, compensation, insurance.

Introduction

According to common language, the consequences of catastrophic events on Cultural and Environmental Heritage are obviously damages. However, from a legal point of view, it is quite difficult to construe these hypotheses as damages in the juridical sense of the term. We could say that such extreme events put pressure on the legal infrastructures that regulate ordinary damages and bring them to their limits.

Let us take into consideration the typical example of damage: a car accident without personal injuries. Everything is quite clear: The injurer has damaged the car of a victim, and therefore, the injurer, or his or her insurance, has to refund the victim for the consequences of the inflicted damage.

In contrast, if we take into consideration catastrophic damages, with particular regard to Cultural and Environmental Heritage, everything becomes very difficult to ascertain: Who is the damager? Who is the damaged? How can we refund the latter?

Who is the Damaged?

Let us start considering the damaged. In the car accident's case, he or she is the owner of the damaged vehicle. In contrast, in the case of a catastrophic event, we will have, at least, to face a plurality of damaged subjects that we will not be able to determine *a priori*, but, if the damaged goods also have any degree of cultural or environmental relevance, it will become difficult even to utilize the ownership's categories. In fact, the Environment is what civilian jurists call a *res communis omnium* (meaning, a good that is common to everybody). Therefore, we can consider environmental goods as the object of communal interests, rather than of an owner's legal right: In fact, historical examples of *res communes omnium* were the air or the sea, and nowadays we can construe their wholesomeness as a *res communis omnium* (Fiorentini, 2010; Dani, 2014; Di Porto, 2014). That's why, for instance, in Italian Law, the power to sue for environmental damages does not belong to a private subject but to the Public Prosecutor (article 18 of the Law n° 349 of 1986).

We could propose an analogous construction for some cultural goods of incorporeal nature, such as the preservation of a language, but maybe in this case, we will not have to face the hypothesis of a catastrophic damage. In contrast, with regard to corporeal cultural goods, a private or public owner does exist, even if the damages to such a good affect not only this owner but also a wider community (a local community, a national community, a religious community, or even a global community, as in the case of the UNESCO's World Cultural Heritage), which recognizes to the good its particular cultural relevance. Therefore, we could utilize, also in this case, the above-mentioned category of communal interests: In fact, there is a deep connection between Environmental Law and Cultural Heritage Law, as we can see taking into consideration, for instance, the provisions concerning the landscape, which in Italian Law is a peculiar good, at the crossroads between environmental goods and cultural goods (article 146, paragraph 12, of the Legislative Decree n° 42 of 2004).

Who is the Damager?

To define a damager in a legal sense is even more difficult. We will consider the issue with regard to three different catastrophic events: a typical human-made catastrophe, the war, and then two typical natural catastrophes, the flood and the earthquake.

Wars

According to common language, the devastating consequences of wars on Environmental and Cultural Heritage are damages, and one of the warring parties is the moral responsible, or the historical responsible, or both. In contrast, from a legal point of view, we have to deal with actions that jurisprudence labels as *acta jure imperii* and that, according to the prevailing international case law, cannot originate a liability under internal jurisdictions (International Court of Justice of The Hague, 3rd February 2012, *Germany v. Italy*).

However, international authorities can prosecute the responsible individuals, but only if and when International Law considers these kinds of destructions as war crimes, and in the past it was not so. Therefore, the most famous international trials, the Nurnberg ones, led to the conviction of some prominent Nazis as responsible for mass killings and genocide, but not

because of their *Bücherverbrennungen* (book burnings) or because of their thefts of cultural goods from all over Europe (Nicholas, 1994; Müller & Tatzkow, 2010; Ronald, 2015). Probably in that period, according to the prevailing opinion, these kinds of facts were still among the "ordinary" consequences of war, not reaching the level of utmost injustice that could authorize the intervention of international justice.

Only in very recent times, international judges have started to consider them as war crimes (International Criminal Court of The Hague, 27th September 2016, *Prosecutor vs. Ahmad Al Faqi Al Mahdi*) because of the rise of a new awareness after the iconoclastic destructions perpetrated, in a sort of postmodern "Savonarola's revival," by the jihadist movements, whose ideology encompasses the exhibited destruction of Pre-Islamic (or, however, not Islamic enough) Cultural Heritage, in order to destroy also the attempts of the secular governments of many Middle Eastern Countries to shape a national, rather than religious, identity through a political use of archaeology based on European models (Reid, 2003; Giardina & Vauchez, 2008; Veyne, 2015; Domenici, 2015).

However, this is a winners' justice (Zolo, 2012), and one of the warring parties will never be liable (for instance, it was unthinkable to put on trial the commanders of the Allied Forces who destroyed Montecassino's Abbey in 1944), while the liable persons will be almost always individuals who have already lost everything and cannot effectively refund anyone.

In contrast, International Law often has utilized the instrument of war reparations that the defeated State has to pay to the winners, according to Peace Treaties, or to its own citizens resident in the occupied or transferred areas, in order to refund the damages the winners inflicted, according to specific internal Laws of the defeated State itself. Anyway, in these cases, from a legal point of view, we do not have to reimburse an unjustified damage but to compensate a licit prejudice.

Sometimes, these Treaties or Laws contain provisions having specific regard to damages inflicted on Environmental or Cultural Heritage. For instance, after the Vienna Congress of 1815, the winning Powers also imposed on the defeated France to accept that a special mission, under the direction of the prominent neoclassic sculptor Antonio Canova, would take back an important part of the cultural goods that Napoleon had obtained during his campaigns in Italy (Pomponi, 1994). Then, during World War II, a special Allied task force, the so-called Monuments Men, were in charge of safeguarding Cultural Heritage from war damages and, as the conflict came to a close, to find and return the stolen works of art (Edsel, 2009).

Natural Catastrophes

To shape, from a legal point of view, a responsible damager is even more difficult with regard to the so-called natural catastrophes. In ancient times, men thought possible to punish a natural element for its misbehavior, as in the famous case of the Persian emperor who ordered to whip the sea after a flood (Herodotus, VII, 35; Piras, 2011; Daryaee, 2016), or to bind the decisions of the gods with control on it, through the instruments of a sacral law. At instance, it was thinkable to placate gods killing who has offended them, or to threaten gods with the denial of sacrifices, while the same paradigms often were applied also to the wars that men were used to seeing as instruments of the divine rage more than as human deeds. But in modern times, the Cartesian idea that animated beings do not animate or control natural forces has made those paradigms absurd.

Therefore, the legislative interventions, which in accordance to the principles of the modern, and pre-modern (Wickham, 2015), Welfare State quite always follow floods and earthquakes, do not regulate the liability of a responsible for damages but provide that the public treasury pays compensations to the victims. However, it does not mean that the State is responsible for the damages but that it has to intervene because there is no responsible at all, since nature cannot be a legal responsible in a modern view. In fact, civilian jurists express this absence of a responsible in natural events through the Latin formulas of *casus fortuitus* or *vis major cui resisti non potest,* while common lawyers refer to "acts of God" in order to express the same concept. We can see how much these constructions are substantially similar to the above-mentioned one regarding war reparations.

Moreover, with specific reference to the damages natural catastrophes inflict on Environmental and Cultural Heritage, these public interventions do not consist of the mere payment of the destructed good's economic value but have to comprehend the funding of its reconstruction. In fact, in the prevailing opinion, the reconstruction has to restore the cultural or environmental good *dov'era e com'era* (meaning: where it was and how it was), according to the famous slogan that the Mayor of Venice, Filippo Grimani, created after the collapse of St. Mark's Belfry in 1902. Anyway, we have to take into more specific consideration some differences between our typical examples, floods and earthquakes.

Floods

The causes of a flood can be, and often are, human deeds provoking hydrogeological instability, such as deforestation, rivers' obstructions, inadequate maintenance of detention basins or levees, and even their deliberate sabotage: For instance, after the devastating Florence flood of 4th November 1966, the city of Pisa avoided the same fate because, in all likelihood, someone sabotaged the Arno's levees in the countryside, and therefore, deliberately flooded some villages. In these cases, it could be possible to sue against the responsible persons or institutions in order to obtain a reimbursement, so reducing the amounts the State has to pay in force of the above-mentioned compensative mechanisms.

Moreover, if we accept the idea that human deeds are the main causes of the ongoing climate changes, we can see also other extreme meteorological events as a consequence of the activities of a part of humankind. Indeed, climate change is an ancient phenomenon that had taken place also in the preindustrial era (La Roy Ladurie, 1967; Behringer, 2010) and has always influenced human migrations (Timmermann & Friedrich, 2016), but it is possible to argue that even some ancient civilizations collapsed because of fatal errors in the management of their ecosystems with particular regard to the climate issues (Diamond, 2005; Cline, 2014).

If we take into consideration this kind of meteorological extreme events, the issue regards a confrontation among States, or however, among large groups of persons, more than among single individuals: therefore, International Law is trying to elaborate some compensative mechanisms, such as the Emissions Trading System (Directive 2003/87/EC), implemented in order to reach the objectives of the UN Kyoto Protocol of 11th December 1997. In fact, we can see this System as a legal instrument whose main effect is that the producers of emissions have to pay a sort of compensation to the non-producers.

We also can consider the debate on the recognition of a Climate Refugee special status: according to the International Organization for Migration (2017), "Environmental migrants are

persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad" (n.p.). This is the case of some Pacific Islanders, whose active contribution to the global warming is minimal or inexistent, but who have to flee from their countries, which will disappear because of the increasing sea-level rise, and therefore, are asking for shelter in other countries, much more responsible for climate changes.

From a different point of view, judges can consider public authorities as responsible of floods and similar events through an extensive interpretation of the Laws on Civil Protection, often containing vague provisions that regard not only the events' prevention but also their management. For instance, the Italian Supreme Court, through a wider interpretation of the Law on Civil Protection (Law n° 225 of 1992), has condemned the Mayor of Sarno for the flood of 1998 (Cass., 3rd May 2010, n° 16761), and then in November 2016 other justices have condemned the Mayor of Genoa for the flood of 2011.

Of course, as far as the effective reimbursement of the inflicted damages, what really matter are not the convictions of single public officers but the consequent liabilities of the public institutions. Therefore, if we follow this path, the final payer will be always the public treasury, but as the responsible and not as the subject entitled to finance a compensative mechanism for damages without a responsible. Assuming a merely economic point of view, we can doubt that this solution will be more efficient than the other because the burden on public treasury will remain the same, but the damaged persons will have to take legal actions, with their times and costs, instead of availing of an administrative compensation mechanism.

Earthquakes

In contrast, human beings cannot cause earthquakes (we make reference to movements of tectonic plates, not to collapses related to hydraulic fracturing technique in the extraction of shale gas), and, on the basis of the current scientific knowledge, they can neither prevent, nor stem, nor predict this kind of catastrophe. Therefore, with regard to such an unpredictable and unavoidable event, it becomes difficult to hypothesize someone's liability. In fact, in a famous case the Italian Supreme Court has absolved the scientists of the Great Risks Committee after L'Aquila's earthquake of 2009, essentially because of the recognized unpredictability of the earthquakes on the basis of the current scientific knowledge (Cass. pen., 25th March 2016, n° 12748).

However, everybody knows that if a seism hits a building compliant with quakeproof criteria, there will be a strong reduction of the damages, as demonstrate the long-lasting experiences of other seismic countries such as Japan (we can just remember how the trivial F. B. Pinkerton mocked the Japanese quakeproof *casa a soffietto* in Puccini's *Madama Butterfly*). Therefore, it is possible to affirm that the constructor who violates quakeproof criteria will be responsible in the event of a building's collapse in the ten years following the completion of the works, in force of article 1669 of the Italian Civil Code (Cass., 10th December 2013, n. 27500).

So, in our times of budget restrictions and European parameters, an important debate is rising about the opportunity of making responsible the damaged party itself, in order to reduce the economic burdens of the earthquake-related compensative mechanisms on public treasuries. In other words, there are many proposals to introduce a system of compulsory seismic

certification, or of compulsory seismic insurance, or both, with a view to push the buildings' owners to ameliorate them under the seismic point of view, in order to improve their certification level or to reduce the amount of the insurance premium. Moreover, a compulsory seismic insurance finally will transfer the economic burden of reconstruction from public treasury to private insurance companies, and indirectly to the potential damaged parties themselves, who will have to pay the premiums. Such a perspective could be interesting with regard to cultural goods too, although in many cases, their owner is the State, or another public institution; therefore, also, if we adopt such a new model, the final economic burden will remain on public finances.

Could a Compulsory Insurance be the Adequate Solution?

Nowadays, while France has introduced a system of compulsory insurance against natural catastrophes since Law n° 600 of 1982, the current Italian Regulations encompass hypotheses of incentivization for these kinds of instruments but never make them compulsory in legal terms. For instance, there are state incentives for insurances against natural catastrophes in the agricultural sector (Landini, 2015), and some recent provisions have just introduced a mechanism of seismic certification that give access to certain tax breaks, the so-called "seism bonus" (Law n° 232 of 2016, Budget Law for the year 2017). However, the introduction of compulsory mechanisms is still a debated issue, and probably it is not by chance. In fact, it will be quite difficult to build from scratch such a mechanism, and overall to find and to implement sanctions coherent with the fundamental principles of our legal order and, at the same time, endowed with an acceptable degree of deterrence.

If we go back to the above-mentioned example of the car accidents, we can consider how in Italy we have reached this objective through legal provisions that bind both drivers and insurers to stipulate compulsory motor insurance contracts and that prevent the uninsured vehicles from circulating (Law n° 990 of 1969), while analogous rules are in force in many other countries too (Fenyves, Kissling, Perner & Rubin, 2016). However, to construct a similar mechanism having regard to buildings and to seismic risks is quite difficult, as we can verify taking into consideration some possible hypotheses of sanctions.

First, we can hypothesize that, if the owners do not insure or certify the buildings, they will have to pay an administrative fine, but this will imply the organization of costly, and maybe ineffective, periodical controls by a great number of public officers with regard to all the buildings (not only the buildings with cultural relevance) in the national territory. In contrast, it is possible that the owners will find it more economically convenient to accept the risk of an improbable fine, rather than to bear the high costs of insurance, certification, or both.

It also is possible to hypothesize the exclusion of uninsured or uncertified buildings from economic circulation, legally nullifying all the contracts stipulated in order to transfer property rights with regard to these buildings. In fact, the Italian legislators already have implemented analogous provisions with regard to buildings constructed without the necessary administrative authorizations (Law n° 47 of 1985; Presidential Decree n° 380 of 2001) and, for shorter periods, also with regard to buildings not endowed with the compulsory energy performance certificate (Legislative Decree n° 192 of 2005; Law n° 90 of 2013). In these cases, the controls are essentially a task of the public notaries who have to draft the transfer contracts because their

Professional Law punishes notaries if and when their acts are legally void (article 28 of Law n° 89 of 1913).

In contrast, also, these sanctions can be ineffective. First, not every real estate transfer implies the intervention of a notary, being possible, for instance, to inherit buildings through an intestate succession or to acquire them in force of uninterrupted possession. Moreover, most of the buildings exposed to serious seismic risks are in small towns or villages of mountain or hilly areas and, in the current conditions of Italian real estate market (still in a phase of severe depression after the Great Recession, and overall because of the strong increases in taxation of 2012), are already nearly unsalable, but will become even more unmarketable with the perspective of new costly burdens linked to insurance and/or certification. So, the threat of a legal sanction against the formal marketability of these buildings could be totally wanting in deterrence from the owners' point of view. With specific reference to cultural goods, the situation is even worse because Cultural Heritage Protection Laws already limit and sometimes eliminate their marketability, so a sanction having regard to the, at least, rare event of their transfer often will result immaterial.

Finally, we can hypothesize the exclusion of the uninsured buildings from the public mechanisms of compensation for seismic damages: In other words, according to this hypothesis, we will abolish the above-mentioned mechanisms because obviously with regard to the insured buildings insurance companies will have to compensate the damages. This solution contrasts with the solidarity principles of Italian Constitution (Landini, 2015), and anyway, it also will be quite difficult to implement such a mechanism. In fact, if we make the reconstruction of an important part of a town impossible, the whole town probably will lose most of its urban functionality and of its landscape and cultural value. In contrast, if we reject this hypothesis and the public intervention will have to repay precisely who has infringed the law on compulsory insurance, it will result in a great disincentive against its compliance.

With regard to every kind of sanction, further problems depend on the legal structure of the compulsory insurance, which can be unilateral or bilateral. In the first case, if the buildings' owners are bound to stipulate a policy against seismic risks but the insurers are not, precisely the most risk-exposed buildings will not find insurance coverage, and to punish their owners for this reason will be absurd. The legislators have faced similar problems with regard to third party liability insurance of Italian healthcare facilities, and the final decision has been to let them be free to choose between an insurance model and a self-insurance model (Law n° 114 of 2014): This could be a useful solution also for the institutions, private and often public, that own cultural goods exposed to serious seismic risks. In the second case, if also the insurers must stipulate the contract, its economic burden, due to the huge amount of the potential damages, could result unbearable even for the companies' budgets. Therefore, they will have to withdraw from that market, or the government will have to provide supports (for instance, in France the State operates as a reinsurer), but in the latter case the related costs will be again a burden for public treasury, and we will be right back just where we started.

We do not want to conclude this article with a declaration of radical skepticism toward any hypothesis of reform in the considered matter, also if we have to observe that probably it could never be possible to wholly eliminate the public intervention. But, it may be possible to reduce its financial burdens and to make it more sustainable through the accurate design of a public-private partnership system, combining government incentives (in order to promote seismic insurance, or self-insurance, or certification, or all of them), with some compulsory mechanisms,

that we will have to introduce only with regard to specific, and so effectively controllable, hypotheses, such as, for instance, cultural goods endowed with a particular value according to Cultural Heritage Protection Laws.

References

Behringer, W. (2010). *A cultural history of climate*. Cambridge, England: Polity.

Cline, E. H. (2014). *1177 B.C.: The year civilization collapsed*. Princeton, NJ: Princeton University Press.

Dani, A. (2014, dicembre). Il concetto giuridico di "beni comuni" tra passato e presente. *Historia et ius*, 6, 7-48. Retrieved from http://www.historiaetius.eu/uploads/5/9/4/8/5948821/dani_6.pdf

Daryaee, T. (2016). Whipping the sea and the earth: Xerxes at the Hellespont and Yima at the Vara. *Digital Archive of Brief Notes & Iran Review*, 4-9.

Diamond, J. (2005). *Collapse: How societies choose to fail or succeed*. New York, NY: Viking Press.

Di Porto, A. (2014). *Salubritas e forme di tutela in età romana Il ruolo del civis*. Turin, Italy: Giappichelli.

Domenici, V. (2015). *Contro la bellezza*. Milan, Italy: Sperling & Kupfer.

Edsel, R. M. (2009). *Monuments men: Allied heroes, Nazi thieves, and the greatest treasure hunt in history*. London, England: Preface Publishing.

Fenyves, A., Kissling, C., Perner, S., & Rubin, D. (2016). *Compulsory liability insurance from a European perspective*. Berlin, Germany: De Gruyter.

Fiorentini, M. (2010). L'acqua da bene economico a "*res communis omnium*" a bene collettivo. *Analisi Giuridica dell'Economia, 1*, 39-78.

Giardina, A., & Vauchez, A. (2008), *Il mito di Roma. Da Carlo Magno a Mussolini*. Rome-Bari, Italy: Laterza.

Herodotus. (2014). *The Histories*. Trans. Tom Holland. New York, NY: Viking.

International Organization for Migration. (2017). Migration, climate change and the environment: Definitional issues. Retrieved from https://www.iom.int/definitional-issues

La Roy Ladurie, E. (1967). *Histoire du climat depuis l'an mil*. Paris, France: Flammarion.

Landini, S. (2015). Responsabilità civile e compensazione dei danni determinati per l'intervento di eventi catastrofali ambientali, 571-589. *Problemi attuali di diritto privato. Studi in memoria di N. Di Prisco*. Turin, Italy: Giappichelli.

Müller, M., & Tatzkow, M. (2010). *Lost lives, lost art: Jewish collectors, Nazi art theft, and the quest for justice*. New York, NY: Vendome Press.

Nicholas, L. H. (1994). *The rape of Europa: The fate of Europe's treasures in the Third Reich and the Second World War*. New York, NY: Knopf.

