Impact of Educational and Training Program on an Economic Loss from the Population Aging Using an Interregional CGE Model of Korea

Euijune Kim
Professor, Department of Agricultural Economics and Rural Development, Seoul National University, Korea
e-mail: euijune@snu.ac.kr

Geoffrey J.D. Hewings
Professor, Regional Economics Applications Laboratory, University of Illinois at Urbana-Champaign

Changkeun Lee
Ph.D. Candidate, Department of Agricultural Economics and Rural Development, Seoul National University, Korea

ABSTRACT
The spatial policies for coping with the challenges of shifting demographic structures can be practically formulated if the responses of economic agents are specified according to economic incentives and motivations for labor participation by recognizing age-specific productivities. The purpose of this paper is to estimate the effects of educational and training policies on an economic loss from the population aging using an Interregional CGE Model of Korea. The CGE model is developed for seven industrial sectors of two regions, namely the SMA and the rest of Korea. The ICGE model accounts for the economic behavior of producers and consumers on the real side economy, following the neoclassical elasticity approach of Robinson (1989), such as that of market-clearing prices, the maximization of a firm’s profit, and a household’s utility. Three major economic regions constitute our ICGE model: the Seoul Metropolitan Area (SMA) and the rest of Korea (ROK) and one representing the rest of the world (ROW). As explained in the previous section, production activity is divided among three industrial sectors. The industrial sectors were not, unfortunately, classified in detail due to a lack of information for industry by commodity matrix and time series data of regional consumption goods by population cohort. To measure the effects of aging on regional economies, population demographics are disaggregated into nine age cohorts: 0–9, 10–19, 20–29, 30–39, 40–49, 50–59, 60–69, 70–79, and an 80+ age group. Among the age cohorts, those individuals between 0–19 years of age are assumed not to participate in the labor markets, and instead believed to be supported by their parents. More generally, each age cohort carries different parameters and values for labor productivity, mortality rates, and participation rates in the labor market (i.e., share of labor supply relative to total population size) on the supply side, and saving rates and consumption behaviors on the demand side. Average wage rate by region and working age group is estimated according to a Mincerian earning regression, in which the determinants of the wage are gender, education level, job experience, type of occupation and industrial sector, and possession (or lack thereof) of a professional license. This paper showed that aging population has a comparatively negative effect on economic growth in domestic economy, but the economic loss could be reduced by the government’s education and training programs.

KEY WORDS: Aging; CGE model; Regional Economic Growth

JEL: R13