Research Statement

My research is in the field of macroeconomics and growth. My dissertation explores the effects of the demographic transition on economic growth. In particular, I use overlapping generation models and quantitative methods to analyze this issue. In my dissertation, I apply these approaches to three topics: (1) the impact of demographic dividends on growth; (2) the role of three channels through which demographic change affects growth; (3) a macroeconomic analysis of a one-child policy.

The first chapter of my dissertation, “Demographic Dividends and Economic Growth”, aims to quantify the importance of demographic dividends for growth by an overlapping generations model with endogenous fertility. In this model, fertility is nonlinear in the survival rate for children. At high mortality rates, an adult chooses to have more children as the survival rate for children goes up. Once mortality is sufficiently low, adults respond to further increases in survival rates by lowering their fertility. In this model, changes in the age composition of the population have an impact on output per capita. To quantify the effects of demographic dividends, I calibrate the model to data from Taiwan. The model suggests that demographic dividends accounted for about 0.39 percent per year of output per capita growth in 1956-1972.

From the 1970s onwards, Taiwan experienced rapid changes not only in the age composition but also in technological progress. In response to skill-biased technological progress, parents may lower their fertility but invest more in their fewer children. To account for such effects, I include human-capital investment as well as skill-biased technological change in my job market paper, entitled “Does Demographic Change Matter for Growth?”. In this paper, demographic change affects growth through three channels: the dependency ratio, physical-capital accumulation, and human-capital accumulation. As survival rates and costs of having children increase, fertility declines. In response, people become more likely to send their children to school. Thus a decline in fertility is associated with human-capital accumulation. Taking Taiwan as an example, the quantitative analysis suggests that during the period 1970-2004, demographic change contributed to growth in GDP per capita by about 1.3 percent per year. I also find important interactions between demographic change and technological progress. When the technology becomes more skill intensive as demographic change occurs, their interaction promotes the accumulation of human capital. In addition, when this interaction is taken into account, the human-capital channel is more important than changes in the dependency ratio for growth.
In the third chapter of my dissertation, “One-child Policy: A Macroeconomic Analysis”, I introduce a fertility constraint in an overlapping generations model to discuss the effects of a one-child policy. A benchmark without the fertility constraint represents the demographic experience in Taiwan. Then a counterfactual experiment with the fertility constraint in place is carried out. The results suggest that imposing the one-child policy promotes the accumulation of human capital. In partial equilibrium, an unskilled adult’s welfare is lowered by the policy. However, in general equilibrium, the policy triggers a decrease in the supply of unskilled labor, which increases the unskilled wage rate. Thus, an unskilled adult may in fact be better off with the policy due to higher wages. The result demonstrates the importance of accounting for general-equilibrium effects and heterogeneity when analyzing population policies.

In the future, I plan to continue my research on demographic change and growth, with a particular focus on the following two issues. First, demographic change is sensitive to government policies, such as regulation of child labor and education reform. Different policies may result in different impacts of demographic change on growth. I plan to explore the impact of demographic change on growth in different countries with different political setups. Second, I plan to extend my studies to the issue of an aging population. Rapid population aging is an increasingly important phenomenon in many developed countries; for example, in Japan people aged 65 or older already make up twenty percent of total population. I plan to explore the macroeconomic implications of population aging as well as the implications of various government policies that have been proposed to deal with the effects of aging.