Piras, A. (2011). Serse e la flagellazione dell'Ellesponto. Ideologia avestica e conquista territoriale achemenide, 109-136. *Studi iranici ravennati*. Series Lazur, 1. Milano, Italia: Associazione Culturale "Mimesis."

Pomponi, M. (1994). Fonti per la storia dei monumenti antichi di Roma. II. Nuove evidenze sulla missione di Canova a Parigi. *Atti della Accademia Nazionale dei Lincei: Rendiconti. Classe di Scienze Morali, Storiche e Filologiche, IX*, V, 4, 739-761.

Reid, D. M. (2003). *Whose Pharaohs? Archaeology, museums, and Egyptian national identity from Napoleon to World War I*. Berkeley, CA: University of California Press.

Ronald, S. (2015). *Hitler's art thief: Hildebrand Gurlitt, the Nazis, and the looting of Europe's treasures*. New York, NY: St. Martin's Press.

Timmermann, A., & Friedrich, T. (2016). Late Pleistocene climate drivers of early human migration. *Nature, 538,* 92-95.

Veyne, P. (2015). *Palmyre, l'irremplaçable trésor*. Paris, France: Albin Michel.

Wickham, C. (2015). *Sleepwalking into a new world: Italian city communes in the twelfth century*. Princeton, NJ: Princeton University Press.

Zolo, D. (2012). *La giustizia dei vincitori. Da Norimberga a Baghdad*. Rome-Bari, Italy: Laterza.

About the Author

Marco Rizzuti, Ph.D. (marco.rizzuti@unifi.it), is a Postdoctoral Researcher at the Legal Sciences Department of the University of Florence (Italy).

Discussion Questions

1. How can it be possible to construe the consequences of catastrophic events on Cultural and Environmental Heritage as damages from a legal perspective?

2. Which are the main differences between the human-made catastrophes and the natural catastrophes from a legal point of view?

3. Which are the pros and cons of the introduction of a compulsory seismic insurance mechanism?

To Cite this Article

Rizzuti, M. (2017, Spring). Liability and reparation of catastrophic damages with particular regard to cultural and environmental heritage. *Journal of Multidisciplinary Research,* 9(1), 23-31.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 33-51.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Cultural Heritage and Challenges for Catastrophic Risk Management in Italy

Stefano Adamo
University of Salento

and

Francesca Imperiale
University of Salento

Abstract

The recent catastrophic events in central Italy reveal how the Italian regulatory framework for managing disaster risk, especially to cultural heritage, is inadequate and needs urgent policy reforms.

In this context, the article aims to identify and discuss the main challenges for catastrophic risk management in Italy, considering the adoption of an ex-ante compensation model including insurance tools with particular reference to cultural heritage protection.

To this end, the article uses the insurance capacity theory (Cassandro, 1968; Stone, 1973) as main theoretical framework and a deductive approach, with the results of an extensive survey that Imperiale et al. (2016) carried out in 2015 concerning the Italian insurance market.

Keywords: cultural heritage, catastrophic risk, risk management, insurance, risk preparedness

Introduction

In the last twenty years in Italy, there have been less than 72 natural catastrophic events including earthquakes, floods, landslides, etc., causing about 21,000 deaths and a total direct damage of around 46 billion dollars excluding indirect damages to business activities (see Table 2).

Moreover, the most recent earthquake swarm in central Italy recalls with inevitable and impressive evidence how the unpredictability and severity of certain events, besides causing huge loss of lives, and the collapse of daily and future living and working conditions, also reveals the extreme vulnerability of the national cultural heritage and the related high risk of irreversible loss. In only three months from the first earthquake on 24th August 2016 to date, there have been as many as 5,000 reports of total or partial damages to monuments, historical buildings, churches, bell towers, etc. (Il Sole 24 ore, 30 October 2016; Gaggioli, 2016).

The scenario is becoming more and more worrying considering the high economic efforts Italy is already making to recover the losses. Thus, considering this scenario, the risk management regulatory framework in force in Italy mainly adopts an ex-post compensation model.

In this context, this article aims to identify and discuss the main challenges for catastrophic risk management in Italy with specific reference to cultural heritage and the adoption of an ex-ante compensation model including insurance tools.

More in detail, the underlying research questions are the following: *Can the insurance market have a role in managing the catastrophic risk of a cultural property? What are the main challenges to insure cultural property against a catastrophic risk in Italy?*

To this end, the article uses the insurance capacity theory (Cassandro, 1968; Stone, 1973) as main theoretical framework and a deductive approach, with the results of an extensive survey on the Italian insurance market that Imperiale et al. (2016) carried out in 2015.

The article consists of four sections. The first section offers a synthetic overview of the Italian cultural heritage vulnerability in relation to catastrophe risks, explaining the main risk management options. Among these options, the second section deals with insurance, focusing on how the insurance system could be capable of managing these risks considering the main requirements for insurability and related management. The third section describes the actual insurance capacity in the Fine Art field in Italy in terms of main players and insurance praxis regarding the Italian cultural properties. The article ends with a discussion of the main facts we have described and some conclusions about the role and the perspectives of the insurance mechanism to protect national cultural heritage against catastrophic risks.

Cultural Heritage and Catastrophe Risks: Risk Management Options

Cultural heritage, in its various immovable and movable forms, is at risk from several threats that can result in the loss of irreplaceable cultural assets and values. UNESCO[3] issued a standard list of 14 primary factors, each one encompassing a number of secondary factors, able to affect cultural properties. Among these factors, there are threats deriving from buildings, infrastructure and developments, those related to pollution, biological resource use, physical resource extraction, local conditions affecting physical fabric, social and cultural use of heritage, and other human activities – such as terrorism, illegal activities, armed conflicts, vandalism, etc. – as well as management and institutional factors and threats due to climate change and severe weather and geological events.

[3] UNESCO, World Heritage Centre, List of factors affecting the properties. http://whc.unesco.org/en/factors/ (Accessed 15 December 2016).

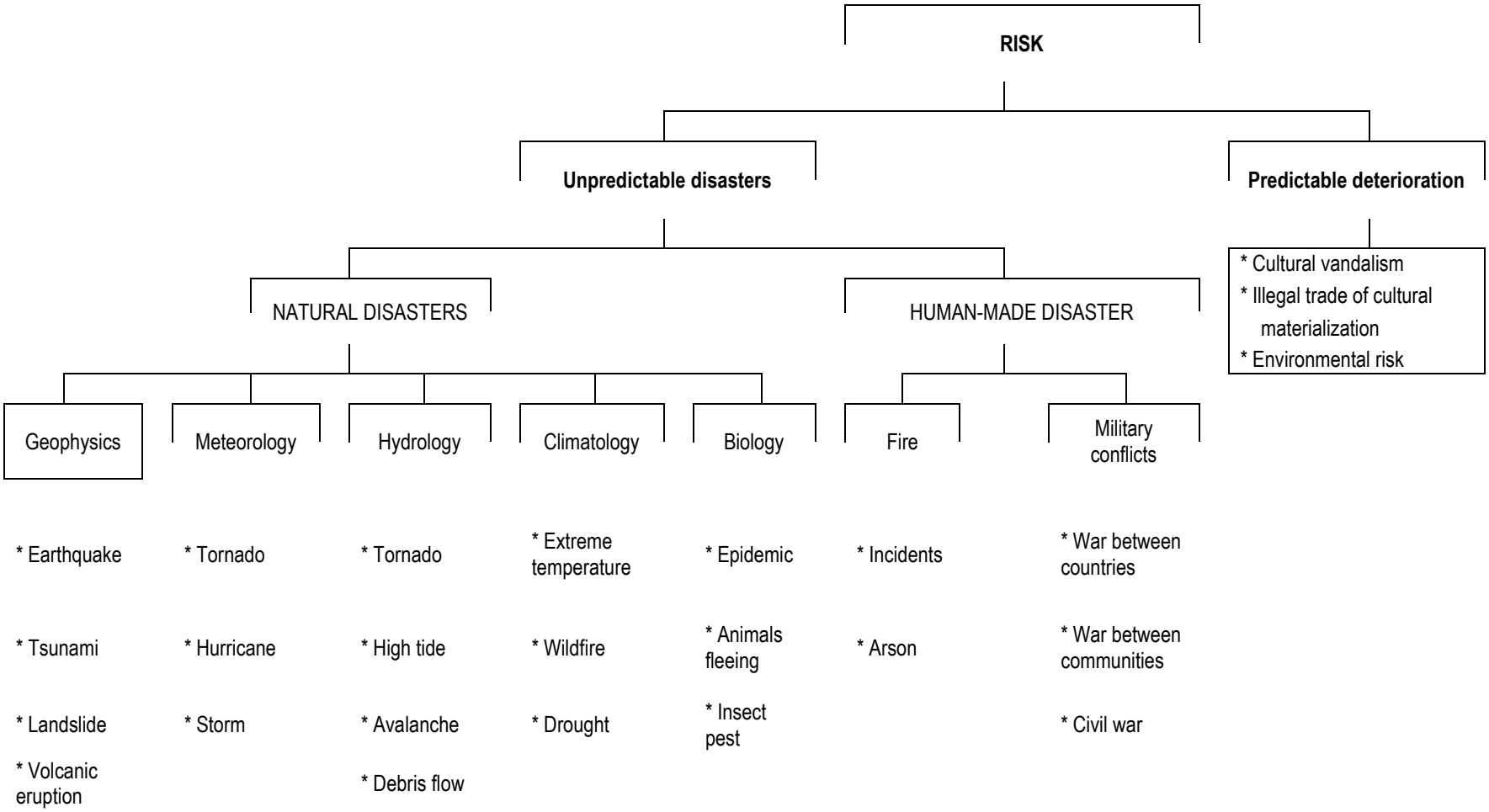


Figure 1. Risks to cultural heritage. Source: Wang, 2015, 211.

Wang (2015) offers a useful schematic diagram of common disasters and risks to cultural heritage (Figure 1) on the basis of Ghose's (1999) risk classification into unpredictable disasters and predictable deterioration.

Moreover, risks, regardless the typology of threats, derive from the combination of hazard and vulnerability, that are the result of external and internal causes (UNESCO, 2010). Indeed, hazard is an external source, a (natural or human-made) phenomenon that has the potential to cause damage to cultural heritage; vulnerability is the internal weakness of a cultural property, compared to that hazard depending on its specific characteristics and location, its exposure to that potential damage.

The probability and scale of the potential damage, therefore, may result more relevant the higher the degree of vulnerability characterizing the cultural properties, which depend on their conservation status and on cultural, social, and environmental conditions affecting their location (Latting, 2012, 20 ss; Cannon & Schipper, 2014). Figure 2 shows this relationship.

Among the different hazards, catastrophe risks are undoubtedly the most unpredictable and severe events of irreversible and cumulative damage threatening cultural heritage.

Catastrophe risks are very high as these events usually occur with low frequency, highly destructive impact, and a significant amount of damage to people and properties (Selleri, 1996, 23; Molinaro, 1966, 283 ss.; Zeckhauser, 1995, 157-175). Catastrophic events can be natural phenomena, such as earthquakes, volcanic eruptions, floods, storms, tsunamis, etc., or consequences of technological or human-made factors, such as fire, armed conflicts, terrorist attacks, etc.

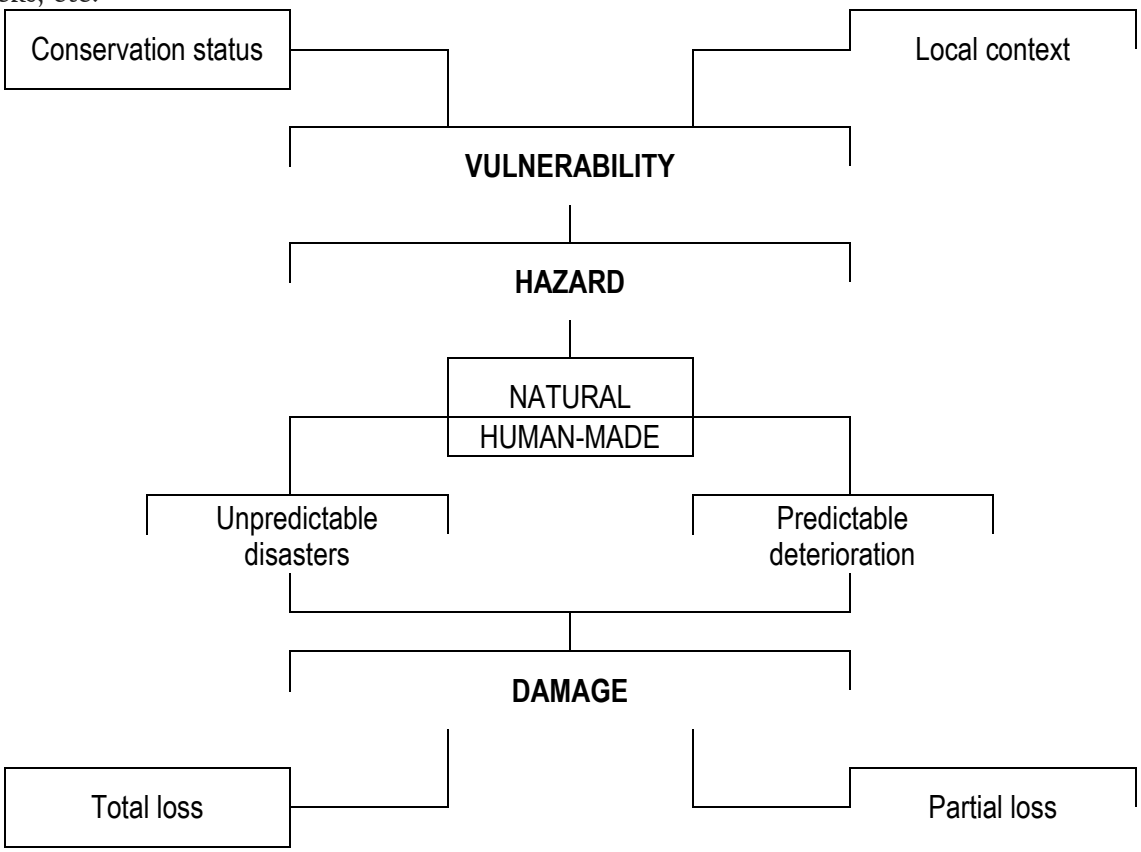


Figure 2. Vulnerability-hazard-damage relationship. Source: Our elaboration.

The related potential damages may be different in terms of scale and typology. Meyer et al. (2013) have classified them in three main categories, as shown in Table 1.

Table 1
Damage Cost Categories

	Tangible costs	Intangible (non-market) costs
Direct	• Physical damage to assets: buildings, contents, infrastructure	• Loss of life • Health effects • Loss of environmental and cultural goods
Business interruption	• Business interruption caused by the destruction of capital goods	• Ecosystem services interrupted
Indirect	• Induced production losses of suppliers and customers of companies directly affected by the hazard	• Increased vulnerability of survivors and existing buildings and infrastructure

Source: Our adaptation from Meyer et al., 2013, 1354.

Considering the different values of a cultural property, as the relevant literature (for all, see Vecco, 2011) shows, the exposure of cultural heritage to catastrophe risk is likely to cause adverse effects in terms of:

- direct and tangible losses (destruction or physical damages of different scale);
- indirect and intangible damages (loss of cultural and social values), whose monetary amount is not always easily quantifiable.

As for the size and scale of the potential damages, human-made catastrophes have more contained impact profiles than natural disasters because they usually involve defined areas and cause minor knock-on effect. Natural catastrophes, besides affecting broader areas of impact, show a more marked interdependence of effects and damage they are able to cause, presenting higher degrees of severity (Selleri, 2015: 99 ss).

Table 2 shows, as an example, the effects of natural catastrophes occurred in Italy over the last 20 years, compared to those of technological catastrophes in the same period.

Table 2
Disasters in Italy in the Last 20 Years

Disaster group	Disaster type	Occurrence	Total deaths	Injured	Affected	Homeless	Total affected	Total damage ('000
Natural	Drought	3						1,990,000
Natural	Earthquake	12	662	1,993	41,859	116,500	160,352	24,682,252
Natural	Epidemic	2	3		10,001		10,001	
Natural	Extreme temperature	8	20,169					4,532,601
Natural	Flood	30	170	183	71,210	6,700	78,093	12,482,000
Natural	Landslide	5	168	10	3,713	219	3,942	34,210
Natural	Storm	8	39	5	200		205	2,166,000
Natural	Volcanic activity	1						3,100
Natural	Wildfire	3	13					115,000
Technological	Industrial accident	2	10	700			700	
Technological	Miscellaneous accident	6	152	57			57	
Technological	Transport accident	42	2,081	651	1,260	100	2,011	
Total		122	23,467	3,599	128,243	123,519	255,361	46,005,163

Source: EM-DAT – The OFDA/CRED International Disaster Database, www.emdat.be, Université Catholique de Louvain, Brussels, Belgium [accessed 31 January 2017].

They have generated direct damages to people and properties amounting to approximately 5 billion euro per year, excluding indirect and intangible damages (Casucci & Liberatore, 2012).

Generally, the risk management approaches may be different, varying along two opposite decisions, respectively aiming at the avoidance or, vice versa, the acceptance of the risk (Williams & Heins, 1989). Figure 3 shows the common decision-making options to manage risks to cultural properties.

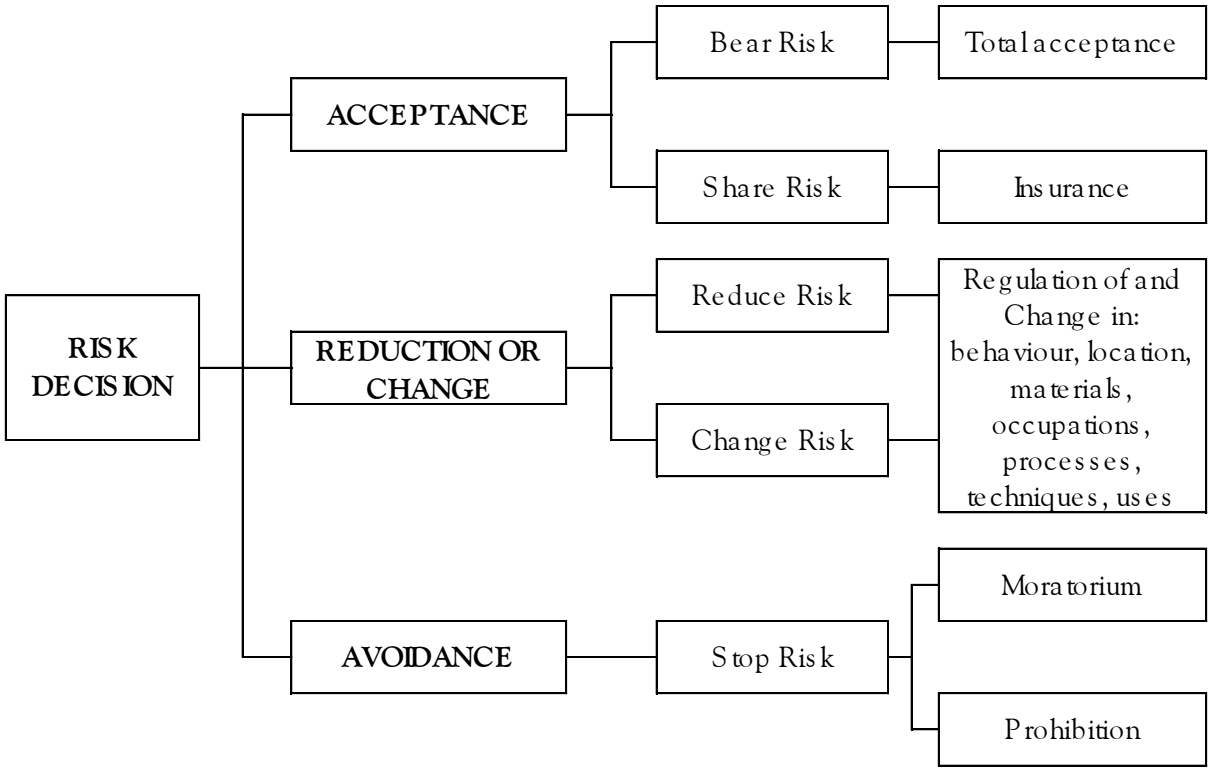


Figure 3. Risk management options. Source: Baer, 2013, 31.

