Research Summary

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I am interested in the economics of human capital formation, or the lifecycle process through which people develop their skills and healthy body to thrive in our economy. My research connects human capital theory and detailed micro-level data in order to better understand the sources of income inequality, with the goal of informing policies to foster human capital formation. My dissertation, entitled "*Essays on Human Capital Comlementarities*," studies the complementarities between skills and health in shaping labor market outcomes. Given my research experience, I consider myself as an **applied microeconomist who works around the intersection of Health Economics and Labor Economics**. The first section of this statement discusses my work on childhood health and skill formation, including my job market paper. The second section discusses my work on ageing and human capital.

1. Childhood Health and Skill Formation

A growing body of literature emphasizes the importance of childhood health in shaping skills and earnings over the life course. While existing evidence suggests that certain disorders during childhood affect schooling outcomes, little is known as to whether and how such influences persist into adult skills beyond academic skills. In "**The Long Reach of Childhood Health on Skills: Task-based Evidence**," I estimate how childhood health conditions affect skills used on the job by adopting a task-based multidimensional skill portfolio approach. The results indicate that workers sort into different kinds of occupations depending on their childhood health conditions. In particular, individuals who had mental health conditions during childhood tend to select less cognitive skill demanding occupations while those who had physical health conditions tend to choose less manual skill demanding occupations. The evidence suggests that not all components of skills are affected in the same way by different types of childhood health conditions. I show that the observed variation in occupation choices is an important predictor of earnings gaps associated with the childhood health conditions.

Childhood health conditions may influence not only skills and health during adulthood but also the psychic costs from conducting particular tasks. For example, individuals who suffer from depression may find it painful to concentrate on cognitive-skill demanding tasks, regardless of their cognitive skills. If the occupation sorting patterns due to childhood health conditions are driven by tastes, the observed health-related earnings gaps may reflect taste-based compensating differentials, and not necessarily the differences in their skills and health. Moreover, childhood health may have a direct influence on adult health, which in turn may affect earnings. My job market paper, entitled "**Childhood Health and Lifecycle Human Capital Formation**," juxtaposes the alternative channels through which childhood health conditions affect labor earnings. This exercise is of considerable importance for identifying effective policies to alleviate the negative effects of adverse childhood health conditions on labor market outcomes. To quantify the relative significance of the alternative channels in determining labor earnings, I propose and estimate a lifecycle model of the joint evolution of skills and health using longitudinal data. In the model, two types of childhood health conditions, "mental conditions" and "physical conditions", are allowed to influence formation of skills and health capitals as well as preferences regarding schooling, labor supply, and occupation choices. The results from counter-factual experiments using the estimated model indicate that the most important channel accounting for health-related earnings gaps is the skill channel.

2. Ageing and Human Capital

The evolution of human capital over the lifecycle has been extensively studied within an optimal human capital investment framework. The focus, however, has mainly been on the path of human capital investments in the accumulation phase. Consequently, depreciation has not been a major focus in conventional lifecycle human capital models which often assume a constant depreciation rate for homogeneous human capital. Given the ageing of the workforce, there is increasing interest in the human capital of older workers. In "**Ageing and Skill Portfolio: Evidence from Job-based Skill Measures**," (joint with Audra Bowlus and Chris Robinson) we adopt a task-based multidimensional skill portfolio approach and argue that this approach is well suited to the investigation of the evolution of the human capital of older workers. This paper provides clear evidence that wage-based single dimension human capital measures mask different shapes for the individual components in a multidimensional skill portfolio. We document that not all components of the skill portfolio evolve in the same way over the lifecycle. Some components of the skill portfolio are found to be particularly sensitive to ageing effects.

There is a well-documented link between ageing and work-limiting disability for older workers. The US Social Security Act defines disability as the inability to engage in any "substantial gainful activity" due to physical/mental impairments that are either long-lasting or fatal. An activity is defined as "gainful" if it generates earnings, and it is considered to be "substantial" if it involves physically/mentally demanding tasks. Disability in this regard is not simply an impairment, but it is related to the accumulated skills of individuals and the characteristics of job tasks. This viewpoint indicates that the effects of disability on labour market outcomes may vary depending on workers' skills and the nature of tasks performed by them. Health capital models conventionally define skill and health as a form of general human capital. Correspondingly, the existing estimates of health-related earnings gaps commonly assume that health attributes are uniformly priced across occupations. Further, the interplay between skills and health in determining wages has not been a major focus in the literature. My work, entitled "**Specificity of Health Capital**," documents that poor health status is concentrated among workers who work in manual skill demanding occupations. This indicates that health status among older workers is correlated with their manual skill levels. This paper further shows that the wage effects of poor health status vary depending on the intensity of manual tasks conducted on the job. The empirical results highlight the importance of accounting the differences in skills and tasks to better understand the health-related wage differentials.