Research Statement

I am an economist working at the intersection of Macro- and Labour Economics. My research explores the relationships between opportunities, wealth and human capital. To this end, I combine applied econometric and data analysis techniques with empirically relevant quantitative economic models. It is my firm belief that economic theory and modelling can add much value to data analysis, particularly when – as is often the case – important factors remain hidden. In such cases, combined with careful data analysis, an economic model 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 the 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 this form of cognitive skill-biased technological change explains the main patterns of rising income and wealth inequality since the 1980s. The paper shows that notions of task biased technological change can not only rationalise the rise in income inequality since the 1980's, but also the corresponding rise in wealth inequality.

In the second chapter, I develop a novel heterogeneous agent model with endogenous human capital and wealth. Human capital is risky and costly to acquire, giving wealthy agents an edge when exploiting novel opportunities. In the stationary equilibrium, this amplifies earnings inequality over and above the underlying distribution of labour productivity. Furthermore, if there are changes to the economy's underlying structure – 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. The paper makes an important contribution to the study of wealth and income inequality, by enabling wealth to feed back into income inequality through human capital. Incorporating this mechanism, allows studying the impact of new types of policies – e.g. education and training – in a general equilibrium setting.

The third chapter focuses on the changing supply of university graduates' skills. Skills are a prime example of an unobservable quantity with huge relevance to economic outcomes. We all agree that they are essential 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 a structural 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 in verbal capabilities. The paper establishes important stylized facts about the changing graduate skills distribution, shedding light on the changing skill composition of the countries most educated.

ESRC Project

Throughout my PhD studies, I had the great opportunity to be part of an interdisciplinary research project: *"Assessing policy to address the medium-run impact of COVID-19 on income and health inequality with models informed by the history of 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. I joined the team as a named research assistant and worked on the project for 2 years.

The project entailed a combination of archival work, gathering historical data from administrative records, and careful, model-based empirical analysis in economics and epidemiology. 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 revealing 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 enormous consequences at every level of society. Our research shows that historically, recurrent outbreaks after the primary pandemic waves were a regular and impactful occurrence across different periods, countries and geographic scales.

The project also helped me appreciate 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 so that they are intelligible to non-specialist audiences and demonstrate the potential for value and impact at the application stage and throughout the project's lifetime.

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

Ongoing projects

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

Together with co-authors from Glasgow and Lancaster, I am currently working on finalizing two papers related to our ESRC project: one on the impact of COVID-19 on health and wealth inequality in the UK, and another on post pandemic outbreak risk. Both papers are already available as working papers and will likely be submitted for publication within the academic year. Another paper, studying the relationship between housing conditions and health in late 19th century Glasgow using some of the historical data sources explored in the grant is in a pilot stage.

Another 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 with a school in India, we collect information on students' beliefs about their abilities and aspirations for academic achievement to study how their expectations and study behaviour change in response to information about their 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

My research aims 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. More broadly, I am 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 learn and update our toolkit continuously. I am particularly interested in developing new skills in the context of Machine Learning. Currently, 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.