Among these options, the international regulatory framework for managing disaster risk for cultural heritage, following The Hague Convention in 1954, "have moved away from avoidance of the natural hazard to mitigation or reduction of disaster impacts by taking appropriate pre/post-event measures, including: reduction of the exposure to various hazards, lessening of the conditions of vulnerability of people and property and enhancement of preparedness" (Tandon, 2013, 3). ICOMOS, ICCROM, and UNESCO produced a comprehensive guide on risk preparedness for cultural heritage to provide guidelines for local and national authorities in countries and regions at risk (Stovel, 1998). It promotes the integration of cultural heritage in existing disaster management plan and the use of preventive approaches aiming at the improvement of the conservation status and local conditions.

Although a number of major natural hazards threaten the country, Italy has not fully established the risk management framework yet. Currently, the central government essentially aims at managing the ex-post disaster emergencies implementing and funding reconstruction processes to recover damages and losses to people. Indeed, the Italian government uses an ex-post compensation model as the main mechanism to manage a disaster risk. It includes a set of extraordinary measures, which it implements after the disaster occurrence applying a solidarity approach to fund losses to citizens (Buzzacchi & Pagnini, 2012; Memola, 2014, 137ss.; Vardi & Zeno-Zencovich, 2013; Selleri, 2015, 114-142).

Considering the composition of Italian cultural heritage and its widespread distribution throughout the country, it seems unlikely Italy will pursue the path of exposure avoidance, although some measures of this type can easily apply to movable heritage (such as the removal and storage of collections to safer places). The most appropriate options, therefore, seem essentially those including the total or partial acceptance of risk, acting on the extent and

allocation of the potential damage, in combination or in alternative to measures to reduce the risk exposure according to an ex-ante perspective.

The Insurance Capacity to Share the Catastrophic Risk

Among the common risk management options acting on the extent and allocation of the potential damages following a catastrophic risk, insurance represents a cooperative phenomenon, by which an economy at risk can transfer the potential damage to a group of economies with similar risky exposure, so a mass of subjects share the same damage (Cassandro, 1968, 4).

It is possible to realize this phenomenon according to two formalities: the pure mutuality or the indirect mutuality. The former occurs when more subjects with similar risky exposure decide to associate themselves to collect the necessary sum of money to face the risk, according to an ex-ante (establishing a fund) or an ex-post (sharing the sum) approach. In the indirect mutuality, the insurance company negotiates the process making available the total sum of money to recover potential damages the risk occurrence can provoke, in return for the collection of insurance premiums from a group of subjects. In both cases, the insurance mechanism results in the transformation of an individual risk into a collective risk, allowing the sharing of the potential damages (Di Cagno & Adamo, 1994, 9-10). More in detail, it allows the transfer in space of the potential damage (so-called insurance risk), whereas the hazard is still in the hands of the single subject at risk (so-called non-insurance risk) (Di Cagno & Adamo, 1994, 10).

Focusing on the indirect mutuality forms, this transfer is technically possible when both insured and insurer can gain a mutual benefit (Gollier, 1997, 177), namely when it is possible an efficient sharing of insurance risks (Arrow, 1953; Borch, 1962).

As for the insurer, the advantage in accepting an additional risk compared to the whole portfolio of risks follows a precise rule, namely the undertaken risk in its own exposure rate. Size should not lead to an increase in the portfolio exposure ratio (that is the aggregate ratio of the standard deviation of an expected loss to the mean value of the loss), which the company values as acceptable according to its survival, stability constraints, and profit objective (Stone, 1973, part I). In other words, the decision-making process lies in the so-called Law of Large Numbers, or Bernoulli's theorem (1713), according to which it is possible to achieve a better equilibrium of the risk portfolio through the increase in the insured units (Selleri, 1996, 25; Selleri, 2015, 28-29). Thus, in order to operate conveniently in equilibrium, the insurance company should set up a large portfolio of similar risks, which have the same nature and size (community of subjects with an insurance policy to cover similar risky exposures)) (Cassandro, 1968, 5; Selleri, 2015, 227-228).

More generally, the decision-making process for the risk insurability aims at verifying the existence of specific statistical, actuarial, and business requirements (Berliner, 1985). The statistical and actuarial ones include the following:

- the risk size, that is the reliable possibility to identify and quantify (or to estimate partially) the hazard occurrence rate and the related maximum potential loss;
- the risk diffusion, that is the existence of numerous risks that are similar in occurrence and potential annual average loss;
- the risk independence, that is the inexistence of any interdependent and cumulative effect of the insurance risks.

Moreover, the business requirements refer to the amount of the applicable insurance premium, to the existence of legal and institutional constraints (i.e., Solvency II, insurance being compulsory by law, maximum coverage applicable, etc.), and to the actual degree of moral hazard and adverse selection.

Summarizing, the insurance company accepting the risk transfer assesses the advantage achievable within an overall strategy aiming at the capital maintenance through the lasting achievement of operating incomes, which are convenient for the company survival, stability, and profitability constraints over the time (Cassandro, 1963, 423-449).

As for the insured, the risk transfer affordability results in a fairness judgment about the insurance premium, which has to meet his or her own expected utility function according to the personal risk aversion (Selleri, 2015, 220-224). Thus, he or she will transfer the risk to the insurer if his or her risk aversion is high and if the insurance premium allows him or her to maximize the difference between the insured value and the potential loss the transferred risk might cause.

Therefore, we can consider the insurance premium as the litmus test of the mutual convenience for the risk transfer, which will happen if it is able to bring an advantage to both insured and insurer simultaneously.The insurance transfer of a catastrophic risk challenges this mechanism of mutual convenience. From the insurer's point of view, the catastrophic risk is a *fat-tailed risk*, that is a risk with a distribution of losses inversely proportional to the risk occurrence and size (the occurrence rate decreases with an increase in risk severity) (Vardi & Zeno-Zencovich, 2013, 422). Indeed, under statistical and actuarial terms, catastrophic risk presents low occurrence rates with return intervals that are typically very large; high severity in terms of potential damage from losses occurring in longer lapses of time; interdependence of the effects, that is the ability to cause the occurrence of other types of risks, resulting in a spatial correlation of the losses or the simultaneous occurrence of numerous losses from the same event (Savelli, 1998, 69-98; Zeckhauser, 1995, 162 ss).

It appears difficult, therefore, that the Law of Large Numbers can work efficiently with this type of risk taking. From this point of view, it is possible to define the catastrophic risk as a *high capacity risk* because it increases the exposure rate of the whole risk portfolio an insurance company manages, absorbing high insurance capacity in terms of available financial capital and size of operating incomes to achieve operational stability (Stone, 1973, part I). Actually, it exposes the insurer to a high risk of default.

Anyway, even in case the insurance company was able to know perfectly the risk occurrence rate and the related maximum possible loss – a rather hypothetical situation considering the extreme unpredictability of these hazards due to the lack of sufficient data and comparable and reliable information as well as the lack of knowledge about the cause-effect relationships that lead to cumulative damages (Meyer et al., 2013, 1362-1366) – the stability constraint would require the following:

- on the one hand, the existence of a demand for similar numerous independent risks and the application of sufficiently high insurance premiums, such as to enable the insurer to reach an income rate that meets the varied conditions of profitability (see the examples reported in Stone, 1973, part II, 341-345); and

- on the other hand, the absence of moral hazard and adverse selection by policyholders that do not allow respectively the application of a system of premiums for different risk classes or encourage the policyholders to cause an increase in expected loss (Grossi & Kunreuther, 2005, 23-42).

This situation makes it very difficult to have a demand willing to pay for such high premiums considering the existent of risk aversion. This is particularly true in countries like Italy, where the ex-post compensation model, which the central government adopts in the case of a natural disaster, actually generates charity hazard phenomena, discouraging reliance on the insurance market and more generally on prevention (Buzzacchi & Pagnini, 2012, 78-79).

Moreover, even in the presence of adequate aggregate insurance capacity by the Italian market (Stone, 1973, part II), we have to consider that the potential insurance demand to protect cultural heritage against catastrophic risks mainly comes from public owners (State and local governments own most of the existing Italian cultural heritage). Therefore, the convenience to get an insurance cover should also follow a cost-benefit analysis with the aim to minimize the whole public spending for disaster compensation.

Nevertheless, regardless the nature of the insured object, for the insurance company, the main challenge for an efficient catastrophic risk management consists in an inter-temporal discrepancy between the linear flow of the annual collectable premiums and the highly non-linear flow of the annual supportable costs deriving from claims. That is likely to cover a large financial requirements in the short-term, such as to affect the insurer solvency and survival (Jaffee & Russell, 1997). This financial problem gets worse the lower the predictive ability during the risk assessment phase (Meyer at al., 2013), and the spatial diversification of the risk portfolio being able to increase the potential cumulative effect.

Obviously, the problem is not one with an immediate and easy solution. Its management encompasses the individual and collective insurance capacity, on the one hand, to reduce that discrepancy, and on the other, to have significant financial resources to cover losses that are actually uncertain in extent and occurrence.

With reference to the first condition (ability to reduce that discrepancy), it would be necessary to extend the insurance capacity at individual and aggregate level leveraging on the increase in risks with a low exposure rate (including self-insurance) and the sharing of aggregate surplus of insurance capacity through the mechanisms of co-insurance and layering (Stone, 1973, parts I e II; Dickinson, 2002).

As for the second condition, that is the ability of increasing the financial capacity (availability of abundant financial capital in the short-term), the main challenges lie (Jaffee & Russell, 1997, 209-222) as follows:

- on the one hand, in the insurer individual capacity to accumulate equity capital. Legal and institutional factors – regarding both the possibility to form technical provisions to cover losses from catastrophic risk occurrence (Di Cagno & Adamo, 2000, 242-244; Savelli, 1998, 69 ss.), and the presence of tax and regulatory incentives – influence this capacity; and
- on the other hand, in the sufficient availability of capital from third parties and more in general from the financial market, through various mechanisms, including reassurance,

securitization (i.e., Insurance Linked Securities – CAT bonds), preference equity issues (i.e., Catastrophic Equity Puts), financial derivative investments (i.e., CAT swap), and mortgages (Coviello, 2013).

Moreover, for the effectiveness of such measures, we can assume clearly that it is possible to implement an efficient allocation of risks and losses according to the Pareto optimum principle (Arrow, 1953; Borch, 1962). However, the high transaction costs and information asymmetries that characterize the operational management of the catastrophic risks, and more generally the moral hazard affecting it, do not allow an efficient allocation, ultimately requiring the intervention of the government in its capacity of reinsurer of last resort (Gollier, 2005).

Cultural Heritage and Insurance Capacity in Italy

The trading of insurance products concerning the protection of cultural properties against risks – above all in the American and English insurance markets where they are more diffused (Il Giornale dell'Arte, 7.12.2016) – identifies a specific insurance field, namely the *Fine Art, Jewellery & Specie (FAJS)*. In Italy, there is not a specialized insurance field; indeed the insurance products concerning cultural properties are part of the generic non-life insurance field. The Italian insurance code manages the field with the observance of the ISVASS implementing rules about the operational classification of risks.

In 2015, we investigated the Italian insurance market in this specific operational field to understand the main features of the national insurance praxis about cultural properties, especially focusing on the assessment and the reliability of their insurance value (Imperiale et al., 2016). The Italian insurance companies that sell policies to protect cultural properties were 88 out of 256 total insurance companies. We interviewed all those companies using a questionnaire of 20 questions (17 close-ended questions and 3 open-ended questions), with a response rate of about 23%. Moreover, we made also a deep-interview to 7 top managers from Assicurazioni Generali S.p.A, Nationale Suisse – Italy, Schweizerische Rückversicherungs-Gesellschaft (Swiss Re), Aon Plc – Italy, Desmos S.p.A., Scagliarini Andrea S.p.A., and MAGJLT S.p.A.

The data we collected for that research allow us to highlight some relevant findings also in terms of insurance capacity and actual risk aversion to protect cultural properties against catastrophic risk.

We observed that the main customers of an art-insurance policy come from the private and not-profit sectors (respectively 36% and 25%). In the Italian public sector, insuring cultural properties is still a little common practice, despite the fact that the majority of the Italian cultural heritage belongs to public entities. They are mainly private collectors (24%) and museums (24%), or owners of historical buildings (13%).

On average, they buy an insurance policy to preserve collections or cultural valuable buildings from various risks. The most insured objects are works of art, such as paintings, sculptures, reliefs, statues, mosaics, tapestries (35%); historical buildings (27%); books, such as manuscripts, incunabula, and prints (14%), and archivist items, like maps and parchments (6%); archaeological objects, such as prehistoric materials, bronzes, terracotta (8%), and restoration works (5%).

The most required insurance policies for movable cultural properties concern the loan and the transport inside and outside national borders, against potential damages from theft,

unwise conservation, or accident. Indeed, in Italy, it is compulsory to buy an insurance policy in order to have authorization from the Ministry for Cultural Heritage and Tourism (MIBACT) to transport heritage items inside and outside the border for loan or transport purposes (art. 48 Italian Cultural Heritage Code). These legal requirements (mandatory insurance of the transport) do not apply in the presence of a State Guarantee (art. 48, subparagraph 5, Italian Cultural Heritage Code). Furthermore, the insurance protection for immovable cultural properties concerns the restoration works against potential damages occurred.

The most demanded contract typologies are the "Nail to Nail" policy and the "All Risk" contract, respectively accounting for the 30% and 36% of the companies we interviewed. The former covers movable cultural properties when it is necessary to move them from one place to another for temporary exhibitions or loans, in order to cover any damage that may occur during the various transport operations and periods it spends in the place in which the exhibition takes place or on the premises of customs, packers, and restorers. The "All Risk" coverage is broader, and it covers from potential loss arising from any fortuitous cause the parts agreed about. The most considered risks are usually theft, fire, and harmful events, with no particular reference to catastrophic risks.

About the risk assessment, external appraisers – who are professionals from the cultural sector (63%) – carry out the process, which starts with the collection of relevant information about the conservation status of the cultural property under coverage. To this end, the insurance companies mainly use: the internal assessment questionnaire (48%), whereby gathering relevant information about the insured objects, client and risks to cover, and the Condition Report (21%), which generally applies to loan operation to know the vulnerability of the cultural property under coverage

The process continues through the assessment of the insurance value. Most of the insurance companies adopts the agreed-value criterion to assess it (69%). That is the refundable amount a professional – that the insurance company has previously hired – calculates on the basis of a monetary appraisal, which the client accepts when signing the insurance contract. Another criterion is the stated-value (24%). In this case, it is the client who decides the amount of the insurance value and has to prove it in case of a claim. However, in assessing the value, there is not a reference framework: The same insurance company can adopt one method or another according to a subjective basis taking into account the trust relationship with its clients as well as the client's reputation in the sector. Indeed, the top managers we interviewed clearly explained that Fine Arts insurance is a non-rated field; therefore, it does not use benchmarks to identify a unique criterion to determine the insurance premium. The appraisal follows a tailor-made procedure that, thanks to the advice of a team of professionals, allows quantifying the insurance value case by case and client by client. They also observed that the economic evaluation of a cultural asset is very complex and difficult, and it highly demands top grade specialization, due to the uniqueness of the property under evaluation and coverage, and the difficulty to estimate the inherent non-use values.

Generally, it applies the following principle: The higher the value of the insured item, the higher will be the insurance premium against potential damages; and where applicable, it is preferable referring to the actual market price of properties with similar use values.

Concluding this paragraph about the insurance capacity in the Fine Art field in Italy, we can summarize the main relevant findings arising from the data and information as follows:

- In Italy, there are few highly specialized operators able to offer adequate business solutions to those who want to insure some cultural properties against risks: operating in the field requires extensive expertise, above all in the risk assessment process;
- The market is growing, but the art-insurance demand is not well defined yet if we compare it to the international trend of the insurance policies to get cover for movable and immovable cultural properties. The field is a very niche market: The client portfolio who buy an art-insurance policy is about 1% or 2% of the total risk portfolio with some exceptional cases accounting for 10% that are for the greatest part exhibition organizers. Generally, there is little attention toward this tool to preserve cultural heritage, above all by the public owners that in Italy represent most of the national cultural heritage at risk;
- Insurance companies operating in the field prefer to select the typology of risk to insure, focusing mainly on hazards concerning transport and loan operations, which seem the most collectable risks, also due to the mandatory nature of this insurance risk transfer;
- The insurability process follows a tailor-made approach depending on the appraiser's reputation and trust relationship with the client, which does not use benchmarks and standard assessment procedures to identify a unique criterion to determine the insurance value and the related insurance premium;
- No mention emerges with specific reference to catastrophic risks.

As for the latter, it is interesting to observe that the Italian Cultural Heritage Code explicitly excludes coverage against catastrophic risks also in case of the State Guarantees (art. 48, subparagraph 5).

As an example, in one of the last State Guarantees about some works of art, the State provided the owners with a guarantee according to a "nail to nail" approach against some risks, such as theft, fire, acts of terrorism, potentially resulting in the total loss of the property or giving rise to a compensation for physical damages. It explicitly excluded damages directly or indirectly occurring from: "4.1 Wars, invasions, acts of foreign enemies, hostilities (that war is declared or not), civil wars, rebellions, revolutions, insurrections, military or usurped power. 4.2. Natural disasters (earthquakes, hydrological landslides, weather agents, floods). 4.3 Ionizing radiations or radioactive contaminations from nuclear fuel or nuclear waste deriving from transmutation of the atom nucleus as well as radioactive, toxic properties, explosive or other dangerous features of nuclear equipment or its components [...]" (MIBACT – Direzione Generale dei Musei, 2016).

That part of the guarantee seems to state: excluding those risks which are so rare as not constituting a possible and real threat (?!). Thus, as for cultural properties the catastrophic risk aversion seems absent.

Insurance of Cultural Heritage against the Catastrophic Risks: What are the Role and Perspectives?

In this concluding section, we discuss the main findings arising from the previous sections to answer our research questions: *Can the insurance market have a role in managing the catastrophic risk of a cultural property? What are the main challenges to insure cultural property against a catastrophic risk in Italy?*

To this end, it seems useful to set up the discussion on two levels: the first one concerns the main inherent challenges regarding the insurance management of the catastrophic risk, regardless the nature of the property to insure; and the second one deals with the specific challenges which emerge when the object at risk is a cultural property.

As for the latter, in section two, we described the main general requirements an insurance company has to meet in order to add a catastrophic risk to its risk portfolio, keeping its own stability, survival and profit constrains. They allow us to infer some conclusions about the role the insurance market can play in the arena of catastrophic risk management. Indeed, this role is complementary according to a multi-stakeholder approach.

There is no doubt that the inherent major problems concerning the management of those risks refer to:

- the individual and collective ability to act on the risk exposure rate, trying to reduce the vulnerability of the objects at risk; and
- the availability of great amounts of financial resources which can compensate, in the occurrence of risk events, the cumulative damages and losses, both tangible and intangible, the hazard might directly and indirectly cause.

Furthermore, it is necessary to consider that the above mentioned operative conditions are in a mutual influence relationship: the higher the vulnerability, the more significant the damage and the amount of financial resources to cover it. Thus, catastrophic risk management can follow only a systemic approach, leading an overall strategy that relies simultaneously on the different management options we have described in section 1.

Reducing or changing behavior, techniques, and construction materials, processes and practices, and the introduction of appropriate moratorium systems certainly can help to improve the overall vulnerability; likewise, the use of pure and indirect mutuality can certainly help to reduce unforeseen financial shocks following a disaster occurrence, at the same time enhancing the risk preparedness in an ex ante perspective.

What is certain is that the insurance risk transfer is not absolute: the full risk transfer to the insurance market, and through it to the financial market, would produce a further catastrophic effect as it would promote the hazard causing further damages from the interruption of the insurance businesses, which the induced defaults have provoked. Thus, the State intervention is essential, when it can operate conveniently with (and) as guarantee for the private (for a review of the public-private models see Bruggeman et al., 2012, 185-241; see also Dickinson, 2002).

Then, accepting this approach, the priorities for risk management become in turn: fulfilling the knowledge and skill gaps about the catastrophic risk assessment both in size and occurrence; raising awareness about the reality and severity of such risk events; as well as raising the overall degree of risk aversion.

Coming to the second level of this discussion, these priorities emerge more clearly when the object to protect against a catastrophic risk is the cultural heritage.

