May 13
16.30-18.30
Room: 20

Topic: Business

Adapting to Extreme Events: risk transfer and insurance provision in the EU and its member states

Programme

Chair: Swenja SURMINSKI, Franz PRETTENTHALER and C. Dionisio PÉREZ-BLANCO

Time (2h total)	Programme
16:30 – 16:35	**Introduction** ***Swenja SURMINSKI, Franz PRETTENTHALER* and *C. Dionisio PÉREZ-BLANCO*, chairpersons**
16:35 – 16:45	**[1] *Jaroslav MYSIAK*, Fondazione Eni Enrico Mattei, Italy** **Partnerships for affordable and equitable insurance provision**
16:45 – 16:50	**Q&A**
16:50 – 17:05	**[2] *Paul HUDSON*, Institute of Environmental Studies IVM, the Netherlands** **Implications of risk based insurance premiums for flood preparedness and affordability of coverage**
17:05 – 17:10	**Q&A**
17:10 – 17:25	**[3] *Anna LORANT*, *International Institute for Applied Systems Analysis, Laxenburg, Austria*** ***The European Solidarity Fund, its past performance and recent reforms***
17:25 – 17:30	**Q&A**
17:30 – 17:45	**[4] *Susann HANGER, International Institute for Applied Systems Analysis, Laxenburg, Austria*** ***Designing national flood insurance systems: the equity-efficiency trade-off***
17:45 – 17:50	**Q&A**
17:50 – 18:10	**[5] Judith, KÖBERL, JOANNEUM RESEARCH, Graz, Austria** **Hansjoerg ALBRECHER, Université de Lausanne, Lausanne, Switzerland** **Financial risk transfer mechanisms – Comparison of alternative national systems for managing flood risks and quantifying capital requirements**
18:10 – 18:15	**Q&A**
18:15 – 18:30	**Panel Discussion**

Posters:

Do insurers help Europe to adapt to climate extremes?	Lorant Ms, Anna, Laxenburg
Reflections on the current debate on how to link flood insurance and disaster risk reduction in the European Union	Dr Surminski Ms, Swenja, London
On capital requirements for flood risk insurance in Europe	Albrecher Mr, Hansjoerg, Lausanne
Two almost practical steps towards designing drought insurance for irrigated agriculture	PhD Gómez Gómez Carlos Mario, Carlos Mario, Alcalá de Henares
Heterogeneous Demands for Flood Insurance against Climate Change Risk through Private Public Participation Mode: A Community-Based Survey in Tainan City	Dr Chang Ms, Ching-Cheng, Taipei
Facing the adaptation challenge under climate uncertainty: a comparison of EU and US adaptation programs	Monasterolo Ms, Irene, Cambridge
The structure of the Natural catastrophe system in Iceland: Strengths and weaknesses with respect to climate change-related risks	Dr Johannsdottir Ms, Lara, Reykjavik
What role for income stabilisation insurance in EU agriculture? The case of the Regione Emilia Romagna in Italy	Mysiak Jaroslav Mysiak, Jaroslav, Venice

ECCA 2015: European climate change adaption conference

Copenhagen, May 12-14, 2015

Adapting to Extreme Events: risk transfer and insurance provision in the EU and its member states

*Chaired by **Swenja SURMINSKI** (Grantham Research Institute on Climate Change and the Environment, UK), **Franz PRETTENTHALER** (Joanneum Research, Austria) and **C. Dionisio PÉREZ-BLANCO** (Fondazione Eni Enrico Mattei and Euro-Mediterranean Centre on Climate Change, Italy)*

***Goal**: To identify and explore promising technical advances, legal and policy reforms for the provision of affordable insurance in a context of raising climate risks and costs.*

Background

The steep upward-rising damage trend incurred by natural hazard risk and the prospects of climate change inflate the economic losses and social hardship set-off by extreme climate and weather events. This has alarmed the governments and the insurance enterprises alike. While the probability distributions of extreme weather and climate events are becoming progressively fat-tailed, private insurers may either increase the risk premiums to levels not affordable or retire from high-risk prone areas. Sensibly designed *public-private* partnerships for insurance provision seem to be a promising way of balancing concerns raised by affordability and solvency of insurance schemes, and the social justice. This session will explore existing and proposed schemes and discuss their performance.

