

論文の内容の要旨

論文題目 Essays on the Economics of Education and Program Evaluation

(教育経済学及びプログラム評価に関する研究)

氏名 菊地信義

This dissertation consists of three studies estimating the effects of an education policy and the returns to schooling in Japan as an application of the program evaluation method.

The first study investigates how the reduction of instructional time affects educational attainment, using the revision of the Japanese curriculum standards in 1981 as a quasi-experiment. Although instructional time is considered an important input for the education production function, there is limited consensus on its causal effect on later outcomes. This is because of the difficulty of estimation without relying on cross-country variation or on before-and-after comparison. By using a feature of the centralized Japanese public educational system, this study estimates the effect of the revision in junior high schools as a difference-in-differences estimator. The revision is unique because it reduces the total school teaching hours by 445, which corresponds to about 13% of the previous standards, leaving the length of school weeks or the educational system unchanged. The main results show that the revision decreases schooling by about 0.5 years and the probability to enroll in high school by about 3 to 4% for women. These results are statistically significant and robust to controlling for the birth cohort or regional effects.

The second study examines the returns to university education in Japan using tuition, availability of universities, and labor market conditions as instrumental variables. For the instrument of availability of universities, this study creates a measure including total accredited capacities of all universities in the prefecture of residence at the age of 15. This measure captures cross-time and cross-prefecture variations, because birth cohort and prefecture dummies are also controlled. A set of education policy relevant instruments allows estimating the marginal effects for individuals who are induced to enroll in university by different marginal policy changes. Using the estimated marginal treatment effect, this study recovers the average treatment effects parameters. The main empirical result shows that an additional year of university education increases hourly wage by about 7% on the population average. This study also finds heterogeneous effects by groups of subpopulation. The average effect of a year of university education for those enrolled in university is about 12%, but the effect is less than 3% for those who did not enroll. In addition, this study investigates the average returns for those who are induced to enroll in university by a particular policy shift increasing the probability of university enrollment, such as free tuition or an increase in local capacities of universities. The results suggest that such policy changes bring about positive effects of university education.

The third study estimates the intergenerational effects of education in Japan, using a nonparametric bounds approach. The educational levels of the parents are considered as key factors in explaining their child's educational success. Empirical studies of social science have long been interested in quantifying the magnitude of the relation, and they have often found a significant positive correlation between the parents' schooling and child's schooling. Unfortunately, a positive intergenerational correlation does not necessarily reflect a causal relation. If the identification assumption on the exogenous selection of treatment is not valid, the ordinary least squares estimates provide a biased magnitude of the causal effect. Moreover, it is not clear whether spousal education should be controlled in the analysis, and if so, how this may be done, because the strong positive correlation of the mother's and father's schooling makes it difficult to interpret the coefficient for each parent separately. This study proposes to estimate multiple treatments of both parents' schooling as an application of the nonparametric bounds method of multiple treatments evaluation. This study considers a set of treatment vectors of the father's and mother's schooling and assumes that the treatment takes semi-ordered multiple values. Rather than imposing the strong assumptions required to obtain point estimates, this study derives bounds depending on relatively weak semi-monotonicity assumptions on treatment response, selection, and instrumental variables. A combination of these three assumptions provides informative bounds on the average treatment effect of parents' schooling on the child's schooling. The main results show that the tightest lower bounds suggest positive causal effects of parents' schooling, but the tightest upper bounds on the effects are lower than the point estimates that rely on the assumption of exogenous selection of parents' schooling. These results suggest that simple regression overestimates the true causal effect of parents' education.