In this case, what makes the catastrophic risk management more complex according to an insurance perspective is the public nature of the cultural heritage and its special features in terms of vulnerability assessment and economic evaluation of the potential total or partial loss.

The first aspect (the public nature) involves, on one side, the State, or the local authority managing the cultural property under coverage according to its ownership, and on the other side, the whole national community (and beyond) as the set of users of the public services deriving from the existence and use of those properties. In the occurrence of a catastrophic event, both the public owner and the citizens will suffer from a loss in terms of the following:

- an increase of the public spending (and taxation accordingly) in order to restore (if possible) the damages;
- the temporary or permanent impossibility to use the damaged cultural property currently and in the future.

However, it is obvious that in case of a total loss of a cultural property, the problem would not arise. Let's consider, for example, the hypothesis (hopefully absurd!) of an earthquake which totally destroys the Colosseum in Rome: even if we were able to estimate the exact economic value of the Colosseum and to have the equivalent amount of money, would we compensate the Colosseum loss through the reconstruction of a copy of it? Obviously, we would not! Its uniqueness and irreplaceable value can only result in the total and collective acceptance of its loss. After all, is there any difference in the case of the loss of a human life? Would a monetary compensation be able to bring a person back to the life?

The preventive protection of the cultural assets as well as their context, seems therefore the only possible and reasonable option to face such risks (whether a catastrophe or not).

Notwithstanding the main approach to an adequate protection, we can argue different considerations for the insurance risk transfer in the event of a potential partial damage to a cultural property, in other words when catastrophe occurrence damages - more or less seriously - one or more cultural properties.

In this case, who would suffer the loss? The answer does not change: the State, the local authority and the current or future collectivity has the right and duty to guarantee the public service and the future collective use of that cultural property. Within this context, insurance can be a useful tool in order to minimize the potential economic loss. It may be the form of an ex-ante pure mutuality (i.e., taxation for the establishment of a special fund) in combination or as an alternative to an indirect mutuality through the insurance market.

The same above-mentioned management issues then will apply accordingly. More in detail, in section 3, we described how in the Italian insurance market the actual catastrophic risk aversion is almost absent for cultural properties. Then, in order to make the risk insurance transfer mutually beneficial, it is foremost necessary to increase the demand for insurance products to cover cultural properties, providing for them an extension of the coverage to catastrophic risks.

Finally, the most relevant issue: In Italy, addressing the insurance market as well as adopting adequate measures of risk mitigation according to an ex-ante perspective suffers the lack of a complete catalogue of the national cultural heritage and an exhaustive mapping of the risks, which might damage it (Gaggioli, 2016). In addition to these challenges of risk assessment, there are also other challenges regarding the inadequacy of the current methods to estimate the economic value of a cultural property and then of its total or partial damages (insured value). Section 3 tell us how unsuccessful are the methods the insurance companies are using, which tend to compare the economic value of a cultural property to that of any other property of

common use, by simplistically translating it only in terms of direct use value. The literature on the subject is unanimous in recognizing that cultural heritage has multidimensional and multi-attribute nature and that its economic value includes both non-use and use values, suggesting different measurement approaches, which are more or less effective although they may be complex and expensive (Mazzanti, 2003; Moreschini, 2003; Nijkamp, 2012).

In conclusion, in the specific case of the insurance coverage of a cultural property against catastrophic risks, the multi-stakeholder perspective previously suggested for the general catastrophic risk management, is wider, taking into account the State-Market-Community triangulation. In other words, it has to include, among the subjects entitled for the catastrophic risk management to protect the cultural heritage, also the reference community such as citizens, cultural operators, professionals and research organizations.

References

Arrow, K. J. (1965). *Aspects of the theory of risk bearing*. Yrjo Jahnsson Lectures, Helsinki. Reprinted in *Essays in the theory of risk bearing* (1971). Chicago, Illinois: Markham Publishing Co.

Baer, N. S. (2013). Assessment and management of risks to cultural property. In N. S. Baer, C. Sabbioni, & A. I. Sors (Eds.). *Science, technology, and European cultural heritage* (pp. 27-36). Oxford, England, and Boston, MA: Butterworth-Heinemann for the Commission of the European Communities.

Bernoulli, J. (1713). *Ars Conjectandi*. Basileae[, Switzerland]: Impensis Thurnisiorum Fraetrum.

Borch, K. (1962). Equilibrium in a reinsurance market. *Econometrica, 30*, 424-444.

Bruggeman, V., Faure, M. G., & Heldt, T. (2013). Insurance against catastrophe: Government stimulation of insurance markets for catastrophic events (February 8, 2013). *Duke Environmental Law & Policy Forum, 23*(185), 2012. Retrieved from SSRN: https://ssrn.com/abstract=2213772 or http://dx.doi.org/10.2139/ssrn.2213772

Buzzacchi, L., & Pagnini, M. (2012). *Terremoti: Intervento pubblico e/o assicurazione privata?* Retrieved from Consumatoridirittidimercato.it, 12 December 2012.

Buzzacchi, L., & Turati, G. (2010). Rischi catastrofali e intervento pubblico. *Consumatori, Diritti e Mercato, 2*, 112-123.

Cannon, T., & Schipper, L. (Eds.). (2014). *World disasters report 2014*. Geneva, Switzerland: International Federation of Red Cross and Red Crescent Societies.

Cassandro, P. E. (1963). Sulla formazione e determinazione del reddito di esercizio nell'impresa assicuratrice, 423-449. *Studi sulle Assicurazioni*. Roma et Milano, Italia: Edizione dell'Iitituto nazionale delle assicurazioni (INA) et Giuffré.

Cassandro, P. E. (1968). *Le gestioni assicuratrici*. 3 ed. Torino, Italia: Utet.

Casucci, S., & Liberatore, P. (2012). *Una valutazione economica dei danni causati dai disastri naturali*. Retrieved from Eddyburg.it, 29 mayo 2012, http://eddyburg.it/article/articleview/19070/0/420/

Coviello, A. (2013). *Calamità naturali e coperture assicurative. Il risk management nel governo dei rischi catastrofali*. Palermo, Italia: Dario Flaccovio Editore srl.

Di Cagno, N., & Adamo, S. (1994). *L'economia delle aziende di assicurazione, amministrazione e controllo*. Torino, Italia: Giappichelli.

Di Cagno, N., & Adamo, S. (2000). *Amministrazione controllo delle imprese di assicurazione*. Torino, Italia: Giappichelli.

Dickinson, G. (2002). *Insurability challenges for large terrorism and natural catastrophe risks.* Unpublished paper, Organization for Economic Co-operation and Development, Paris, France.

EM-DAT – The OFDA/CRED International Disaster Database, www.emdat.be, Universite Catholique de Louvain, Brussels, Belgium [accessed 31 January 2017].

Gaggioli, A. (2016). Una mappa dell'arte a rischio. *Il Corriere Fiorentino*, 2 novembre 2016.

Ghose, S. (1999). *Protection against natural and manmade disasters*. Risk Preparedness for Cultural Properties: Development of Guidelines for Emergency Response, International Symposium on Risk Preparedness for Cultural Properties, Chuo-Koron Bijustu Shuppan Co., Ltd., Tokyo, Japan.

Gollier, C. (1997). About the insurability of catastrophic risks. *The Geneva Papers on Risk and Insurance, 22*(83), 177-186.

Gollier, C. (2005). Some aspects of the economics of catastrophe risk insurance. *CESIFO Working Paper* No. 1409. Category 3: Social Protection. Retrieved from *SSRN* website: http://ssrn.com/abstract=668384

Grossi, P., & Kunreuther, H. (Eds.) (2005). *Catastrophe modeling. A New Approach to Managing Risk.* New York, NY: Springer.

Il Giornale dell'Arte. *Le compagnie assicurative e i patrimoni culturali: Un confronto che parte dalla definizione del valore*, 07 December 2016.

Il Sole 24 Ore. (2016). *Ministero beni culturali: 5mila segnalazioni danni a patrimonio artistico*. Retrieved 30 octubre 2016 from http://www.ilsole24ore.com/art/notizie/2016-10-30/ministero-beni-culturali-5mila-segnalazioni-danni-patrimonio-artistico-183806.shtml?uuid=ADGvuKmB

Imperiale, F., Adamo, S., & Luperto, I. (2016). Heritage values: Some evidence from the Italian insurance market. Imperiale, F., & Vecco, M. (Eds.) *Cultural management education in risk societies: Towards a paradigm and policy shift?!* Valencia, Spain: ENCATC Annual Conference Proceedings, 5th-8th October 2016.

Jaffee, D. M., & Russell T. (1997). Catastrophe insurance, capital markets, and uninsurable risks. *The Journal of Risk and Insurance, 64*(2), Symposium on Financial Risk Management in Insurance Firms, 205-230.

Lattig, J. W. (2012). *Calamities, catastrophes, and cataclysms: Current trends in international disaster risk management practices for cultural heritage sites*. (Master's Thesis). University of Pennsylvania, Philadelphia, Pennsylvania.

Mazzanti, M. (2002). Cultural heritage as multi-dimensional, multi-value and multi-attribute economic good. *The Journal of Socio-Economics, 31,* 529-558.

Memola, A. T. (2014). *Assicurazione dei rischi da catastrofe naturale: scenario italiano e realtà straniere*. Doctoral Thesis, Università degli studi di Milano. Retrieved from https://air.unimi.it/handle/2434/233254#.WKHsKdThDGg

Meyer, V., Becker N., Markantonis, V., Schwarze, R., Van Den Bergh, J. C. J. M., Bouwer, L. M., Bubeck, P., Ciavola, P., Genovese, E., Green, C., Hallegatte, S., Kreibich, H., Lequeux, Q., Logar, I., Papyrakis, E., Pfurtscheller, C., Poussin, J., Przyluski, V., Thieken, A. H., & Viavatten, C. (2013). Assessing the costs of natural hazards – state of the art and knowledge gaps. *Natural Hazards Earth System Science, 13*, 1351-1373.

MIBACT – Direzione Generale dei Musei. (2016). Decreto direttoriale n. 454, 04.07.2016.

Molinaro, L. (1966). *Fondamenti tecnici e statistici delle assicurazioni contro i danni*. Roma, Italia: Assicurazioni Serie Monografiche.

Moreschini, L. (2003). Metodi di valutazione economica di beni pubblici culturali. *Working paper No. 01.* Dipartimento di Economia "S. Cognetti de Martiis" International Centre for Research on the Economics of Culture, Institutions, and Creativity (EBLA).

Niikamp, P. (2012). Economic valuation of cultural heritage. Licciardi, G., & Amirtahmasebi, R. (Eds.) *The economics of uniqueness. Investing in Historic City Cores and Cultural Heritage Assets for Sustainable Development* (pp. 75-106). Washington, DC: International Bank for Reconstruction and Development (The World Bank).

Savelli, N. (1998). La riserva di equilibrio per le assicurazioni Danni: un modello di teoria del rischio per la sua regolamentazione. *Diritto ed Economia dell'assicurazione, 1*, 68-98.

Selleri, L. (1996). *I rischi catastrofali e ambientali*. Milano, Italia: Guerini e Associati.

Selleri, L. (2015). *Viaggio nel mondo del rischio*, Youcanprint. Retrivied from https://books.google.it/books?id=LPhnBwAAQBAJ&printsec=frontcover&hl=it&source=gbs_ge_summary_r&cad=0#v=onepage&q&f=false.

Stone, C. D. (1992). PA. Beyond Rio: "Insuring" against global warming. *The American Journal of International Law, 86*(3), 445-488.

Stone, J. M. (1973). A theory of capacity and the insurance of catastrophe risks (Part I). *The Journal of Risk and Insurance, 40*(2), 231-243.

Stone, J. M. (1973). A theory of capacity and the insurance of catastrophe risks (Part II). *The Journal of Risk and Insurance, 40*(3), 339-355.

Stovel, H. (1998). *Risk preparedness: A management manual for world cultural heritage*. Rome, Italy: ICCROM.

Tandon, A. (2013). ICCROM Programme on Disaster and Risk Management. A background paper. Draft: April 30, 2013 – Retrieved from http://www.iccrom.org/wp-content/uploads/RDRM-Background-paper_AT_REV_30-April-2.pdf

UNESCO. (2010). *Managing disaster risks for world heritage*. Paris, France: UNESCO.

UNESCO. (current time) World Heritage Centre – List of factors affecting the properties. http://whc.unesco.org/en/factors/ (Accessed 15 December 2016).

Vardi N., & Zeno-Zencovich V. (2013), L'assicurabilità dei rischi catastrofali. *Rivista di diritto privato, 3*, 421-438.

Vecco, M. (2011). *L'evoluzione del concetto di patrimonio culturale*. Milano, Italia: Franco Angeli.

Vecvagars, K. (2006). Valuing damage and losses in cultural assets after a disaster: Concept paper and research options. *Serie estudios y perspectivas*, 56. Mexico City, Mexico: United Nations.

Wang J. J. (2015). Flood risk maps to cultural heritage: Measures and process. *Journal of Cultural Heritage, 16,* 210-220.

Williams C. A., & Heins R. M. (1989). *Risk management and insurance.* Insurance Series. New York, NY: McGraw Hill.

Zeckhauser R. (1995). Insurance and catastrophes. *The Geneva Papers on Risk and Insurance Theory*, *20*(2), 157-175.

About the Authors

Stefano Adamo (stefano.adamo@unisalento.it) is Full Professor of Business Administration at the Department of Management and Economics, University of Salento.

Francesca Imperiale (francesca.imperiale@unisalento.it) is Assistant Professor in Management of Cultural Organizations at the Department of Management and Economics, University of Salento.

Discussion Questions

1. What are the main challenges involved in the catastrophic risk management?

2. To what extent can the insurance market properly operate in the cultural heritage field?

3. Is the catastrophic risk management involving specific challenges in presence of cultural asset at risk?

4. Are the current risk assessment approaches suitable to estimate cultural heritage loss for insurance purposes?

To Cite this Article

Adamo, S., & Imperiale, F. (2017, Spring). Cultural heritage and challenges for catastrophic risk management in Italy. *Journal of Multidisciplinary Research, 9*(1), 33-51.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 53-62.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

New Voluntary-based Instruments Supporting Ecological Insurance

Donatella Valente
University of Salento

Irene Petrosillo
University of Salento

and

Giovanni Zurlini
University of Salento

Abstract

Ecosystems can provide output values, which are the benefits that the current state of ecosystem (i.e., ecosystem services and natural capital) provides, and insurance value, which is ecosystem resilience. The output values link to the insurance values of ecosystems, which relate closely to its resilience and self-organizing capacity and are able to maintain the provision of ecosystem services. The valuation of ecosystem resilience could be as analogous to the valuation of a portfolio of assets in a given state, where the value of the asset mix – the portfolio – depends on the covariance in the returns on the individual assets it contains. Two examples better analyze the practical implications related to these concepts. The first regards the drylands salinization in Australia useful to illustrate how the quantification of thresholds can be useful to explain the relation between management, ecosystem services, and resilience. The second concerns the widespread promotion of market-based instruments for conservation such as the so-called Payments for Ecosystem Services schemes, which are voluntary and conditional transactions over well-defined ecosystem services between at least one supplier and one user. The conclusions report some final considerations.

Keywords: ecosystem services, ecosystem resilience, PES, ecological insurance

Introduction

The economic insurance value of ecosystem resilience is a complex concept that keeps and integrates together several notions, such as ecosystems, ecosystem services, resilience, and human well-being.

Ecosystems can provide two different types of values (Gren et al., 1994; Turner et al., 2003; Balmford et al., 2008):

- output values are the benefits the current state of ecosystem provides, such as food, climate regulation, recreational value, and represent the guarantee for human well-being. The output values are called ecosystem services and natural capital; and
- insurance value is the ecosystem capacity to maintain the provision of ecosystem services in the face of variability and disturbance, represents, also in this case, the guarantee for human well-being. Resilience represents the insurance value.

In the first case, output values are ecosystem services, which are the benefits humans derive, directly or indirectly, from natural and semi-natural systems (Costanza et al., 1997). The Millennium Ecosystem Assessment (2005) classifies the ecosystem services as in the following:

- Provisioning ES: food, fibers, fresh water supply, etc.;
- Regulating ES: air quality regulation, climate regulation, water regulation, natural hazard regulation, etc.;
- Cultural ES: cultural heritage, recreation and tourism, aesthetic values, etc.;
- Supporting ES: primary production, nutrient cycling, soil formation, etc.

The last class represents the basis for the other typologies, since it includes the basic ecological cycles of Nature.

The inclusion of the concept of ecosystem services within an economic perspective highlights that the deliver and consumption of ecosystem services in the absence of market transactions is a form of positive externalities within the neoclassical economic paradigm. In this context, the ecological economics literature has developed since the early 1960s a range of methods to value these "invisible to the market" benefits from ecosystems, often with the aim of improving the cost-benefit analysis.

The Economic Values of Ecosystem Services

Some scholars provide a clear and comprehensive classification of the possible economic values associated to ecosystem services (Krutilla, 1967; Pearce and Turner, 1990; de Groot et al., 2002; de Groot, 2006; Balmford et al., 2008). In particular, the Total Economic Value sees two different components: use values, associated with private or quasi-private goods, for which market prices usually exist; and non-use values, which do not involve direct or indirect uses of

ecosystem services. Under the use values, it is possible to find three different typologies of values: direct, indirect, and option values.

Direct use value relative to the benefits concerns the direct use of ecosystem services, for instance food consumption, while indirect use values regards usually the regulating services, such as air quality regulation or erosion prevention, which are public services and are not the object of evaluation in the current market transactions. Finally, the option value connects to the possibility of valuing the option of the future use of a given ecosystem service (Krutilla & Fisher, 1975).

In contrast, non-use values associated to ecosystem services do not involve their direct or indirect uses, but rather reflect the satisfaction that individuals derive from the knowledge that other people in the present or in the future have or will have access to them (Kolstad, 2000). Non-use values are existence values, or the mere satisfaction of knowing that a species or ecosystem exists; altruist values, regarding the satisfaction that other people can have access to resources; and bequest values, regarding the satisfaction that future generations will have access to natural resources.

Resilience as Insurance Value of Ecosystems

The output values that relate to the insurance values of ecosystems, which depend closely on its ability to resilience and self-organization, are able to maintain the provision of the ecosystem services. The definition of ecosystem resilience according to Holling (1973) is the amount of perturbation an ecosystem can withstand by maintaining its structures and functions, and before relations between organisms (predator and prey, herbivore and resources, or competing species) cause local extinctions and, as a consequence, cause the ecosystem to shift to another state (Admiraal et al., 2013). In the case of socio-ecological landscapes, resilience is the amount of disturbance a landscape can adsorb before flipping into another stability domain – in other words, before changing its status and identity (Walker et al., 2004).

According to Baumgärtner and Strunz (2009), the resilience is meant as an "insurance" against flips of the system into different basins of stability, reaching a non-desired state, and facing catastrophic changes when managers apply policies and practices (Mäler, 2008; Mäler et al., 2009; Perrings, 1995; Holling et al., 2002).

Several are the graphical representation of stability domains. In any case, Figure 1 reports a simple scheme that relates stability domains to the resilience of a system and to how people perceive it, highlighting a social dimension of resilience (Marten, 2001).

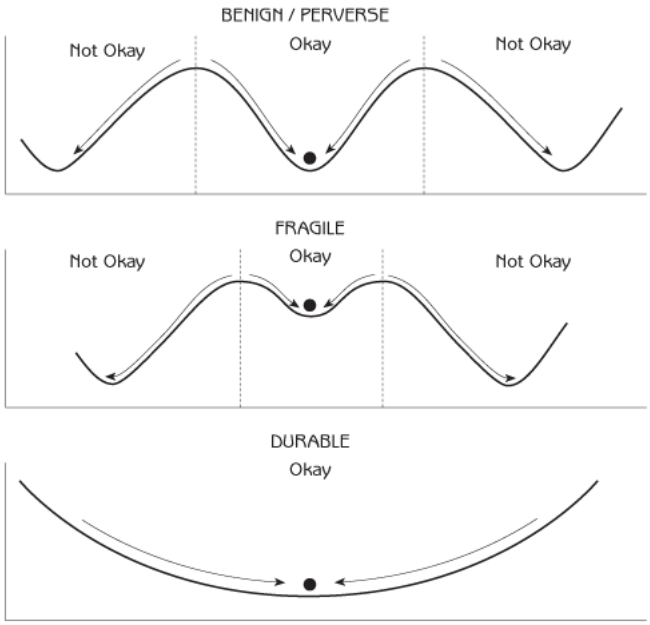


Figure 1. Graphic representation of different domains of stability that shows the relationships of these domains with resilience and how people perceive them. The small black point represents the system. Source: Marten, 2001.