Structure of the Session

The session offers different perspectives on existing and proposed disaster insurance in Europe, and explores solutions to address public policy challenges in insurance provision and disaster risk reduction.

This session is jointly organized and chaired by ENHANCE (*Enhancing risk management partnerships for catastrophic natural hazards in Europe*) and IMPACT2C (*Quantifying projected impacts under 2°C warming*) Projects' consortium partners (http://www.enhanceproject.eu), (http://impact2c.hzg.de). Among others, the projects set to explore provision of natural hazard insurance in several EU Member States and quantify the capital requirement for an EU-wide risk transfer mechanism for flood risk.

Expected results

- Discuss challenges in the design of affordable and viable insurance against natural hazards under changing climate.
- Assess the role of partnerships and insurance in providing incentives to disaster risk reduction and enhanced solvency, while ensuring affordability.
- Develop synthetic and rigorous policy recommendations, based on scientific evidence, to support the EU policy agenda in this area.
- Position paper planned to inform the ongoing debate on insurance provision in the European Union.

Annex: Abstracts - selected presentations

[1] Partnerships for affordable and equitable insurance provision *(Jaroslav MYSIAK, PhD – FEEM, Italy)*

Extreme events are becoming more frequent and intense, inflating the economic damages and social hardship set-off by natural catastrophes. Amidst budgetary cuts, there is a growing concern on societies' ability to design solvent disaster recovery strategies, while addressing equity and affordability concerns. The participation of private sector along with public one through *Public-Private Partnerships* (PPPs) has gained on importance as a means to address these seemingly conflicting objectives through the provision of (catastrophic) natural hazard insurance. This is the case of many OECD countries, notably some EU Member States such as the United Kingdom and Spain. The EU legislator has adapted to this new scenario and recently produced major reforms in the legislation and regulation that govern the framework in which PPPs for (catastrophic) natural hazard insurance develop. This paper has a dual objective: 1) review the complex legal background that rules the provision of insurance against natural catastrophes in the EU after these major reforms; 2) assess the implications of the reforms and offer concise Policy Guiding Principles.

[2] Implications of risk based insurance premiums for flood preparedness and affordability of coverage *(Paul HUDSON, MSc – IVM, the Netherlands)*

In some countries, such as Germany and France, it has been proposed that a movement towards risk based pricing of natural disaster insurance can stimulate investments in flood risk mitigation measures by policyholders. However, providing financial incentives for risk reduction activities through charging risk based premium may conflict with the affordability of insurance. This study examines the potential trade-off between risk reduction and affordability in a model of (risk based) public-private flood insurance in France and Germany that includes household flood preparedness decisions. Flood risk preparedness is modelled over time to examine adaptation to changing flood risk caused by climate change. The results show that a compulsory insurance scheme offering premium discounts for reducing risk is potentially unaffordable for, at most, 26% of households at risk. Risk based incentives are able to promote the employment of risk reduction measures in both France and Germany. In particular, flood risk can reduce by 13% in Germany and 23% in France by 2040 compared with the current situation in which financial incentives for mitigation are absent. The higher level of flood risk in France results in a strong incentive to reduce risk in the present. Rapid growth of flood risks in Germany results in more effective financial incentives in later periods. The trade-off between affordability and financial incentives can be overcome via a voucher scheme. Providing these vouchers after 2040 is estimated to result in a level of damage reduction that is larger than the cost of the vouchers. A policy recommendation is that there is ample room for these countries to link flood insurance with financial incentives to guide household adaptation to changing flood risk.

