

## STATEMENT OF PURPOSE

Benjamin Davies  
Economics PhD applicant

I am fascinated by how theoretical and empirical models can be used to analyse how people behave and interact. I developed this fascination during my undergraduate studies in economics and mathematics, and through collaborating with economists on theoretical and empirical research projects. My strong academic background and research experience position me well to thrive as an economics PhD student at Stanford University.

I studied at the University of Canterbury for four years, earning a bachelor's degree with majors in economics and mathematics. My undergraduate coursework included multivariable calculus, linear algebra, real analysis, microeconomic theory, financial economics, econometrics, and statistical inference. I also took graduate-level courses on dynamical systems, stochastic processes, numerical optimisation, functional analysis, microeconomic theory, and financial economics. I was the top student in my economics and mathematics cohorts, and I graduated with first class honours. I also won the Sir Frank Holmes Prize for being New Zealand's top undergraduate economics student.

I enjoyed combining the rigour of mathematics with the behavioural insights of economics. I particularly enjoyed my financial economics courses, which used mathematical models to study how people make choices under risk. Consequently, I wrote my honours thesis on a variant of Dionne and Eeckhoudt's (1984) two-period model of insurance and precautionary savings. My thesis compared the comparative statics of insurance demand with and without access to riskless savings. It won the Seamus Hogan Memorial Prize for the best honours or master's thesis in economics at Canterbury. I presented my thesis at the New Zealand Association of Economists conference, where I won the Jan Whitwell Prize for the best paper presented by a current or recent student. Writing and presenting my honours thesis was a rewarding opportunity to conduct and communicate independent research.

Before my fourth year of study, I completed a summer research project with Professor Richard Watt on aggregating risks prior to buying insurance. Arrow (1963) shows that consumers prefer single contracts written on aggregated risks. In contrast, real-world insurers typically offer multiple contracts written on disaggregated risks. We developed and simulated a theoretical model to compare social preferences among contract types, and we found that disaggregation can be Kaldor-Hicks efficient if consumers are sufficiently risk averse. I presented our results at the European Group of Risk and Insurance Economists conference in London, England, at which I was the only undergraduate student. Attending this conference allowed me to interact with, and learn from, world-class economic researchers using theoretical models to form empirically testable hypotheses. These interactions inspired me to pursue an academic career in economics.

Since completing my degree, I have worked at New Zealand's top-ranked economic research institute, Motu, as a full-time research analyst. I joined Motu to strengthen my empirical skills, and to gain experience being involved in research projects from data cleaning to publication.

My first project, on which I worked with Senior Fellow David Maré, involved analysing whether local clusters of related activities promote urban employment growth. In theory, such clusters foster innovation by bringing together people with complementary skills, which, in turn, promotes employment growth as competitive forces reallocate employees into more valuable activities. We tested this theory using historical census data and found that it holds in large cities only. This makes sense because larger cities provide more opportunities to interact with people with different skills and, consequently, more potential for relatedness-driven growth. I enjoyed working on this project because it allowed me to combine mathematical models with careful empirical analysis. It also gave me experience overcoming the practical challenges of empirical research, such as working with suppressed data and time-varying classification systems. With our manuscript invited for resubmission at *Regional Studies*, I hope to continue adding to the body of knowledge on how local interactions contribute to economic growth and innovation.

My current project at Motu, on which I am working with Professor Adam Jaffe from Brandeis University, involves analysing the interaction between research funding and collaboration. Researchers with more co-authors may be better at forming productive teams and, consequently, more likely to attract funding for team-based projects. At the same time, getting funded may increase researchers' perceived quality and, consequently, attract co-authors. Our goal is to isolate these two causal channels and estimate their effects. Working on this project has given me experience forming research questions about causal relationships, linking data from disparate sources, and developing econometric models with longitudinal network data. It has also given me experience working as a member of an international research team. I am looking forward to engaging with, and contributing to, the international economics research community throughout my career.

Given my research experience and current interests, the areas in which I see myself most likely to pursue my PhD are financial, urban, labour and innovation economics. Two topics that particularly interest me are the incentives and mechanisms underlying team formation, and how scientific teams contribute to innovation and knowledge diffusion. However, I am aware that my interests may change as I discover new research questions during my graduate studies. Therefore, I remain open to new options.

I am excited to pursue an academic career conducting independent research, collaborating with other researchers, and teaching undergraduate and graduate students. Completing a PhD at Stanford University will provide a strong foundation for succeeding in this pursuit and for making a significant contribution to the field of economics.