The black dot represents the state of the ecosystem at a point in time, and movement along the hills represents change in the ecosystem. As an ecosystem moves out of a basin, it approaches a threshold, and a regime shift occurs when the ecosystem "falls" into another basin of stability. The first and the third cases represent a resilient system, benign and durable respectively. The second case represents, instead, a not-resilient system since even a small disturbance can cause its regime shift, and people perceive it as fragile.

Therefore, enhancing the resilience of a desirable (resilient) domain reduces the likelihood of a flip into another (less resilient) domain. It is for this reason that ecosystem resilience is a form of "insurance" (Baumgärtner & Strunz, 2009).

The probability that the system will flip from one stability domain to another, given its current state and the current disturbance regime, is a general measure of system resilience (Perrings, 1998). The thresholds, which represent the level of disturbance that triggers a dramatic change in the state of ecosystems and in the provision of ecosystem services, separate these regimes (Folke et al., 2002; Luck, 2005; Muradian, 2001). Therefore, the economic value of ecosystem services depends on the distance of the system from an ecological threshold able to affect the state of the ecosystem (Limburg et al., 2002). The closer the ecosystem to the threshold, the higher the economic value of ecosystem services because the probability of overpassing the threshold and losing the ecosystem services is higher.

The valuation of ecosystem resilience is analogous to the valuation of a portfolio of assets in a given state (Brock & Xepapadeas, 2002). The value of the asset mix – the portfolio – depends on the covariance in the returns on the individual assets it contains. It is worth noting that just as the value of a portfolio of financial assets depends on the risk preferences of the asset holders, so does the value of the ecosystem resilience, which depends on the risk preferences of society. The more risk averse is society, the more weight it will place on strategies that preserve

or build ecosystem resilience, and the higher the value it would allocate to ecosystem configurations that are less variance prone – i.e., more resilient (Armsworth & Roughgarden, 2003).

Currently, ecological economists deal with valuing how the natural capital flow (ecosystem services flow) contributes to ecosystem resilience and, thus, must take part in cost benefit analysis (Mäler et al., 2008). An example will help in illustrating how the quantification of thresholds can explain the relation between management, ecosystem services, and resilience.

Drylands salinization in Australia (a major issue for individual farmers since 1930) becomes a collective problem in 1980-1990 (Anderies et al., 2001; Greiner & Cacho, 2001; Briggs & Taws, 2003). Briefly, to increase agricultural and wool production by sheep (a provisioning service), agricultural fields and pastures replaced the original woody vegetation in the years (Schofield, 1992; Farrington & Salama, 1996). However, the natural woody vegetation is usually able to maintain the groundwater at low enough levels through evapotranspiration, so that salts could remain in the soil, providing an important regulating service (Rodríguez et al., 2006). The salt from the basement complex reaches the surface soils through the movement of the water table, making lands unusable for traditional agriculture (Anderies et al., 2001; Greiner & Cacho 2001; Briggs & Taws 2003). In natural conditions, Australia shows that original water tables are very deep (-30mt) (Walker et al., 2009), and fluctuations in rainfall cause variations in water table depth, but without socio-environmental problems. However, there is a critical threshold in the depth of the water table – ca. -2mt, depending on soil type, and once it reaches this level, the salt rises to the surface by capillary action. However, it is enough that water table is -3mt below the surface the top meter of soil, which determines agricultural production. Therefore, the water table at -3mt and at -30mt guarantee the agricultural production, the same ecosystem services, but in the first case, the system is less resilient, and the risk of salinization is high because the threshold of -2mt is very close (Pascual et al., 2010). In terms of insurance, the depth of -30mt represents a best guarantee that the natural capital flow will be maintained, since the system will not flip into another stability domain.

Payment for Ecosystem Services as a Form of Insurance against Natural Disasters related to the Use of Natural Resources

Gómez-Baggethun and colleagues (2010) showed an interesting review of the development of the ecosystem services concept, highlighting how, recently, ecosystem services are increasingly getting economic decision-making through the widespread promotion of market-based instruments for conservation such as the so-called Payments for Ecosystem Services schemes (PES) (Landell-Mills & Porras, 2002; Wunder, 2005; Pagiola & Platais, 2007; Engel et al., 2008; Pagiola, 2008).

PES schemes represent a kind of voluntary and conditional transactions over well-defined ecosystem services between at least one supplier and one user (Wunder, 2005). The basic logic behind PES schemes is that managers very often receive few benefits from the conservation of land uses, and they could increase their benefits through a conversion in alternative land uses, such as conversion of forests to cropland or pasture. At the same time, deforestation can impose costs on downstream populations, who no longer receive the benefits of services such as water filtration, and on the global community because of reductions in biodiversity and carbon storage (Engel et al., 2008). Payments by the service users can help make conservation the more

attractive option for ecosystem managers, thus inducing them to adopt it; therefore, PES seeks to internalize what would otherwise be an externality (Pagiola & Platais, 2007).

Ecosystem services existing in market schemes so far include (i) carbon sequestration in biomass or soils; (ii) provision of habitat for endangered species; (iii) protection of landscapes; and (iv) various hydrological functions related to the quality, quantity, or timing of freshwater flows from upstream areas to downstream users. Costa Rica pioneered the use of formal PES mechanisms in developed countries by establishing a country-wide program called *Pago por Servicios Ambientales* (PSA) in 1997, which reversed the severe deforestation rates existing at that time (Pagiola, 2008). In the early 2000s, a growing number of PES-like mechanisms have spread throughout other Meso-American and South American countries (Corbera et al., 2007; Kosoy et al., 2007; Asquith et al., 2008; Pagiola, 2008; Wunder & Albán, 2008; Wunder et al., 2008). A recent review analyzes, among other aspects, the application of PES in different countries in order to verify the respect of PES definition in different applications (Schomers & Matzdorf, 2013). Surprisingly, even though Costa Rica appears to have the most prevalently analyzed PES scheme, it fails Wunder's PES definition as commitment does not appear to be voluntary on the buyer's nor on the provider's side, and does not comply with the criteria of conditionality. In Europe, the discussion on PES as a mechanism to internalize externalities dates back to the 1970s, and thus, long before PES implementation in Latin America. However, with the regulation EC 2078/92, it is possible to observe the introduction of agri-environmental programs (AEPs) as a supplement to the Common Agricultural Policy (CAP), providing payments to farmers choosing to implement conservation efforts that improve the environment, or maintain the countryside on a voluntary basis, or both (Baylis et al., 2008).

Conclusions

Resilience represents the real ecological insurance because, despite the presence of disturbances and changes (i.e., climate change), a resilient system maintains its structures, functions, and processes, and thus, it is able to guarantee the provision of ecosystem services (Armsworth & Roughgarden, 2003; Pascual et al., 2010; Gómez-Baggethun & Barton, 2013). It is clear that the marked-based instruments at the moment available, the so-called PES, are not able to face every natural disaster, such as volcano eruption or earthquake. However, PES represent a first example of a form of insurance, which ensures the delivery of one or more ecosystem services to support quality of life, and they represent a good starting point over which to build up new insurance instruments voluntary-based. They can be a way to prevent certain catastrophic events such as landslides, floods, and water contamination that can affect human well-being and survival.

Nowadays, several are the open research questions that need a solution in order to better manage the issues related to natural disasters. First, it is necessary to analyze the possible linkages between the traditional economic insurances and new forms of insurance including environmental perspective. Second, an aspect that deserves a focus is how tools like PES can spread using a more common approach applicable to different countries, in order to take into account natural disasters. Finally, the reason why areas with high frequency of natural disasters show people with low attention toward possible natural insurance should be subject of further research in order to analyze how much the perception of environmental risk can affect the kinds of insurance measure to contrast or face environmental disasters.

References

Admiraal, J. F., Wossink, A., de Groot, W. T., & de Snoo, G. R. (2013). More than total economic value: How to combine economic valuation of biodiversity with ecological resilience. *Ecological Economics* 89, 115-122.

Anderies, J. M., Cumming, G., Janssen, M., Lebel, L., Norberg, J., Peterson, & Walker, G. B. (2001). *A resilience centered approach for engaging stakeholders about regional sustainability: an example from the Goulburn Broken catchment in Southeastern Australia.* Technical Report. Townsville, Australia: CSIRO Sustainable Ecosystems.

Armsworth, P. R., & Roughgarden, J. E. (2003). The economic value of ecological stability. *Proceedings of the National Academy of Sciences USA* 100, 7147-7151.

Asquith, N. M., Teresa Vargas, M., & Wunder, S. (2008). Selling two environmental services: In-kind payments for bird habitat and watershed protection in Los Negros, Bolivia. *Ecological Economics* 65, 675-684.

Balmford, A., Rodrigues, A., Walpole, M., ten Brink, P., Kettunen, M., Braat, L., & de Groot, R. (2008). *The Economics of Ecosystems and Biodiversity: Scoping the Science.* Cambridge, UK: European Commission.

Baumgärtner, S., & Strunz, S. (2009). *The economic insurance value of ecosystem resilience.* University of Lüneburg Working Paper Series in Economics No. 132. Retrieved from http://www.leuphana.de/vwl/papers ISSN 1860-5508.

Baylis, K., Peplow, S., Rausser, G., & Simon, L. (2008). Agri-environmental policies in the EU and the United States: A comparison. *Ecological Economics* 65, 753-764.

Briggs, S. V., & Taws N. (2003). Impacts of salinity on biodiversity-clear understanding or muddy confusion? *Australian Journal of Botany, 51*, 609-617.

Brock, W. A., & Xepapadeas, A. (2002). Biodiversity management under uncertainty: Species selection and harvesting rules. In B. Kristrom, P. Dasgupta, & K. Lofgren (Eds.), *Economic theory for the environment: Essays in honour of Karl-Goŕan Maĺer* (pp. 62-97). Cheltenham, England: Edward Elgar.

Corbera, E., Kosoy, N., & Martínez-Tuna, M. (2007). The equity implications of marketing ecosystem services in protected areas and rural communities: case studies from Meso-America. *Global Environmental Change, 17*, 365-380.

Costanza, R., d'Arge, R., de Groot, R., Farber, S., Grasso, M., Hannon, B., Limburg, K., Naeem, S., O'Neill, R. V., Paruelo, J., Raskin, R. G., Sutton, P., & van den Belt, M. (1997). The value of the world's ecosystem services and natural capital. *Nature, 387*, 253-260.

de Groot, R. S., Wilson, M., & Boumans, R. (2002). A typology for the description, classification and valuation of ecosystem functions, goods and services. *Ecological Economics, 41*, 393-408.

de Groot, R. S. (2006). Function-analysis and valuation as a tool to assess land use conflicts in planning for sustainable, multi-functional landscapes. *Landscape and Urban Planning, 75*, 175-186.

Engel, S., Pagiola, S., & Wunder, S. (2008). Designing payments for environmental services in theory and practice: An overview of the issue. *Ecological Economics, 65*, 663-674.

Farrington, P., & Salama R. B. (1996). Controlling dryland salinity by planting trees in the best hydrogeological setting. *Land Degradation & Development, 7*, 183-204.

Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C. S., & Walker, B. (2002). Resilience and sustainable development: Building adaptive capacity in a world of transformations. *Ambio, 31*(5), 437-440.

Gómez-Baggethun, E., & Barton, D. N. (2013). Classifying and valuing ecosystem services for urban planning. *Ecological Economics,* 86, 235-245.

Gómez-Baggethun, E., de Groot, R., Lomas, P. L., & Montes, C. (2010). The history of ecosystem services in economic theory and practice: From early notions to markets and payment schemes. *Ecological Economics,* 69, 1209-1218.

Greiner, R., & Cacho, O. (2001). On the efficient use of a catchment's land and water resources: Dryland salinization in Australia. *Ecological Economics, 38*, 441-458.

Gren, I.-M., Folke, C., Turner, R. K., & Batman, I.-J. (1994). Primary and secondary values of wetland ecosystems. *Environmental and Resource Economics, 4*(4), 55-74.

Holling, C. S. (1973). Resilience and stability of ecological systems. *Annual Review of Ecology and Systematics, 4*, 1-23.

Holling, C. S., Carpenter, S., Brock, W. A., & Gunderson, L. H. (2002). Discoveries for sustainable futures. In L. H. Gunderson, & C. S. Holling (Eds), *Panarchy: Understanding transformations in human and natural systems* (pp. 395-418). Washington, DC: Island Press.

Kolstad, C. D. (2000). *Environmental economics*. New York, NY, and Oxford, England: Oxford University Press.

Kosoy, N., Martínez-Tuna, M., Muradian, R., & Martínez Alier, J. (2007). Payments for environmental services in watersheds: Insights from a comparative study of three cases in Central America. *Ecological Economics, 61*, 446-455.

Krutilla, J. V. (1967). Conservation reconsidered. *American Economic Review, 57*, 777-786.

Krutilla, J. V., & Fisher, A. C. (1975). *The economics of the natural environment. Studies in the valuation of commodity and amenity resources.* Baltimore, MD: John Hopkins Press for Resources for the Future.

Landell-Mills, N., & Porras, I. T. (2002). *Silver bullet or fool's gold? A global review of markets for environmental services and their impact on the poor*. London, England: International Institute for Environment and Development (IIED).

Limburg, K. E., O'Neill, R. V., Costanza, R., & Farber, S. (2002). Complex systems and valuation. *Ecological Economics, 41*, 409-420.

Luck, G. (2005). An introduction to ecological thresholds. *Biological Conservation, 124*, 299-300.

Mäler, K. G. (2008). Sustainable development and resilience in ecosystems. *Environmental and Resource Economics, 39*(1), 17-24.

Mäler, K. G., Aniyar, S., & Jansson, Å (2009). Accounting for ecosystems. *Environmental and Resource Economics, 42*(1), 39-51.

Mäler, K. G., Aniyar, S., & Jansson, Å. (2008). Accounting for ecosystem services as a way to understand the requirements for sustainable development. *Proceedings of the National Academy of Sciences of the United States of America, 105*(28), 9501-9506.

Marten, G. G. (2001). *Human ecology: Basic concepts for sustainable development*. London, England: Earthscan Publications.

Millennium Ecosystem Assessment [MEA]. (2005). *Ecosystems and human well-being.* Washington, DC: Island Press.

Muradian, R. (2001). Ecological thresholds: A survey. *Ecological Economics, 38*(1), 7-24.

Pagiola, S. (2008). Payments for environmental services in Costa Rica. *Ecological Economics, 65*, 712-724.

Pagiola, S., & Platais, G. (2007). *Payments for environmental services: From theory to practice*. Washington, DC: World Bank.

Pascual, U., Muradian, R., Brander, L., Gómez-Baggethun, E., Martín-López, B., Verma, M., Armsworth, P., Christie, H., Eppink, F., Farley, J., Loomis, J., Pearson, L., Perrings, C., & Polasky, M. (2010). The Economics of Valuing Ecosystem Services and Biodiversity. In P. Kumar (Ed.), *The economics of ecosystems and biodiversity: Ecological and economic foundations* (pp. 183-256). London, England: Earthscan Publications.

Pearce, D. W., & Turner, R. K. (1990). *Economics of natural resources and the environment*. Baltimore, MD: John Hopkins University Press.

Perrings, C. (1998). Resilience in the dynamics of economy-environment systems. *Environmental and Resource Economics, 11*(3-4), 503-520.

Perrings, C., & Walker, B. W. (1995). Biodiversity loss and the economics of discontinuous change in semiarid rangelands. In C. Perrings, K. G. Mäler, C. Folke, C. S. Holling, & B. O. Jansson (Eds), *Biodiversity loss: Economic and ecological issues* (pp. 190-210). Cambridge, England: Cambridge University Press.

Rodríguez, J. P., Beard, Jr., T. D., Bennett, E. M., Cumming, G. S., Cork, S., Agard, J., Dobson, A. P., & Peterson, G. D. (2006). Trade-offs across space, time, and ecosystem services. *Ecology and Society, 11*(1), 28. Retrieved from http://www.ecologyandsociety.org/vol11/iss1/art28/

Schofield, N. J. (1992). Tree planting for dryland salinity control in Australia. *Agroforestry Systems, 20*, 1-23.

Schomers, S. & Matzdorf, B. (2013). Payments for ecosystem services: A review and comparison of developing and industrialized countries. *Ecosystem Services, 6*, 16-30.

Turner, K. T., Paavola, J., Cooper, P., Farber, S., Jessamy, V., & Georgiu, S. (2003). Valuing nature: Lessons learned and future research directions. *Ecological Economics, 46*, 493-510.

Walker, B. H., Abel, N., Anderies, J. M., & Ryan, P. (2009). Resilience, adaptability, and transformability in the Goulburn-Broken Catchment, Australia. *Ecology and Society, 14*(1), 12. Retrieved from http://www.ecologyandsociety.org/vol14/iss1/art12/

Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability, and transformability in social–ecological systems. *Ecology and Society, 9*(2), 5. Retrieved from http://www.ecologyandsociety.org/vol9/iss2/art5.

Wunder, S. (2005). *Payments for environmental services: Some nuts and bolts.* Occasional Paper No 42. Bogor, Indonesia: Center for International Forestry Research (CIFOR).

Wunder, S., & Albán, M. (2008). Decentralized payments for environmental services: The cases of Pimampiro and PROFAFOR in Ecuador. *Ecological Economics, 65*, 685-698.

Wunder, S., Engel, S., & Pagiola, S., (2008). Taking stock: A comparative analysis of payments for environmental services programs in developed and developing countries. *Ecological Economics, 65*, 834-852.

About the Authors

Donatella Valente (donatella.valente@unisalento.it) is a post-doc research assistant of Ecology at the Laboratory of Landscape Ecology, Department of Biological and Environmental Sciences and Technologies, University of Salento. She is carrying out research on the integration of ecological and economic concepts.

Irene Petrosillo (irene.petrosillo@unisalento.it) is Associate Professor of Ecology at the Laboratory of Landscape Ecology, Department of Biological and Environmental Sciences and Technologies, University of Salento. She is carrying out research on ecosystem services, natural capital flow, and economic values.

Giovanni Zurlini (giovanni.zurlini@unisalento.it) is Full Professor of Ecology at the Laboratory of Landscape Ecology, Department of Biological and Environmental Sciences and Technologies, University of Salento. His research activities focus on disturbance pattern and landscape ecology analysis.

Discussion Questions

1. What are the possible linkages between traditional economic insurance and new forms of insurance embracing the environmental perspective?

2. How can tools such as PES be used commonly in different countries?

3. To what extent is it possible to identify a relationship between areas characterized by high frequency of natural disasters and a low level of attention of local people toward possible natural insurance?

To Cite this Article

Valente, D., Petrosillo, I., & Zurlini, G. (2017, Spring). New voluntary-based instruments supporting ecological insurance. *Journal of Multidisciplinary Research, 9*(1), 53-62.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 63-77.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Policy Choice and Insurance System for Catastrophic Risks: The Case of Cultural Heritage

Fabrizio Terenzio Gizzi
Institute of Archaeological and Monumental Heritage CNR (Italy)

and

Donatella Porrini
University of Salento (Italy)

Abstract

Cultural heritage, such as historical cities, monuments, and archaeological sites, represents our identity, contributes to people's wellbeing and local economy development, and helps to build more resilient communities. However, effects of natural as well as human-induced disasters threaten historical heritage, and they had caused the irrecoverable loss of many properties over the centuries. The issue is topical especially because the number as well as the magnitude of disasters predictably will increase in the future also due to the effects of climate change. Therefore, it is more necessary than ever to schedule timely and tailored strategies dealing with the effects and consequences of future disasters on cultural heritage paying attention to possible strategies to assure future conservation. In this direction, the article, starting from a brief overview about disaster consequences on cultural heritage, lingers on the role that insurance can play as *ex ante* and *ex post* tool in setting up policies dealing with catastrophe risk and cultural heritage. The conclusion considers some future research perspectives.

Keywords: cultural heritage, cat-risk, risk management, policy choice, insurance.

