

## Research Statement

I am an economist working at the intersection of Macro- and Labour Economics. My research focusses on exploring the relationships between opportunities, wealth and human capital. For this end I develop quantitative economic models and bring them to the data using both calibration and estimation methods. It is my firm belief that economic theory and modelling can add a lot of value to data analysis, particularly when – as is often the case – important factors remain hidden. In such cases an economic model, combined with careful data analysis can help fill in the blanks and help us make more interesting and relevant predictions.

### Dissertation Project

My dissertation project explores the interaction between wealth, skills and technologies in the context of the United Kingdom. In my first chapter I develop a heterogenous agent model where an agent's income depends on the degree of cognitive skill utilisation of their occupation. Using data on the usage of computers in the workplace, I show that the main patterns of rising income and wealth inequality since the 1980's can be explained by this form of cognitive skill biased technological change.

In my second chapter I develop a novel heterogenous agent model with endogenous human capital and wealth. Human capital is risky and costly to acquire, giving wealthy agents an edge when it comes to exploiting novel opportunities. In the stationary equilibrium this leads to an amplification of earnings inequality over and above the underlying distribution of labour productivity. Furthermore, if there are changes to the underlying structure of the economy – for example as a consequence of new technologies – the pain of adjustment falls primarily on those workers with low levels of wealth, suggesting the need for policy intervention throughout the transition period.

My third chapter focusses on the changing supply of university graduate's skills. Skills are a prime example of an unobservable quantity with huge relevance to economic outcomes. We all agree that they are important in shaping economic outcomes both at the individual and the level of the whole economy, but measuring difficulties mean that we are usually restricted to infer them residually. In this chapter I develop an economic model, linking unobservable skills to observable choices in the labour market. Estimating the model, I find that the last 25 years saw a gradual shift in the composition of graduates' skills, with increasing quantities of mathematical skills and a corresponding fall of verbal capabilities.

### ESRC Project

Throughout my PhD studies I had the great opportunity to be part of an interdisciplinary research project assessing the medium run impact of COVID-19 on health and wealth inequalities using data from historical disease outbreaks. The research was funded by an ESRC COVID-19 rapid response grant and involved a team of 4 researchers from different universities and disciplines.

The project entailed a combination of archival work, gathering historical data from administrative records, and careful, model based empirical analysis. As the research was at the intersection of public health, epidemiology, and economics I gained an appreciation for the methods and approaches of other empirical disciplines outside of economics. One telling example of this collaboration is a paper where we use statistical modelling techniques to estimate recurrent outbreak risk following large influenza pandemics. As the COVID-19 pandemic has shown, infectious

disease outbreaks present major economic and health risks that have large consequences at every level of society. Our research shows that historically, recurrent outbreaks after the main pandemic waves were a regular and impactful occurrence across different time periods, countries and geographic scales.

The project also helped me gain an appreciation of how research is conducted in the context of a large grant. I helped in drafting the successful grant application and then assisted the project PI with periodic reporting requirements to the funders. I understand how important it is to frame one's research aims in a way that they are intelligible to non-specialist audiences and demonstrate the potential for value and impact at the application stage and throughout projects lifetime.

Communicating research findings to practitioners and policymakers has a high priority in my work. Throughout the project I helped write several briefing notes outlining the potential medium run effects of COVID-19, and organise a number of symposia with members of the academic and policy communities.

#### Ongoing projects

I am currently engaged in a number of ongoing research efforts with collaborators across several different universities. I prefer collaborative work since it allows me to use my skills to complement the knowledge and experience of my co-authors.

One project in collaboration with colleagues from Würzburg University, the University of Warwick and the Indian Statistical Institute, studies the role of aspirations in sustaining effort in school children. Working together with a school in India, we collect information on student's beliefs about their own abilities and their aspirations for academic achievement, to study how their expectations and study behaviour changes in response to information about their own performance in class.

In another project with colleagues from the University of Glasgow, we aim to test the empirical content of a theoretical model of quality choices by small businesses in situations where business reputation is mediated through a public review platform.

#### Future work

The goal of my research is to understand how idiosyncratic circumstances shape individual abilities and incentives to accumulate skills and human capital, and how these differences in circumstances can have persistent effects on income and wealth inequality. This means, I am generally interested in working on diverse topics related to applied labour economics in the broadest sense (health, education, crime, etc.).

I also have a deep passion for learning new things, and I think it is the greatest benefit of this profession to be able to continuously learn and update our toolkit. I am particularly interested in developing new skills in the context of Machine Learning. At the moment I am developing a framework to use Optical Character Recognition to extract information from historical Valuation Roll records for the City of Glasgow. I am very excited about the research opportunities that can be opened up using these new tools and data sources.