Industry Project Details – EXAMPLE ADVERTISEMENT 2019

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Company Details

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| Company Name | Hymans Robertson LLP |
| Company Address | One London Wall, London, EC2Y 5EA |
| Supervisor | Dr Mayukh Gayen |

Proposal Details

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| Proposed Project Title | On climate risk quantification approaches in the financial industry |
| Brief Summary | Climate risk is the result of the interaction between how climate shapes up due to natural forces, its feedback in the natural systems and human (in)action of adopting best practice and policies for environment. As huge and uncertain it is, the financial industry and professional bodies are yet to qualify, quantify and manage it adequately. In this project, we study and analyse different techniques that can be adopted by a financial services firm to quantify its climate risk exposure. If time permits, we will also touch upon the potential enhanced accuracy by using new-age (AI/ML) algorithms for this purpose.  Risks and controls  Bank of England has classified the climate change risks into – (1) physical damages due to climate change, (2) increased liability due to extremes of climate, (3) risks while in transition to a low carbon economy. Moreover, climate change is manifesting itself as a huge strategic risk, more so in the light of regulatory ESG concerns from the governing bodies.  Several controls have been proposed – moving away from fossil fuels, moving investments to be environment friendly etc. In the upcoming regime of ethical and sustainable investments, it is important to model quantitatively the impact of these systemic change in the financial markets.  Modelling stages  There are three stages of modelling – (1) physical damages, (2) macroeconomic implications of (1), and, (3) resultant microeconomic changes due to (1) and (2). Moreover, the entire modelling would be affected by shocks in the system induced by policy-makers.  Modelling output  It finally translates to quantifying the risk via (1) stress-tests, (2) scenario analysis, (3) full-funnels. The question is which one to choose?  Modelling approaches  There are different modelling approaches. Going in order of decreasing risk and increasing uncertainty, they can be – (1) continue existing models and expect the risks are caught up in bad scenarios, (2) recalibrate existing models, (3) assume a new ‘central’ scenario, (4) more uncertain and complex approach.  Conclusion  At the end of the project we should have a modelling hypothesis and implementation of incorporating climate change risks in the economic scenarios ready for industrial use.  Objectives  Overall, the questions we are trying to answer:  1. Background into climate change economic models  2. Analysis of the risk drivers to consider  3. Identify factors are impacting the macro to micro economic variables  4. Regionally study the impact on the UK  5. An updated version of the Nordhaus model, and implemented in R  6. Impact on pension funds/insurance/banking products  7. Impact on investment advice  Project plan  This is a very topical area to do research on. This is important because we are moving to an era where our models should factor in climate risk.  The project would have an initial phase of exploring the available literature, and then deep dive in quantitative modelling. There are no academic past papers. However, industry review will be provided at the outset of the project.  There project is aimed at achieving a modelling approach that can be adopted by financial industries for quantifying their climate risk exposure.  At the end of the project we are looking for an output of publishable standard.  We do not foresee any special requirement for doing this project. If access to data or premise is required, then that would be granted in due course.  Background Knowledge  The student should have good background in modelling via mathematics, statistics, economics and possess an idea of asset classes. A general interest in climate change related issues is preferred. |
| Proposed Format of Placement | Supervision would be mainly online – email, skype or via telephone.  The student is not expected to be at our offices. However, meetings can be arranged if required. |
| Software and Packages | *All modelling will include coding in R.* |

For assistance on making this application please consult the Heriot Watt Career Service on preparing a [covering letter](https://www.hw.ac.uk/students/careers/uk/applications/cover-letters.htm) and [CV](https://www.hw.ac.uk/students/careers/uk/applications/cvs.htm) for industry placement applications.

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