Introduction

Natural disasters together with global warming, but also industrial activities and terrorism, are causing increased number of catastrophes, and carrying higher probability of damage on historic and artistic heritage. As we have seen in the recent earthquake that hit central Italy, a catastrophic phenomenon can cause not only losses of human life but also damage to unique and irreplaceable cultural heritage requiring the scientific community to find solutions to recovering or rebuilding monuments and whole historical centres.

The cost of the damage associated with catastrophe risks (cat-risks) poses serious challenges to governments in terms of policy choice. However, the insurance sector could play a relevant role in different directions: on the one hand, by supplying, as tradition, policies covering claims of third-parties who allege injury or property damage; on the other hand, insurance companies are in challenge to design financial products aiming to stimulate technological responses to risks. Moreover, insurers can induce indirect effects in proactively stimulating prevention behaviour related to their customers. Through their insurance products, they can play two primary roles in stimulating prevention behaviour. First, by supplying and pricing traditional insurance coverage for damage, insurers can promote actions by businesses and individuals to align policyholders with behaviours that promote positive outcomes. Second, by providing capital to new ventures and by reducing the financial risk to investors in these business ventures, insurers can also facilitate the growth of new markets and services that will help to reduce cat-risks consequences.

In the following paragraph, we will address the issue of the natural and human-made disasters effects on cultural heritage; the third paragraph deals with the choice between different policy instruments; the fourth is specifically devoted to the role of insurance as policy instrument; the fifth gives the economic definition of cultural heritage and defines the role of insurance protection; the conclusion considers some future research perspectives.

Impact of Natural and Human-Induced Disasters on Cultural Heritage

Both natural and human-induced hazards menace cultural heritage. The former include, for example, earthquakes, tsunami, volcanic eruptions, floods, landslides, and hurricanes; the latter refers to arson, pollution, vandalism, wars, civil unrests, terrorism, grave robberies, thefts, and so on. The hazards can change into disasters when serious disruption of the functioning of a community or a society occurs, involving one or more consequences such as widespread human, material, economic or environmental losses that may exceed the ability of the affected community or society to cope using its own resources so as to require assistance from external sources (UNISDR, https://www.unisdr.org/we/inform/terminology).

From the perspective of the impact on heritage, this general definition of disaster implicitly provides for the effects on cultural properties such as historic cities, monuments, archaeological sites, museums, and cultural landscapes (Vecco, 2011). Despite the circumstance that worldwide statistics regarding disaster risks do not take into account heritage, the consequences of catastrophic events on historical properties can exceed by far the impact of long-term processes due to the ravages of time such as erosion, biological colonization, tourism pressure, and so on (Gizzi et al., 2016).

As a matter of fact, looking at the historical natural disasters, they have left a lasting mark on the cultural history and historic consciousness, such as the destruction of Pompeii by the eruption of Vesuvius in 79 A.D.; the earthquakes in Shaanxi (1556), Lisbon (1755), Tokyo (1649 and 1703), and San Francisco (1906); the floods of the Huang He (1887) and the Chang Jiang (1911 and 1931); or the inundation of Florence in 1966.

In recent times, other disasters caused huge damage to several cultural properties such as the earthquake on 26 December 2003 that hit the historic city and the UNESCO site of Bam (Iran) with severe damages to the vernacular buildings made up of earthen bricks. Furthermore, on 15 August 2007, an earthquake of magnitude 7.9 struck the coast of Peru at Pisco, 250 kilometres to the south of Lima, with significant damage to the archaeological sites (including those of Inca period), colonial churches, and historical houses (Petzet and Ziesemer, 2008). Hydro-meteorological hazards also seriously hit the Ayutthaya World Heritage site in Leh, India (2010), and Thailand (2011) (UNESCO, 2013; Thayyen et al., 2013).

The occurrence of these extreme events entails an underlying risk for many historical properties and sites over the world. For example, the World Bank has evaluated the flood and landslide risk in relation to 237 World Heritage Cities (WHC), corresponding to about one fourth of all World Heritage Sites (Bigio et al., 2014). The study shows that among the top ten WHC at flood risk, the relative majority (4) of them is located in "Asia and the Pacific" region such as Hué, the former capital of Vietnam that hosts the heritage of the feudal empire, and the sacred Buddhist site of Kandy (3°, Sri Lanka); conversely, focusing on the top ten WHC exposed to landslide risk, 60% of them in "Europe and North America" region and among the most exposed city we find Mostar (1°, Bosnia and Herzegovina) and Dubrovnik (3°, Croatia).

Looking at the national risk scenarios, we can see that in Italy, that holds a heritage unique in the world, a percentage equal to about 18% of the assessed cultural heritage is at landslide risk, and about 43% is at flood risk. Among the cities with historical floods and where heritage is at risk with different degree of severity, we list Rome and Florence that suffered the last significant hydraulic events in 1937 and 1966 respectively (Trigila et al., 2015).

The progressive loss of past evidence due to disaster occurrence and the high risk affecting cultural heritage worldwide has stimulated in-depth discussion among professionals in the field of cultural heritage disaster risk management to put into the field proactive measures to adequately limit the impact of future extreme events.

However, the protection of heritage against human actions or natural disasters requires more and more to overshoot the national interests of each state, putting new and huge challenges for stakeholders and those in charge of heritage protection and management. Therefore, in order to reduce the disaster risk of cultural heritage, numerous international initiatives such as conferences, workshops, and declarations, have begun since the late 1990s, with a steady increase in the 2000s. These initiatives have seen the contribution of international organizations such as UNESCO, UNISDR, ICOMOS, ICCROM, and ICOM. In particular, an increasing corpus of research has dealt with the impact of the climate change on cultural heritage in the last years.

In fact, the climate change predictably will increase the frequency and the magnitude of weather extremes and, as a consequence, the impact of floods and landslides. However, the effects of the increase in rainy events also can include the rise in moisture in some places with the consequent increase of underlying risk factor distressing historical properties. We refer, for example, to the ground water table rise that can cause an increase in building humidity or geotechnical problems in building foundation soils. Among the recent research activities dealing

with climate change and cultural heritage worthy of mention are the Noah's Ark project that faces the consequences of climate change on European heritage buildings and cultural landscapes, having the next 100 years as a scenario (Sabbioni et al., 2010) and the research of the World Bank that considers the effect of the climate change in relation to the World Heritage Cities (Bigio et al., 2014).

The Choice between Different Policy Instruments

In the near future, we can expect increasing losses from natural and human-induced disaster, especially in disaster-prone areas, such as flood plains and coastal areas or earthquake-prone cities, and probably climate change will be responsible for the occurrence of more frequent and severe weather events. We can infer the future trend analysing global disaster losses during the last decades in Figure 1.

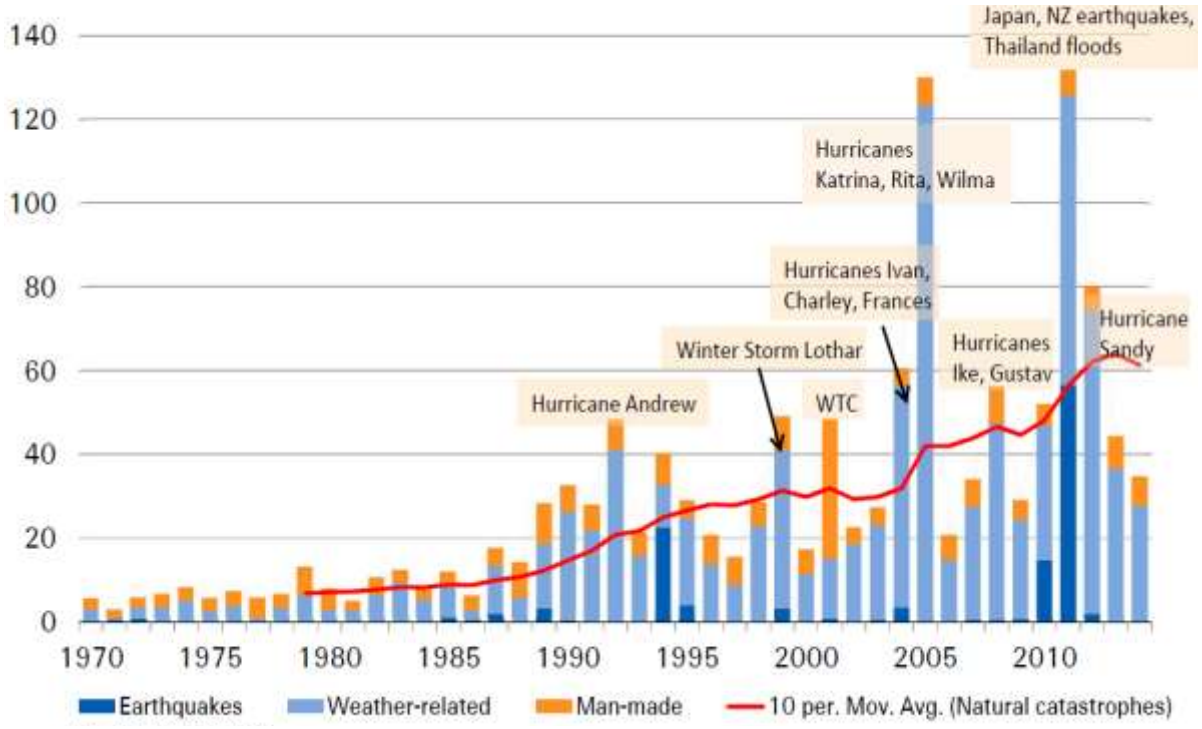


Figure 1. Worldwide natural and human-induced catastrophes losses (USD billion in 2014 prices). Source: Swiss Re, 2015.

As we can see in Figure 1, in recent years, catastrophic events have occurred with increasing frequency and greater severity. The rising phenomena of cat-risks pose serious challenges to governments to tackle all the economic consequences, given also the losses deriving from a catastrophic event do not depend solely on the hazard severity but also on a number of human-related factors, such as the lack or inadequacy of law contexts, risk awareness by people, administration policy security, urban planning, mitigation actions, construction methods used (which determine the resistance of buildings), and the presence of control tools in relation to a given risk.

To define the model for correct risk management strategies, we can consider the theory of environmental policy choice that presents at least two opposite views: on the one hand, the choice of policy instruments is a public matter and the state, as policy designer, should select the optimal instruments and take responsibility for its imposition in the public interest; on the other hand, the private sector has to play a role, particularly by choosing market-based policies (Stavins, 1998; Porrini, 2005).

So, in the case under examination, the policy choice regards the assignment of respective roles to the private and the public sector to provide compensation and incentives for the reduction of the risk of catastrophic losses.

The choice between "public" and "private" instruments is essential given that in the case in which the government does not provide any policy instruments to prevent the events and compensate the victims, the costs deriving from catastrophes fall on the society as a whole. Alternatively, the government can carry the risk directly as "insurer of last resort," and, in this case, the taxpayer supports the costs of catastrophic events, contributing according to the tax-regime of the country; or the private sector can cover, at least partially, the cost connected with cat-risks, eventually with the use of insurance products.

Another important distinction is between instruments that are effective *ex ante* or *ex post*. The first corresponds to regulatory instruments that *ex ante* fix precaution standards to control risks; the second corresponds to *ex post* intervention that provides compensation to victims while internalizing the social costs of harm producing activities (Shavell, 1984; Kolstad et al. 1990).

In this sense, dealing with the issue of catastrophic events, risk management strategies have to address the *ex ante* objective of prevention, especially providing incentives to improve safety standards, and the *ex post* objective of paying compensation to the victims.

In connection with these objectives, the next paragraph focuses on the role the insurance sector may play within risk management strategies.

Insurance as a Policy Instrument

Within the debate about the political economic instruments choice, we can include insurance in market-based instruments as private tools (sometimes publicly supported).

As we can see in Figure 2, the insurance sector already is playing a role in covering the economic losses from catastrophic events.

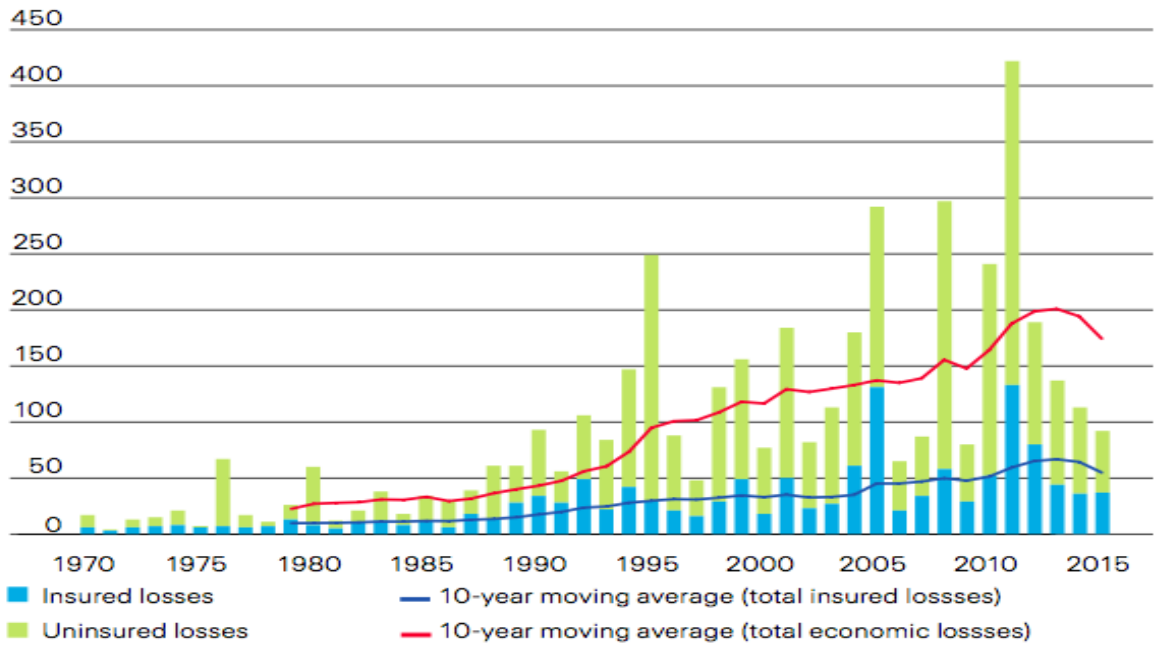


Figure 2. Insured vs. uninsured losses from catastrophes (USD billion in 2015 prices). Source: Swiss Re, 2016.

Figure 2 also shows an increase over the time difference between the total economic losses and the total insured losses. Given this amount of cat-losses the insurance compensation left out, insurance may play a relevant role as an instrument to face the economic consequences of the catastrophic events.

Because an insurance provider offers compensation for the damages and the victims, the insurance acts as an *ex post* kind of policy instruments. But on an ex ante point of view property, casualty, health, and liability insurance for individuals and businesses all present opportunities to stimulate preventive policyholder behaviour. In fact, insurance contract terms and conditions and the pricing structures can create incentives to improve outcomes, "forcing" the property's owner to take the proper risk mitigation measures, boosting preventive actions so as to give financial advantages to policyholders who engage in risk-friendly behaviour (Gizzi et al., 2016).

A relevant question connected with the use of insurance as a policy instrument is the assessment of the insurability of catastrophic risks (Coviello, 2013). The possibility to insure these kinds of risks depends on the following factors:

- the difficulty of calculating a fair premium, such that companies tend to estimate a very prudent premium, which often is too high for the potential purchaser;
- the asymmetry of the information that causes moral hazard – i.e., unscrupulous behaviour by policyholders, and adverse selection, being the tendency for the parties most exposed to risk to cover it; and
- the characteristics of the insurance company in terms of size, propensity to accept risk, and underwriting ability – all elements that influence the decision to include the coverage of catastrophic risks in the insurance portfolio.

For what concerns the last point, one or more other insurers may re-insure a catastrophic risk, upon acceptance. Accordingly, reinsurance is a useful tool in the diversification of the portfolios of insurance companies.

Moreover, the use of catastrophe bonds (cat bonds) may solve the insolvency risk, increasing the "underwriting ability" with the recourse to the capital market via securitisation of the catastrophe risk, as we will see in the following part of the paragraph.

Another way to overcome the solvency risk is to provide for a mixed public-private system. International experience of mixed public-private systems shows the State can play various roles: as primary insurer, as re-insurer, or by defining rules that enable the private sector to provide insurance. Such a system would incentivise citizens to cover catastrophe risks; would mitigate the adverse selection issue and provide, due to State intervention, the financial resources to cover any event that causes losses in excess of those sustainable by the private system on its own.

In some cases, the State acts as the primary insurer, covering entirely the consequences of cat-risks. Usually, the premiums and the compensation are proportional, generalised, and pre-determined, which might cause to see the premium as a tax for the provision of public support, rather than an obligation deriving from the provision of insurance cover. For example, Spain and the USA follow this approach with regard to floods.

In other cases, such as in United Kingdom, the State acts as a re-insurer with private insurance sector supporting part of the risk. Even so, the State uses the administrative mechanisms of the private insurance market for example for the signature of policies and the appraisal and settlement of claims. This approach increases the effectiveness of the private market since the public system intervenes when necessary (Porrini and Schwartze, 2014).

The State also can act as regulator, issuing specific rules governing responsibility and providing the precautionary and preventive obligations, so that private sector can manage certain risks.

Direct State intervention in the market could easily neutralise the insolvency risk the private insurance sector faces, although it is evident that public intervention often facilitates moral hazard, especially when contracts do not contain corrective mechanisms, such as deductibles and maximum covers. Particularly in the case of cat-risk, we can speak about a peculiar kind of moral hazard that literature calls "charity hazard." With the term "charity hazard," we refer to fact that individuals choose not to buy insurance because they believe they will receive government support if they suffer damage (Browne and Hoyt, 2000).

Another important issue is the opportunity to introduce a compulsory insurance system for cat-risks, or an obligatory extension of other policies to include these events. This proposal is under discussion especially in States, such as Italy, with a low penetration of insurance and a low propensity of citizens to address risk prevention (Porrini, 2016).

Even if citizens might see a compulsory system as a new property tax, rather than a form of wealth protection, it still would generate the critical mass necessary for the good functioning of the insurance mechanism, based on mutuality and the sharing of risk.

To cover the economic costs of cat-risks, in some countries not only insurance companies supply catastrophe insurance coverage but also a system of compensation funds, such as a special government disaster fund with the target to promote framework of contingency measures to tackle economic consequences (Faure & Grimeaud, 2000) could come into existence.

In this sense, the insurance industry's role is far beyond simply compensating cat-risks victims for their losses *ex post*. So, the activity of insurance companies can contribute to develop political economic instruments within an *ex ante* strategy with the target to financially manage large-scale catastrophes as a complement of insurance instruments for the compensation of disaster losses.

The insurance industry also is developing alternative risk transfer products, given that conventional reinsurance arrangements may in the future cover a smaller proportion of total losses and that insufficient capital may available to insurance markets to cover these losses.

A first kind of these insurance products are catastrophe bonds, consisting in securitising some of the risk in bonds, that high-yield investors could buy. The so-called cat bonds are able to transfer risk to investors that receive coupons that are normally a reference rate plus an appropriate risk premium. By these products, insurers limit risk exposure transferring natural catastrophe risk into the capital markets. Due to their size, financial markets offer enormous potential for insurers to diversify risks. But, transaction costs can be considerable, and the unfamiliarity of investors with insurance risks means they currently demand a relatively large risk premium.[4]

Cat bonds are the most standardised and common type of "insurance linked security." Their target is to finance the coverage of lower-frequency, high-impact insurance risks, such as hurricanes, earthquakes, and other natural catastrophes. The issue and placement of these instruments in fact redistributes part of the exposure deriving from catastrophe risks to a vast number of investors, with a high propensity to accept risk, that seek high returns. For financial markets, these instruments represent an attractive opportunity to diversify the investment portfolios. In this way, insurance risk becomes financial risk.

Another type of risk transfer products is the weather derivatives companies use to hedge against the risk of weather-related losses – particularly important for climate change consequences. Weather derivatives pay out on a specified trigger, e.g., temperature over a specified period, rather than proof of loss. The investor providing a weather derivative charges the buyer a premium for access to capital. If nothing happens then the investor makes a profit.

With these kinds of financial products, the insurance industry tries to reach two goals. First, it responds to the need for extra capital and the need to spread risks beyond the insurance sector; particularly cat bonds serve to spread insurance risk in the financial sector. Second, it seeks to improve the accuracy and the resolution of hazard data and the likely impacts on climate change with the involvement of financial market forecast ability.

