PHYSICAL RISKS, CARBON MARKETS BIODIVERSITY

Alicia Bassière

Risks Forum 2022
Impacts of extreme weather events on mortgage risks and their evolution under climate change: A case study on Florida (September 2021)

Authors: Raffaella Calabrese, Timothy Dombrowski, Antoine Mandel, R. Kelley Pace, Luca Zanin
Research question

- “Climate change could impact the soundness of financial institutions and pose a threat to global financial stability" (Carney, 2015)
- Despite major concerns, still low literature on this topic
- Paper aims to analyse the impact of cyclones and heavy rainfall events on mortgage risk
- Case study in Florida
- Projection of future changes in risk
Methodology

- Portfolio representative from the Florida Mortgage market
- Survival approach to predict probability of termination of mortgage (default and prepayment)
- Use of semi parametric for of additive Cox model, estimated by penalised ML approach to find the best fitting model
- Inference of the distribution of future hazards based on climate models
Main results

▶ Default influenced by both tropical cyclones and rainfall, in a non-linear way
▶ Prepayment influenced only intense rainfalls for prepayment
▶ Climate change will unambiguously lead to an increase in risk of default, with heterogeneous effect on the tail of the distribution
Strengths of the paper

- Very clear paper
- Major issue for the incoming decades
- Extensive and well-justified methodology
Remaining questions

- Could you go into the details of the estimation method?
- Consider prospective studies with other climate scenarios?

Authors: Romain Svartzman, Etienne Espagne, Julien Gauthey, Paul Hadji-Lazaro, Mathilde Salin, Thomas Allen, Joshua Berger, Julien Calas, Antoine Godin, Antoine Vallier
Research question

- Newly emerging literature on the link between biodiversity loss and financial crisis risks
- Aims to quantitatively estimate the ecosystem services dependency of French financial institutions
Methodology

- Assessment of the biodiversity dependence of securities issuers by sector, region and profit using several databases
- Databases includes production processes dependency of some ecosystem services (ENCORE database), and value of outputs produced by each sector in each region (EXIOBASE3)
- Assessment of the biodiversity services general dependence of the portfolio of financial institutions according to its securities
Main results

- Provides a first assessment for securities Biodiversity-related Finance Risks in France
- Almost half (42%) of the portfolio of French financial institutions come from highly ecosystem services dependent issuers
- Quantitative estimation of equivalent in biodiversity loss as a land surface
Strengths of the paper

- Large part of the paper devoted to the study of the topic of biodiversity for the economy
- Clear and very transparent approach for the reader
- Calls for many future research questions
Remaining questions

- Having studied scope 1 (direct impact), have you considered adding a scope 2 (Energy)?
Remaining questions

- Having studied scope 1 (direct impact), have you considered adding a scope 2 (Energy)?
- You focus on regional impacts, how do you intend to account for “delocalized impacts"?
Remaining questions

- Having studied scope 1 (direct impact), have you considered adding a scope 2 (Energy)?
- You focus on regional impacts, how do you intend to account for “delocalized impacts”?
- Did you consider heterogeneity among the securities holder you studied?
Thank you for your attention Questions?