(https://lbbe.univ-lyon1.fr/sites/default/files/styles/img__1280x768__image_scale__crop_main/public/media/images/hub-vph.png?itok=0GuBgB72)

RECRUTEMENT

Le LBBE recrute un étudiant en doctorat dans le cadre de la Chaire de Santé publique

Cette thèse s'intéressera au processus décisionnel en matière de commerce du bétail pendant une crise et son implication dans la propagation des maladies.

Publié le 22 juin 2021

A PhD scholarship is available on research farmers' trading decision-making processes during disease outbreaks and itsimpact on the spread of infectious disease in livestock.

Funding body : IDEX university de Lyon
Duration and start date 3 years from the starting date Expected start date: September 2021
Job environment : The successful candidate will be recruited by the Biometry and Evolutionary Biology Laboratory (LBBE; https://lbbe.univ-lyon1.fr/) under the supervision of CNRS, UCBL and VetAgro Sup. Built around three pillars consisting of biometry (understood as the set of informatic, statistical and mathematical formalisation tools of biological problems), evolutionary biology and health, this laboratory offers an ideal environment for the development of interdisciplinary projects at the
methodology/biology interface in eco-infectiology. The laboratory is also co-holder of the Labex Ecofect.
The candidate will work in the newly created Veterinary Public Health Team within the Department of Evolutionary Ecology, one of the unit's four departments. As such, he/she will be able to rely on the expertise in epidemiology, risk assessment, mathematical modelling, and network analysis and modelling available in the unit as those available at partners institutions in France and Great Britain.
The work will be in close partnership with the GATE (Groupe d'Analyse et Théorie Economique) which is widely recognized in the field of experimental and behavioral economics (individual and group decision, social norms, neuroeconomics) and offers an experimental platform to conduct experiments on decision making (GATE-LAB). The GATE is co-founder of the Labex CORTEX.
Application criteria : Masters in Economics / Social-sciences or related degree
Knowledge on experimental economics, behaviour analysis and behavioural changes
would be appreciated
Good quantitative abilities would be appreciated.
Ability to write and speak English to a high standard.
Ability to speak French to a high standard.

Must be comfortable and motivated to work in a predominantly French-speaking environment.

Application submission deadline 30 July 2021

How to apply : Please submit current CV, academic qualification certificates and cover letter addressing the requirements above, by email to: thibaud.porphyre@vetagro-sup.fr or to dominique.pontier@univ-lyon1.fr

Contacts for more information

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Summary:

Foot-and-mouth disease (FMD) and African swine fever (ASF) are highly contagious transboundary animal diseases that are caused by viruses and spread across multiple countries. Both FMD and ASF are listed as notifiable terrestrial animal diseases by the OIE and are regarded as major challenges for livestock industry and economic growth globally due to their associated production losses and trade restrictions to disease free markets. Incursions of FMD and ASF results in all animals in the infected farms to be culled within 24h.

In addition, a movements' restriction zone (MRZ) is immediately enforced within 10km around each infected farm, prohibiting all movements of animals coming in and out the MRZ to limit the spread of the disease while, at the same time, allowing farms outside the MRZ to keep trading to limit the economic impact of epidemics on the industry. Farms outside the MRZ whose movements are affected by these restrictions will have to decide what to do about their animals in order to limit the economic and animal welfare impact while avoiding increasing their risk of being infected. However, it is up to the farmer to decide if they are at high or low risk and if their decision with regard to their animals will affect it. Their decision process will therefore generate new trading events with other farms based on no to little trading history which may represent potential new pathways along which diseases may spread and for which no prior knowledge exists.

Farmers' decision making on livestock trading practices has mostly been ignored in most predictive epidemiological models. When considered, such a rewiring of network was based purely on farm's characteristics (such as distance from infected farms) or using game-theoretical techniques. Although this latter accounts for farmer's decision when facing multiple constraints (incl. risk of infection), this assumes that farmers will take their decision rationally during a time of crisis. Recently, farmers' decision making on livestock trading practices has been studied qualitatively based on interviews of 15 New Zealand dairy farmers (Hidano et al 2019). This study has shown that farmers' livestock purchasing behaviour depends on cultural aspect and can be disrupted by various triggers such as disease outbreaks, introductions of animals with undesired characteristics, and farm relocation. While very informative for the control of endemic or slow spread diseases (e.g. bovine tuberculosis), this study does not answer the question on how farmers would behave when facing outbreaks of highly infectious diseases (such as FMD or ASF), nor if constraints' influence on their decision remains consistent across livestock production systems and across time. Indeed, this study ignores the dynamic nature of decision-making as both risk perception and constraints may change as the outbreak progress.

In standard economic theory, individuals are assumed to make rational decision. However recent evidence suggest that people departs from this view even in 'normal time' (DellaVigna, 2009): they have non-standard preference (e.g., reference dependence), non-standard belief or cognitive limitation (e.g., limited attention, emotion). But how do people change their behavior following a sudden and unforeseen change in the environment or facing tail events (Barberis, 2013) is an open question. For example, how do they adapt their beliefs about the probabilities of infecting their cattle after receiving new information? What is the role of emotion or stress in their decision making? Likewise, what does the effect of new constraints imposed by authorities to mitigate outbreaks on their behavior?

During this PhD project, the successful candidate will carry out an experimental analysis of trading behaviour to characterise what drives livestock trading decision-making of farmers when facing outbreaks of highly infectious diseases as well as evaluate how decision may evolve when constraints and perception of the risk of infection are changing. To do this, the candidate will use the methods of experimental and behavioral economics: laboratory, field or lab-in-the-field experiments with "standard" participants (students) and farmers. Based on these results, the candidate will then develop novel algorithms to rewire networks of animal trade between farms and will compare their performance with previously developed modelling techniques to mitigate disease spread.

The person recruited will join the newly created Veterinary Public Health (VPH) Team of the Biometry and Evolutionary Biology Laboratory which is supported by the CNRS, Claude Bernard Lyon 1 University (UCBL), VetAgro Sup and Boehringer Ingelheim. This project will be carried out in collaboration with the GATE (Groupe d'Analyse et Théorie Économique de Lyon-Saint-Etienne). The person will use GATE's Specific Experimental Economics Platform (GATE-LAB) which provides advanced facilities for researchers who conduct experiments on individual and group decision making as well as physiological responses to environmental changes. This project has the potential to directly influence policy in both France and the UK, and inform decisions of industry stakeholders in the design of their surveillance and control programmes against infectious diseases.

References:

- A. Hidano, M.C. Gates, G. Enticott (2019) Farmers' Decision Making on Livestock Trading Practices: Cowshed Culture and Behavioral Triggers Amongst New Zealand Dairy Farmers. Front. Vet. Sci. doi:10.3389/fvets.2019.00320
- DellaVigna S. (2009). Psychology and Economics: Evidence from the Field. Journal of Economic Literature, 47(2), 315-372.
- Barberis, N. C. (2013). The Psychology of Tail Events: Progress and Challenges. American Economic Review Papers and Proceedings 103, 611-616, May 2013.