The Economic Definition of Cultural Heritage and Insurance Protection

Cultural heritage refers to a set of recognized assets that reflect the historical, socioeconomic, political, scientific, artistic, and educational importance of a good that our

[4] The financial markets issue cat bonds at a notional value that repay on maturity (typically three to five years) if the related catastrophe has not occurred; in contrast, if the event has occurred, they repair notional value in part, or not at all, to cover the losses by the catastrophe. The sponsor of the issue may be an insurance company, a re-insurer, or the State; the investors are usually professional operators looking for an asset class that different from the traditional products in the financial markets.

ancestors created as a visible landmark. It is a historical social asset that we cannot substitute in case of loss or damage and as such differs from normal economic goods. In fact, there is essentially no market for such goods since we cannot replace or reproduce them.[5]

So, in economic terms, we can say that "historic and artistic heritage" is a set of public goods. With the term "public goods," we refer to a type of goods we consider to be non-rivalrous, meaning that the consumption of the goods by one individual does not reduce the availability for others, and non-excludable, meaning that we cannot exclude anyone from using the goods.[6]

Public goods present the characteristic to have a value that benefits to the community as a whole beyond any purchase price; they often require large initial investment costs generally too expensive for any individual or private corporation to afford and to earn a reasonable return requires such a high level of administration that no individual or company can arrange (Throsby, 2010).

Economic value of cultural heritage includes the amount of welfare that heritage generates for society. We define total economic value in terms of *use* and *non-use* values.

The use value is the value one gets from actually visiting a certain heritage site or a monument (direct use) as well as all the recreational facilities it provides (indirect use). The non-use value, on the other hand, is the value it creates from simply the knowledge of its existence (existence value), the possibility of having the chance to visit it in some future time (option value), and the satisfaction one has knowing that it will be a value for future generations (bequest value). Cultural heritage, like any other public good, produces externalities. We can consider tourism, employment, and regional development as production externalities and national identity, education, and research as consumption externalities.

One of the more fundamental components of cultural policy is the preservation of a society's heritage, especially its historic buildings and structures. Heritage preservation policy focuses on large and public structures as symbols of local, national, or even global heritage. The impact of historic preservation in markets defies simple characterizations in practice because the very essence of the historic properties is, by its nature, in connection with the broader community through both cultural channels and market forces.

Standard economic theory holds that markets under-produce preservation activities without some kind of policy intervention. Otherwise, the property owners typically do not

[5] With the term "historic and artistic heritage," we refer to what the World Heritage Convention defines: monuments – architectural works, works of monumental sculpture and painting, elements of structures of an archaeological nature, inscriptions, cave dwellings, and combinations of features, which are of outstanding value from the point of view of history, art, or science; groups of buildings – groups of separate or connected buildings, which, because of their architecture, their homogeneity, or their place in the landscape, are of outstanding universal value from the point of view of history, art, or science; sites – works of man or the combined works of nature and of man, and areas including archaeological sites, which are of outstanding universal value from the historical, aesthetic, ethnological, or anthropological points of view; see Convention Concerning the Protection of the World Cultural and Natural Heritage, The General Conference of UNESCO adopted on 16 November 1972.

[6] When the cultural heritage site is too crowded, the non-rivalness property does not hold at least to some degree. We consider congestion to be a negative externality that reduces the benefits of the consumer. Similarly, when there is an entrance fee, we may consider that the non-excludability condition does not hold and classify it as a quasi-public good.

undertake the historic preservation that would benefit the broader community because they cannot recoup their expenses given that the non-excludability allows everyone else in the community to "free-ride" on their costly efforts to create and maintain the historic amenity.

Preservation policy typically targets the problem of maintaining or preserving the built environment, given that private owners may let their historic property decay or may redevelop it in ways that squander its heritage value, even though the community at large would greatly benefit from preservation. Thus, even though the market may have initially produced the heritage that merits preservation, there is no guarantee that it will maintain it indefinitely.

This guarantee may come from preservation policy in light of the irreversibility of historic qualities of structures because once we lose the original landmark to damage or redevelopment, the change is irreversible, and authentic substitutes might not exist.

Whenever a catastrophic event happens, a relevant issue emerges for the costs of reconstruction. The importance of internalizing this kind of costs comes from the fact that the victims ask for the reconstruction of monuments, historical buildings, and art works because they are symbols of their community and represent the identity of a territory that they cannot abandon. In this sense, the heritage is a public good that corresponds to a set of recognized assets that reflect the historical, socioeconomic, political, scientific, artistic, and educational features. Recently, some studies that national institutions have performed, which have aimed to assess the well-being of people, have ratified the importance of heritage. For example, the Italian National Institute of Statistics (ISTAT) in the perspective of considering not only the traditional economic indicators but also others aspects of peoples' life, has included Landscape and Cultural Heritage among the 12 dimensions of well-being on which to base future political actions (CNEL-ISTAT, 2012).

In addition to the identity and well-being considerations, at least two are the reasons that should encourage actions aimed at guaranteeing the posterity of heritage: The former refers to the circumstance that cultural heritage represent an important drivers to develop many local economies being able to stimulate investments as well as many typologies of jobs in tourism, arts, and crafts; the latter embraces the consideration, in the Venice Declaration of 20 March 2012, that cultural heritage can promote the resilience of communities putting, for example, the traditional skills and knowledge over the centuries and integrated in cultural heritage to good use to develop or rebuild resilient communities after a disaster occurrence (e.g., traditional antiseismic building techniques).

As we already have seen generally for the consequences of cat-risks, we can define insurance as a means to even out the flow of income, that is, a way of buffering the insured party from economic shocks resulting from disasters by providing businesses and households with the resources they need to recover and rebuild after a catastrophic event.

With regard to handling the consequences on cultural heritage, an insurance system can play a direct role by providing coverage for the consequences of extreme events. More than 20 years ago, in 1993, the Council of Europe, by Recommendation No. R (93)9, already emphasized this role; in fact, the document advises national states to make any legal effort to facilitate the coverage of the architectural heritage against losses and damage disasters cause.

In fact, the insurance companies are in charge to calculate actuarial risks and to set adequate premiums and contractual conditions, such as cover and deductibles, and are inclined to gear their calculations toward a long time horizon, which enables valuation of and planning for low probability-high loss events. However, in order to better estimate the risk and the premium,

companies need to found their actuarial models on more and more robust statistical data including the damage that cultural heritage has suffered historically.

From this point of view, considering that the statistics on disaster risks do not include the effects on cultural heritage, it should be suitable to develop a standard methodology to build national and large-scale databases of natural disaster consequences on historical properties in past centuries. The methodological approach to build national databases should take into consideration both the technical and administrative primary sources in national or local archives by which it is possible to improve to a great extent the information about both the structural effects on the properties and the economic impact of natural disasters on the heritage looking at the rebuilding costs that private owners or public institutions support.

The insurance, in addition to acting as a tool to recover the physical losses of affected heritage, can be effective to sustain financially local economies in case of business interruption. In fact, the consequences of disasters can involve both structural damage of the property and the economic benefits of it due to its tourist enjoyment. Therefore, owners, or managers, or both, can use the coverage in a wider perspective, as an economic instrument to compensate losses that could be responsible for significant depression of local economics based on tourism earnings.

As we have seen above, the role of insurance is not only in *ex post* actions but also in *ex ante* actions, and particularly for cultural heritage, it is relevant in terms of risk management, mitigation, and adaptation.

The nation's stock of historic buildings is finite. Whether a stately home or a more commonplace town house, each individual building contains an inherent and often unique series of values that deserves a higher degree of care and consideration than its more modern counterparts. We need to apply this philosophy when assessing requirements for property insurance to ensure the appropriate levels of cover and protection. In addition, the design and construction of historic buildings invariably makes them more vulnerable to damage, especially by fire, and more expensive to repair after damage has occurred.

Prevention is obviously better than cure, as no matter how well we carry out reinstatement works, the loss of historic fabric is irreversible. Insurance cover is a fall-back position only, which provides recompense to owners in the event of loss or damage in order to finance in whole or in part repair or reinstatement.

Moreover, the insurance sector can act to tackle the consequences of cat-risks by playing its part in mitigation, through the promotion of ways to reduce the consequences. But insurers also are well placed to help society to adapt to the impacts of cat-risks by promoting the effective limitation and management of risks.

In fact, insurance companies are motivated to take significant actions aimed at mitigating overall societal effects and increasing adaptive capacity because these actions will reduce overall uncertainty and other barriers to insurability, by reducing insurers potential exposure to catastrophic risks in excess of their capacity as well as the potential for property and liability claims in excess of current pricing structures.

Broadly, insurance products may facilitate mitigation by providing incentives or capital to build resilience to those impacts, or help to develop new markets for private ventures to create cat-risks related solutions, or both.

Insurers also are developing new products that create the conditions for an active adaptation to building physically resilient communities and to providing economic resources to help communities to cope with cultural heritage losses that catastrophes cause.

Insurance innovations with the most promise to build adaptive capacity might simply involve insurers pricing their policies to reflect the level of cat-risks that the insurers assume. These products will tend to reward behaviour that reduces risk of financial losses and, thus, will encourage adaptive behaviour.

Offering differential premiums to customers depending on the customers' level of protection from loss by disasters would seem to be a clear opportunity for insurers to reduce their own overall and maximum possible loss exposure while promoting communities overall resilience in the face of impacts. For example, discounts for businesses or homeowners that have taken specific steps to ensure buildings are resistant to floods or other hazards could potentially reflect the risk. Insurers also can condition their policies on compliance with laws such as building codes, thus playing a role in enforcing laws that promote catastrophe resilience. To guarantee good maintenance of the property that justifies more favorable policy conditions, the owners – as well as the occupiers, the heritage managers, and the insurers – should survey buildings regularly over time. The recommendations according to such technical survey will be compelling for those in charge of managing the estate. This should guarantee both the insured from the perspective of the timeliness and quality of the technical intervention on the property, and the insurance company that will be sure its financial exposure will be proportional to the premium with no additional financial risks for the companies.

Conclusion

In this article, we show that insurance could play a core role in policy choice to face the cat-risks consequences on cultural heritage. Governments need to utilise the benefits of insurance in the fight against catastrophes' economic impact as much as the insurance sector requires the support by an effective government strategy. Insurance is part of the overall mitigation and adaptation policies that we aim at reducing the severity of many impacts resulting from catastrophes if current adverse conditions prevail.

The challenge is to define an efficient mix of government policy interventions to provide the right incentives to invest in cost-effective preventive measures to reduce the final cost of disasters. To enable insurance companies to play a responsible role in tackling cat-risks consequences, the requirement is for a reliable, transparent, and international co-ordinated policy framework that gives certainty for investment decisions and provides business opportunities for clients.

In order to organize its own operations to the new challenge, the insurance sector should include cat-risks in its internal governance procedures, in line with the existing financial corporate risk identification, controlling and reporting structures, and best practice in reporting requirements.

To reach the aim, it is very much indeed necessary to arrange a system of international cooperation within a wider program of protection of cultural heritage involving national and international organizations in charge of protecting and managing cultural heritage as well as insurance companies that could bring their experience and the lessons they have learned as a consequence of past disaster occurrences.

References

Bigio, A. G., Ochoa, M. C., & Amirtahmasebi, R. (2014). Climate-resilient, climate-friendly World Heritage Cities. *Urban Development Series, Knowledge Papers, 19.* Washington, DC: World Bank. Retrieved from https://openknowledge.worldbank.org/handle/10986/19288 License: CC BY 3.0 IGO.

Browne, M. J., & Hoyt, R. E. (2000). The demand for flood insurance: Empirical evidence. *Journal of Risk and Uncertainty, 20*(3), 291-306.

CNEL-ISTAT. (2012). Comitato CNEL-ISTAT sugli indicatori di progresso e benessere. *La misurazione del Benessere Equo e Sostenibile (BES)*. Roma, Italia: ISTAT, CNEL [in Italian].

Coviello, A. (2013). *Calamità naturali e coperture assicurative. Il risk management nel governo dei rischi catastrofali*. Palermo, Italy: Dario Flaccovio Editore srl.

Faure, M., & Grimeaud, D. (2000). *Financial assurance issues of environmental liability: Report for the European Commission.* N.p.: N.p. http://www.europa.eu.int/comm/environment/liability/ insurance_gen.htm

Gizzi, F. T. (2008). Identifying geological and geo-technical influences that threaten historical sites: a method to evaluate the usefulness of data already available. *Journal of Cultural Heritage, IX*(3), 302-310.

Gizzi, F. T., Potenza, M. R., & Zotta, C. (2016). The insurance market of natural hazards for residential properties in Italy. *Open Journal of Earthquake Research, 5*, 35-61. http://dx.doi.org/10.4236/ojer.2016.51004.

Gizzi, F. T., Sileo, M., Biscione, M., Danese, M., & Alvarez de Buergo, M. (2016). The conservation state of the Sassi of Matera site (Southern Italy) and its correlation with the environmental conditions analysed through spatial analysis techniques. *Journal of Cultural Heritage, 17*, 61-74.

Kolstad, C. D., Ulen, T. S., & Johnson G. V. (1990). Ex post liability for harm vs. ex ante safety regulation: Substitutes or complements. *American Economic Review, 80*, 888-901.

Petzet, M., & Ziesemer, J. (Eds) (2008). *Heritage at risk: ICOMOS world report 2006/2007 on monuments and sites in danger*. Altenberg, Germany: E. Reinhold Verlag.

Porrini, D. (2005). Environmental policies choice as an issue of informational efficiency, 350-363, in *The Elgar companion to law and economics,* edited by Jurgen G. Backhaus, 2nd ed. Cheltenham, UK: Edward Elgar.

Porrini, D. (2016). Risk classification in natural catastrophe insurance: The case of Italy. *International Journal of Financial Research, 7*(1), 39-49. doi:10.5430/ijfr.v7n1p39.

Porrini, D., & Schwartze, R. (2014). Insurance models and European climate change policies: An assessment. *European Journal of Law and Economics, 38*(1), 7-28.

Sabbioni, C., Brimblecombe, P., & Cassar, M. (2010). *The atlas of climate change impact on European cultural heritage: Scientific analysis and management strategies*. London, England: Anthem Press.

Shavell, S. (1984). A model of the optimal use of liability and safety regulation. *Rand Journal of Economics, 15*, 271-280.

Stavins, R. N. (1998). Market-based environmental policies. *RFF Discussion Paper,* 98-26.

Swiss Re. (2015). Natural catastrophes and man-made disasters in 2014: Convective and winter storms generate most losses. *Sigma, 2*. Retrieved from PreventionWeb, http://www.actuarialpost.co.uk/downloads/cat_1/sigma2_2015_en.pdf

Swiss Re. (2016, March 30). Natural catastrophes and man-made disasters in 2015: Asia suffers substantial losses, *Sigma, 1*. Retrieved from PreventionWeb, http://www.preventionweb.net/news/view/48423

Thayyen, R. J., Dimri, A. P., Kumar, P., & Agnihotri G. (2013). Study of cloudburst and flash floods around Leh, India, during August 4–6. *Natural Hazards, 65*, 2175-2204.

Throsby, D. (2010). *The economics of cultural policy*. Cambridge Books. Cambridge, England: Cambridge University Press.

Trigila, A., Iadanza, C., Bussettini, M., Lastoria, B., & Barbano A. (2015). *Dissesto idrogeologico in Italia: Pericolosità e indicatori di rischio*. Rapporto 2015, ISPRA, Rapporti 233/2015 [in Italian].

UNESCO. (2013). *UNESCO launches project to develop a flood risk mitigation plan for Ayutthaya World Heritage.* Paris, France: UNESCO. Retrieved from UNESCO, http://whc.unesco.org/en/news/1040/, accessed 01 February 2017.

Vecco, M. (2011). *L'evoluzione del concetto di patrimonio culturale*, 2da ed. Milano, Italia: FrancoAngeli [in Italian].

About the Authors

Fabrizio Terenzio Gizzi (f.gizzi@ibam.cnr.it) graduated in Geological Science at Università di Napoli Federico II (Naples, Italy). He is researcher geologist at the Institute of Archaeological and Monumental Heritage of the Italian National Research Council (IBAM-CNR). His research interests include, among others, the analysis of natural and man-made risks affecting cultural heritage to identify suitable mitigation strategies. Such studies rely primarily on historical documents as sources to obtain physical and economic effects by earthquakes, landslides, and floods. On these topics, he has published several articles in international journal and conference proceedings. Furthermore, he is author-editor of monographs concerning the study of some historical extreme natural events.

Donatella Porrini (donatella.porrini@unisalento.it), M.Sc. in Economics at Queen Mary and Westfield College London, Ph.D. in Economics at Milano University, is Associate Professor of Political Economy at the University of Salento, Department of Management, Economics, Mathematics, and Statistics. Her research activity follows an economic analysis of law approach and deals with environmental policies and, particularly, the role of insurance. She is affiliated to The Euro-Mediterranean Center on Climate Change (CMCC).

Discussion Questions

1. Natural and human-induced disasters affect cultural heritage. Which will be the future trend?

2. Which policy instruments may we implement to face natural and human-induced disaster consequences?

3. Which role can we assign to insurance as policy instrument?

4. Why is it important to protect cultural heritage from disaster consequences? Which values does cultural heritage represent?

To Cite this Article

Gizzi, F. T., & Porrini, D. (2017, Spring). Policy choice and insurance system for catastrophic risks: The case of cultural heritage. *Journal of Multidisciplinary Research, 9*(1), 63-77.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 79-82.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Life Forward

Roni Raab
Non-Profit Administrator

Dr. Roni Raab is the South Florida Executive Director of Jewish National Fund (JNF), a 501(c)3 dedicated to improving the quality of life for all those living in Israel. Prior to his arrival at JNF, he was Head of School at Hebrew Academy (RASG), Miami Beach, for eight years.

He has a doctorate degree in Educational Leadership and Administration from Florida Atlantic University as well as degrees from Florida International University and Bar Ilan University, Israel.

He has been living in South Florida since 1978 years and has been host of Florida's Sunday morning Jewish radio show, *Shalom South Florida*, for nearly 31 years. He is also the founder of the Jewish Heritage Day Foundation and organizer of the Miami Marlins annual Jewish Heritage Day event.

Interview

by Hagai Gringarten
Editor-in-Chief, *Journal of Multidisciplinary Research*

Q1. Life is about stories. Do you have a favorite story you use as an icebreaker?

No one, specific anecdote pops into mind, as each event, situation, and circumstance has its unique nuances and flavor. Although I do like to include a personal story (see question 3 below), as it helps shape many of my thoughts and ideas.

Q2. What are the top three characteristics that contributed to your success?

Persistence and 'sick-with-it-ness' – Just because something is difficult or challenging doesn't mean we should walk away from it. Look challenges in the eyes, confront them, and tell them to get out of your way!

A willingness to get out of the comfort zone – Never stay stagnant. When you hit the next rung on the ladder, there is another rung awaiting your arrival. Keep climbing, and keep setting goals.

A thirst for learning and growth – There is so much out there that we don't know. How exciting that we get to explore, learn, stretch, expand. Stop learning, and you stop growing.

Q3. What life-changing events or decisions have guided your career?

When I was around six years old, I was hijacked by the Popular Front for the Liberation of Palestine (PFLP-PLO). After spending an entire week on an airplane in the Jordanian desert with more than 100 hostages, including my mother and four siblings, our airplane was blown up. Realizing how precious life is, and how dear each moment we are given is, my life has been dedicated to building, growth, and improvement. That includes the institutions and organizations for which I work, those around me, and of course my family and me.

Q4. Tell us of any expressions your parents often repeated with you.

"Are we having fun yet?" This has been a lifelong motivator for me. No matter how bad things get, not matter how dire or stressful, take the time to smile and laugh. It could be a lot worse, and this too shall pass. Have fun, and share it with those around you.

Q5. What is the biggest misconception about how to achieve success?

That others are to blame if things don't go the way you want. You have the ability to shape your environment, and if it does not suit your paradigm, walk away and find an environment that does.

Also, no reason to step on others to achieve your goals. Surround yourself with people you enjoy working with. Make them look good, and it'll reflect on you.

Q6. What books have you read lately?