[3] The European Solidarity Fund, its past performance and recent reforms *(Anna LORANT, MSc – IIASA, Austria)*

The European Union has established its Solidarity Fund (EUSF) after the devastating Central-European floods in 2002 with the aim of providing practical solidarity to disaster-stricken Member States and candidate countries. While the Fund, which is the main post disaster instrument of the Community, generally had met its main objectives well, several critical remarks arised during the first ten years of its operation, leading to its recent reforms. We assess the performance of the pre and post-reform EUSF taking into account the following recognized aims of the Fund: its promotion of solidarity with those countries having the least capacity to cope with major disasters; its contribution to pro-active disaster risk reduction and management; and its robustness with regard to its risk of

depletion. While we conclude that the recent reforms will improve the Fund's performance, especially with regard to its responsiveness to major disasters, we suggest more far reaching reforms to further advance its effectiveness. More concretely, we discuss the option to formulate a new EU-wide multi-sector partnership by reorienting the EUSF to a pre-disaster, risk based solidarity instrument that could support national or regional sovereign insurance systems. Recently several similar instruments have been established around the world that could provide some ideas for these more fundamental structural reforms.

[4] ***Designing national flood insurance systems: the equity-efficiency trade-off*** *(Susann* HANGER, International Institute for Applied Systems Analysis, Laxenburg, Austria)

In the face of increasing losses from extreme weather events, and the expectation that losses will continue to rise as a result of socio-economic and climatic changes, governments and private insurers are looking to reform or establish private and/or public insurance programs. In line with the increasing importance of managing loss and damage from adverse effects of climate change, fostering risk reduction to secure insurability is the new prominent objective of flood insurance. The main research questions we address are: What are the competing objectives that can guide the design of a national risk-sharing and transfer program? What are the respective trade-offs? And how do they manifest across different national insurance regimes? We focus especially on what might be considered the most fundamental trade-off: the pursuit of equity, which is manifest, for example, in premium subsidies or ex-post disaster aid, and the pursuit of efficiency, which has been interpreted to mean the propensity of the system guarantee risk-based pricing. We show how this trade-off is fundamental to the overall structure of the system in terms of public and private involvement.

[5] ***Financial risk transfer mechanisms – Comparison of alternative national systems for managing flood risks and quantifying capital requirements*** *(Judith, KÖBERL, JOANNEUM RESEARCH, Graz, Austria and Hansjoerg ALBRECHER, , Université de Lausanne, Lausanne, Switzerland)*

Risk transfer, which is defined as shifting the burden of disaster loss to another party (for instance by means of insurance), represents an important instrument in order to manage the risk resulting from natural perils and can help in mitigating or minimizing disaster losses. A well implemented plan how to spread economic risks from extreme events within society and/or transfer them from the victims to the financial markets is a fundamental adaptation measure that crucially decides on how impacts from climate change will finally disturb a society. Although risk transfer does not prevent damages from climate change it represents an effective mechanism to manage the hardship related to climate risks, especially of those climate risks which cannot be prevented (cost-effectively) by means of risk mitigation measures. Moreover, adequately designed, risk transfer mechanisms even have the potential to generate incentives for individuals as well as the collective to actively engage in risk reduction.

The present paper compares alternative national risk transfer mechanisms for managing flood risks – including amongst others the systems of France, Germany, Belgium, Switzerland and Spain.– and addresses pros and cons of these systems and their single design elements. Also, based on recent flood risk insurance data we use extreme value statistics methods to quantify the risk of flood insurance in individual member countries of the EU and the EU as a whole. The study focuses on estimating truncated Pareto distributions to the suitably normalized insurance data. We also discuss whether the data suggest statistical evidence for structural changes of flood-induced insurance losses during the last decades. For individual countries as well as the entire EU 99.5% quantiles are estimated, and diversification potential for this type of insurance across Europe are discussed.