I recent read a book called *Ask*, by Ryan Levesque. It was very helpful in getting into the habits and thought processes of "buyers" and how to turn them into loyal customers. I shared it with my son who is in marketing analysis, and he, too, found it intriguing and enlightening.

I am currently in the middle of reading *The Revolt*, by the late Israeli Prime Minister, Menachem Begin. Written as a retrospective account of the personal and national sacrifice that was involved in creating a homeland for the Jewish people, he waxes poetic and nostalgic on how his and others' passion for a cause drove them to stay focused on their goal, regardless of the cost.

Also, the Book of Ecclesiastes is a personal favorite which I make sure to review periodically to keep myself grounded. Our time here is brief, and we are not taking our material possessions with us, so be satisfied with what you have here on earth, and focus on happiness and fulfillment.

Q7. Imagine your phone rings and it's you from 10 years ago. If you only had a minute to talk, what would you say? (Yes, we know, buy AAPL).

Set your sights high. Life is great and there is so much to accomplish. Don't be satisfied with where you are – it's not about material pursuits, but rather growth and forward momentum. And, make sure you maintain a great reputation for being a kind person, a hard worker, a dedicated employee and friend. These characteristics will pay dividends in the long run. And they will help you sleep well at night.

Q8. What elevator speech would you give children about success in life?

Take responsibility. You become a better stronger person when you look inward and figure out how *you* can improve, as opposed to looking outward and trying to change those around you. The student in school who blames the teacher, the test, the textbook, his friends, etc., will rarely excel or shine until he or she takes responsibility for his or her own progress. No different for an adult in the work environment. See how you can improve you; how you can make things better in your space.

Q9. What is the best advice you've ever received, and who gave it to you?

"Never touch the same piece of paper twice." This advice has saved me countless hours at work and at home. File it, pass it on, or toss it. But don't put it down and say I'll get to it later. Same applies to email. A cluttered desk or an overstuffed inbox can be intimidating and disheartening to look at, and will hinder you from being able to complete all that you need to accomplish.

Q10. What would you like to see as your life's legacy?

Great question. Three things: I want my family to remember me as someone who worked hard to provide for them, but also to make the broader community in which we lived a better place. I'd like to be remembered by those in my community as someone who looked for voids and filled them, saw a break and fixed it, and was dedicated to the greater good. Finally, I want to be remembered as someone who was a staunch supporter of the State of Israel – its safety, security and vibrancy.

To Cite this Interview

Gringarten, H. (2017). Life forward: Roni Raab: Non-profit administrator. *Journal of Multidisciplinary Research, 9*(1), 79-82.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 83-84.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Book Review

Book Details

Burnett, B. & Evans, D. (2016). *Designing your life: How to build a well-lived, joyful life*. New York, NY: Alfred A. Knopf, 238 pages, $14.97, hardcover, ISBN 9781101875322.

Reviewer

Josefina E. Oramas, Ed.D.

Synopsis and Evaluation

Burnett and Evans' *Designing your Life: How to Build a Well-Lived, Joyful Life* describes the process of life designing; encouraging readers to think and approach life as designers: curious, empowered, and action-oriented while creating "a life that makes sense" (p. xxx). Life designers are immune to failures while generating ideas and making connections to find what is exciting and engaging before making choices and creating momentum to reach clarity and coherency. "A coherent life is one lived in such a way that you can clearly connect the dots between three things: who you are, what you believe, (and) what you are doing" (p. 32).

The book contains 11 chapters describing design methodology as a human process that involves five mind-sets or tools. These are (a) *curiosity* – exploring, asking questions, finding answers, and seeking new opportunities; (b) *bias to action* – trying new things, making decisions, and embracing change; (c) *reframing* or 'pivot' – restating a point of view and rephrasing dysfunctional beliefs, such as "to be happy, I have to make the right choice" by "there is no right choice – only good choosing" (p. 158); (d) *awareness* – knowing this is a process of brainstorming ideas, getting stuck, and moving forward while refusing the temptation to "rehash and ruminate" (p. 174); and (e) *radical collaboration* – building a team and creating a community because this is "an act of co-creation…a communal effort" (pp. 199-200), where ideas and opportunities are *created* in collaboration with others. Another tool involved in life design is a compass to help organize ideas, stay on course, and develop a Workview and a Lifeview.

Burnett and Evans, educators, innovators, and entrepreneurs at Stanford University in Silicon Valley, share their authority and experiences in design thinking to help readers navigate the process of life designing: creating alternatives, building things ('prototypes'), and quieting the "internal problem-finding critic" (p. 85). To them, life is not about winning or losing, but about choosing what is interesting, enjoyable, and helpful to others. "The secret to happiness in life design isn't making the right choice; it's learning to choose well" (p. 157).

Despite a variety of recent publications on the topic of how to succeed and achieve professional and personal fulfillment in life (David, 2016; Duckworth, 2016), Burnett and Evans' *Designing Your Life: How to Build a Well-Lived, Joyful Life* is empowering and thought-provoking. It provides sensible advice, practical explorations (e.g., mind mapping), reflections (e.g., Good Time Journal), and observations to create a fulfilling, satisfying, and meaningful life. Besides a road map for real change, the book is an essential read for scholarship in the areas of career planning and social psychology as well as for all those seeking positive change, trying to reach their full potential and ultimate happiness depending on individual insights, values, and perspectives because "life is more of an abstract painting – one that's open to multiple interpretations" (p. 87). The idea is that life is not static, but about growth, change, and evolvement, focused on what surprises may come next. "A well-designed life is a life that is generative – it is constantly creative, productive, changing, evolving, and there is always the possibility of surprise" (p. xvi).

In the Author's Own Words

"When designing your life, you start with who you are… then you have lots of ideas… make the best choice you can…you grow various aspects of your personality and identity that are nurtured and called upon by those experiences – you become more yourself. In this way, you energize a very productive cycle of growth, naturally evolving from being, to doing, to becoming. Then it all repeats, as the more-like-you version of you (your new being) takes the next step of doing, and so it goes. All of life's chapters – both the wonderfully victorious and the painfully difficult and disappointing – keep this growth cycle going if we have the right mind-set. In this way of seeing and experiencing things, you're always succeeding at the infinite game of discovering and engaging your own life in the world…and that mind-set is a great big dose of our version of the failure immunity vaccine" (p. 186).

Reviewer's Details

Josefina E. Oramas is the Director of the Student Health Center at St. Thomas University and a licensed mental health professional who works as the university's counselor. She is also adjunct faculty for the School of Leadership Studies teaching for the Doctorate in Education and the Master in Executive Management. Josefina holds a Doctorate in Education (Ed.D.) from Nova Southeastern University, with concentrations in Organizational Leadership and Human Services Administration, and a Master of Science degree in Psychology from Carlos Albizu University.

References

David, S. (2016). *Emotional agility: Get unstuck, embrace change, and thrive in work and life.* New York, NY: Penguin Random House.

Duckworth, A. (2016). *Grit: The power of passion and perseverance*. New York, NY: Simon & Schuster.

To Cite this Review

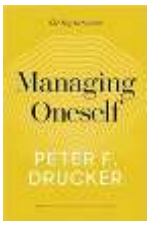
Oramas, J. E. (2017, Spring). Review of *Designing your life: How to build a well-lived, joyful life,* by Bill Burnett and Dave Evans. *Journal of Multidisciplinary Research, 9*(1), 83-84.

Journal of Multidisciplinary Research, Vol. 9, No. 1, Spring 2017, 85-88.
ISSN 1947-2900 (print) • ISSN 1947-2919 (online)

Editors' Choice
Recent Books of Interest – Spring 2017

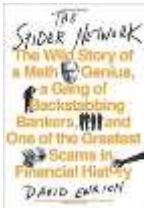
Eugenia P. Treadwell
St. Thomas University

1. Drucker, P. F. (2017). *Managing Oneself: The Key to Success*. Boston, MA: Harvard Business Review Press, 128 pages, hardcover, $19.99, ISBN: 9781633693043.



Drucker, often referred to as the father of modern management, provides insights that remain relevant and applicable in the modern business world. The author asks the reader to engage in a degree of introspective reflection, asking questions that help you peel back the layers of your unfolding and ever-changing career, and thereby giving you control over your career as well as providing you with the skills to become a more effective leader in all sectors of your life. Definitely a must-read for everyone!

2. Enrich, D. (2017). *The Spider Network: The Wild Story of a Math Genius, a Gang of Backstabbing Bankers, and One of the Greatest Scams in Financial History*. New York, NY: Harper Collins Publishers, 384 pages, hardcover, $29.99, ISBN: 9780062452986.

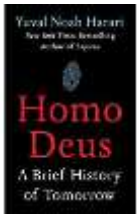


The *Wall Street Journal's* award-winning business reporter shares a riveting account of the 2006 Libor scandal, one of the greatest financial scams in history, which had far-reaching consequences throughout the financial industry and the world's largest financial institutions. The book provides a thrilling read filled with corruption, manipulation, money, and justice with a healthy mix of both history and investigative journalism. Even those without a financial background will enjoy this well-written book!

3. Glinert, L. (2017). *The Story of Hebrew (Library of Jewish Ideas)*. Princeton, NJ: Princeton University Press, 296 pages, hardcover, $27.95, ISBN: 9780691153292.

The author takes the reader on a fascinating journey, closely examining the Hebrew language and its impact on other religions, beginning from Biblical times leading up to the modern Jewish state. The symbolism and philosophical intricacies are explored throughout the book, providing the reader with an unforgettable experience while reflecting on the important role language plays in society, both past and present.

4. Harari, Y. N. (2017). *Homo Deus: A Brief History of Tomorrow*. New York, NY: Harper Collins Publishers, 464 pages, hardcover, $35.00, ISBN: 9780062464316.



New York Times bestselling author of *Sapiens* has returned, and he surely has not disappointed us! In his newest thought-provoking and irresistible book, he gives us a glimpse of what humanity could be like in the future. This in-depth exploration showcases challenges, disasters, and dreams, while posing timely questions of mortality, power, destruction, and the next stage of evolution. A truly enjoyable read as we prepare for the next stage of humanity's transformation.

5. Katz, Y., & Bohbot, A. (2017). *The Weapon Wizards: How Israel Became a High-Tech Military Superpower*. New York, NY: St. Martin's Press, 304 pages, hardcover, $27.99, ISBN: 9781250088338.

The authors provide a detailed account of the Israeli military's use of new technology that promotes a new, modern battlefield, which in turn changes how wars are carried out and won. A history of Israel's extensive war experience is accounted for and used as the framework for how this nation has transformed itself into a significant military player in the 21st century. An eye-opening reading experience from start to finish.

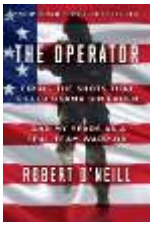
6. McDonald, D. (2017). *The Golden Passport: Harvard Business School, the Limits of Capitalism, and the Moral Failure of the MBA Elite*. New York, NY: Harper Collins Publishers, 672 pages, hardcover, $35.00, ISBN: 9780062347176.

The author meticulously sets forth the history of the Harvard Business School (HBS), while providing tedious details with a plethora of examples illustrating how corporate money and influence have contributed significantly to the disdain and indifference surrounding the HBS. The elaborate history, coupled with the author's investigative reporting, provides an impressive critique of U.S. capitalism. McDonald guides the reader on this epic journey of success, failure, power, morality, and influence, which has unmistakably impacted modern U.S. society and culture.

7. McRaven, W. H. (2017). *Make your Bed: Little Things that Can Change your Life…and Maybe the World*. New York, NY: Grand Central Publishing, 96 pages, hardcover, $18.00, ISBN: 978-1-4555-7024-9.

The author, a retired Admiral, offers the audience simple things to do daily to inspire us all to be productive members of society. This book is based on a speech the author gave at a University of Texas graduation and incorporates lessons he learned from his U.S. Navy SEAL training. As the bed symbolizes the individual and reflects one's personal habits, if one is not capable of making one's bed then one will not be able to accomplish anything. Everyone can benefit from this book, as it encourages the audience to start the day by making one's bed as it can lead to positive changes such as changing the world.

8. O'Neill, R. (2017). *The Operator: Firing the Shots that Killed Osama bin Laden and My Years as a SEAL Team Warrior*. New York, NY: Simon & Schuster, 368 pages, hardcover, $28.00, ISBN: 9781501145032.

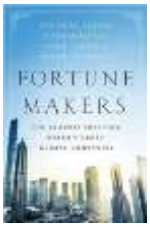


O'Neill recounts his inspirational 400-mission career across Iraq and Afghanistan, among other countries, while revealing firsthand details about the justified killing of the world's most notorious and wanted terrorist. The author shares intimate details about his childhood growing up in Butte, Montana, and why he decided to join the U.S. Navy SEALS. He also details the grueling training as part of the SEALS unit, which culminated in the author being the special operator who fired the shot that killed bin Laden. A chilling read, with the use of vivid language and description of the author's counter-terrorism operations, this is a must-read for every patriotic American.

9. Trump, I. (2017). *Women Who Work: Rewriting the Rules for Success*. New York, NY: Penguin Publishing Group, 256 pages, hardcover, $26.00, ISBN: 9780735211322.

Already a *New York Times* Bestseller, the author gives her own personal advice from her work experience ranging from fashion to real estate, to inspire all readers, regardless of gender or age. The tone of the book is inspirational while providing real-world experiences showcasing how women can maximize opportunities, be productive team-players, and be home in time for dinner with the family. Trump is attempting to re-define success in a more personal and individual framework by encouraging each person to soul-search to find the values that matter most. This is a must-read – it is uplifting and encouraging, and it honors our individual gifts and passions. Even better, a portion of future royalties received will be donated to The Ivanka M. Trump Charitable Fund that supports the economic empowerment of women and girls.

10. Useem, M., Singh, H., Neng, L., & Cappelli, P. (2017). *Fortune Makers: The Leaders Creating China's Great Global Companies*. New York, NY: PublicAffairs, 288 pages, hardcover, $28.99, ISBN: 9781610396585.



The authors create a comprehensive and distinctive overview of business practices used by key business leaders who are shaping the Chinese economy. Working in a global market, this book provides critical insight to how innovation is applied to the business world while being mindful of numerous political constraints. The authors challenge us to view Chinese corporate practices and life through a different lens and to acknowledge their vital role in the vast and constantly changing world of business on a global scale.

Reviewer's Details

Eugenia P. Treadwell (etreadwell@stu.edu) teaches at St. Thomas University in Miami Gardens, Florida.

To Cite these Reviews

Treadwell, E. P. (2017, Spring). Editors' choice: Recent books of interest – Spring 2017. *Journal of Multidisciplinary Research,* 9(1), 85-88.

About the Journal

Advertising

For information on advertising, please contact the journal editor-in-chief (hgringarten@stu.edu).

Copyright Notice

Disclaimer

The *Journal of Multidisciplinary Research* publisher, editor-in-chief, managing editor, associate editors, and reviews editor, and the members of the editorial advisory and editorial review committees are not responsible for errors or any consequences arising from the use of information contained in the *Journal of Multidisciplinary Research*; the views and opinions expressed do not necessarily reflect those of the publisher, editor-in-chief, managing editor, associate editors, or reviews editor; neither does the publication of advertisements constitute any endorsement by the publisher, editor-in-chief, managing editor, associate editors, or reviews editor of the products advertised.

Electronic Submissions

The *Journal of Multidisciplinary Research* accepts electronic submissions.

Indexing and Listing

The *Journal of Multidisciplinary Research* is indexed in ProQuest, Cabells, EBSCO, Gale-Cengage Learning, CiteFactor, Ulrich's, de Gruyter (Germany), Elektronische Zeitschriftenbibliothek (EZB) (Germany), and Directory of Research Journals Indexing (DRJI) (India). It is listed in the *Directory of Open Access Journals*, AcademicKeys, Cision Directory, EconPapers, Gaudeamus, Google Scholar, Isis Current Bibliography, JournalSeek, Journals4Free, MediaFinder, NewJour, Research Papers in Economics (RePEc), COPAC (England), CUFTS Journal Database (Canada), EconBiz (Germany), Edanz (Japan), HEC Paris Journal Finder (France), MIAR (Spain), Mir@bel (France), PhilPapers (Canada), REBIUN-CRUE (Spain), SUDOC (France), ZeitschriftenDatenBank (ZDB) (Germany), and the Open University of Hong Kong Electronic Library (Hong Kong). It is accessible via BASE-Bielefeld Academic Search Engine (Germany), and NIST Research Library (National Institute of Standards and Technology, part of the U.S. Department of Commerce).

Open Access Statement

The *Journal of Multidisciplinary Research* does not charge readers or their institutions for access. Our users have the right to read, download, copy, print, search, or link to the full texts of articles. The JMR does *not* charge Article Processing Fees for submitting an article for possible publication.

Privacy Statement

The *Journal of Multidisciplinary Research* uses the names and e-mail addresses it enters into this journal exclusively for the stated purposes of this journal and will not make these available for any other purpose or to any other party.

Permissions and Reprints

For information on permissions and reprints in relation to the *Journal of Multidisciplinary Research,* please contact the journal editor-in-chief (hgringarten@stu.edu).

Sponsorship

This journal is made possible by the generosity of the St. Thomas University School of Business.

To Cite Articles

To cite articles from the *Journal of Multidisciplinary Research,* you may use the following example:

Dunn, M. W., Dastoor, B., & Sims, R. L. (2012, Spring). Transformational leadership and organizational commitment: A cross-cultural perspective. *Journal of Multidisciplinary Research, 4*(1), 45-59.

Submissions

Author Guidelines

The *Journal of Multidisciplinary Research* (JMR) seeks to publish authors who strive to produce original, insightful, interesting, important, and theoretically solid research. Demonstration of a significant "value-added" contribution to a field's understanding of an issue or topic is crucial to acceptance for publication.

All articles submitted to the JMR must be accessible to a wide-ranging readership. Authors should write manuscripts as simply and concisely as possible, without sacrificing meaningfulness or clarity of exposition. The journal editor-in-chief will evaluate manuscripts in terms of their contribution-to-length ratio; that is, he or she may permit more pages to manuscripts that make strong contributions.

Manuscripts should be no more than 26, double-spaced pages (justified, one-inch margins, half-inch indentations, in Times New Roman 12-point font, *using active voice*), including an abstract (up to 200 words), keywords (up to seven terms), references, discussion questions (up to five), and relevant tables and figures (in their correct position in the text, not separate and not at the end of the manuscript), and appendixes (at the end of the manuscript). At his or her own discretion, the JMR editor-in-chief may allow additional space to papers that make very extensive contributions or that require additional space for data presentation or references.

Submission Preparation Checklist

When an author submit his or her manuscript to the *Journal of Multidisciplinary Research* for publication consideration, he or she agrees to abide by JMR publication requirements. Specifically, an author must:

- Agree that his or her manuscript is not under review for publication elsewhere and that he or she will not submit it to another publication during the review period at the JMR.
- Attest that the manuscript reports empirical results that have not been published previously. An author whose manuscript utilizes data reported in any other manuscript, published or not, must inform the editors of these reports at the time of submission.
- Confirm he or she has not submitted the manuscript previously to the JMR for review. He or she may submit a manuscript that previously was released in conference proceedings, but the editors may view this manuscript less favorably.
- Agree that, during the review process, he or she will take down all other versions of submitted manuscripts (e.g., working papers, prior drafts, final drafts) posted on any Web site (e.g., personal, departmental, institutional, university, archival, working series).
- Agree that his or her submission supports the core values of St. Thomas University (http://www.stu.edu).
- Adhere to the sixth edition of the *Publication Manual of the American Psychological Association* (APA, 6th edition). At the initial stage, the editors tend to review less favorably those manuscripts that do not conform to APA and may return them to the primary author for revision prior to submission to the full review process.
- Submit the manuscript in a Microsoft Word file from which the author has removed the title page, his or her name, and all author-identifying references.
- Submit the manuscript via e-mail to the JMR Editor-in-Chief (at hgringarten@stu.edu).
- Be willing to review submissions to the *Journal of Multidisciplinary Research* by other authors if the JMR Editor-in-Chief calls upon him or her to do so.

Editorial Review Board

The *Journal of Multidisciplinary Research* Editorial Review Board consists of selected individuals, expert in their field(s), reviewing submissions to the journal and serving for one year.

JMR
Journal of Multidisciplinary Research
http://www.jmrpublication.org