

Human capital and spatial development in Northeastern Asian regions

Brian H. S. Kim^{1,2} · Euijune Kim¹

Published online: 27 November 2015
© Springer-Verlag Berlin Heidelberg 2015

There has been a tremendous economic transformation of the Northeastern Asian countries (NEAC)—China, Japan and Korea—over the last 50 years. The area has grown to be a major global economic player from being at the edge of the world's mainstream economy. Success stories have developed as the product of industrial and trade policy with persistent support from human capital. The area's large population with a skilled, educated and low-cost labor pool forms a great intraregional market rich in human capital. The NEAC has become an economic region composed of diversity and dynamism. Regionalization among these countries is, therefore, expected to include transnational cooperation to strengthen networks and to accommodate innovations with seamless flows of people, goods and information. However, it is important to recognize the changing patterns of the NEAC, especially in recent years, with respect to globalization and transition speed of the economy, the feminization and aging trend in the labor market, the flexibility of specialization and externalities of human capital and infrastructure. In particular, the economic relations among the NEAC could be competitive or complementary cooperative since regional formation results from changes in locations of people and firms seeking maximum returns.

Under the progress of spatial development within its territories and preparation of strategic policies that respond to a more complex and multi-connected economy, it is useful to identify the regional dynamics and assess the impacts of demographic

✉ Euijune Kim
euijune@snu.ac.kr

Brian H. S. Kim
briankim66@snu.ac.kr

¹ Department of Agricultural Economics and Rural Development and Research Institute of Agricultural and Life Science, Seoul National University, Seoul, Korea

² Program in Agricultural and Forest Meteorology, Seoul National University, Seoul, Korea

and regional policies on economic development. There are many challenges to the sustainable transformation of the NEAC in the future, and this special issue highlights some of the central roles played by human capital and spatial development in a regional context from the NEAC perspective.

The four papers collected in this special issue were presented earlier at the 4th Asian Seminar in Regional Science, which was held August 4–6, 2014 in Seoul (Korea). The four papers offer unique, but complementing, perspectives and use empirical evidence to improve our understanding of the progress and transition of human capital and spatial development in the NEAC.

In the first paper, Jae Won Lim, Changkeun Lee and Euijune Kim investigate the regional transformation in population and economics from a strategic human capital policy of educational investment in Korea. The authors are motivated by two key government policies for human capital development: (1) reduction in income disparity between the Seoul metropolitan area (SMA) and the rest of Korea (ROK) and (2) population redistribution. Given the spatial human capital policy to shift steady interregional migration from ROK to SMA, the authors try to understand how the long-running stream of population flow into SMA can be influenced by imposing a national policy tool that affects human capital investment. In this vein, they employ an Interregional Computable General Equilibrium-Population (ICGEP) model with a human capital module and use two age cohorts, 20s and 30s, as the labor input in order to highlight such policy. Mincerian earning functions are estimated to describe the average wage level, which is determined by gender, education level and number of years of work experience and type of industrial sector. Interregional migration by regional age cohorts is determined by expected wage differentials and comparable employment opportunities. The ICGEP model is a recursive dynamic model with two subsystem modules, within period and between period, and is solved to find a sequential equilibrium path over time. Four policy scenarios are developed for two different types of educational investments for two age cohorts in two time periods. The simulation results suggest that human capital investment in the 30s age cohort induces a greater impact on regional growth and productivity than does the investment in the 20s age cohort for both SMA and ROK. However, due to different mobility behavior between the two age cohorts, the authors recommend investing workforce development program for the older cohort in ROK. Such an investment in the 30s age cohort would act to slow the population concentration in SMA and contribute to partly balance the unequal spatial distribution of human capital in Korea. The authors conclude by pointing out that current government policy to provide subsidies to highly mobile university students is not an effective method to curb migration to SMA. Instead, investing in the older cohort to improve their employment opportunity and productivity would be a vital policy to promote regional growth and reduce regional disparity.

The second paper by Up Lim, Ye Seul Choi and Heonyoung Lee investigates the problem of the lingering low economic status of female workers in Korea compared to male workers (and other OECD countries) even with a significant increase in labor force participation and wage increases. The authors first examine traditional empirical findings in human capital theory about constant gender wage segregation across occupations, as well as the positive relationship of education level for skills and individual success in the labor market. Overcoming limitations found in previous findings, the

authors attempt to explain the role of occupational skills on the gender wage gap by investigating one of the largest cities in Korea, Seoul. Seoul is unique in that it has a large portion of highly educated and skilled female workers. A rich set of data “Korea Network for Occupations and Workers (KNOW)” from the Korea Employment Information Service (KEIS) is used to classify three occupation skills levels (cognitive, physical and technical) using factor analysis. Empirical assessments are made using multi-level regression analysis. The empirical results demonstrate that there is a significant variation of occupational skills and gender effect on wages when individual- and occupation-level characteristics are controlled in the analysis. An interesting finding is that the occupations with higher cognitive skills and lower technical and physical skills are associated with higher average wages, whereas the gender effect is greater in the occupations that require higher levels of physical skills and low levels of technical skills. Accordingly, female workers have significant wage disadvantages in occupations associated with technical skills and suffer greater gender wage gaps within the female-dominated occupations. This paper provides a more nuanced picture than that of previous studies about the role of human capital in explaining the gender wage gap.

Also concerned with the wage disparity problems, the third paper by Jian Wang and Junqian Xu examines the development of spatial disparities during regional integration. The paper empirically reinvestigates the home market effect (HME) in terms of wages by using provincial panel data in China. In terms of theoretical and empirical models of the HME, the authors argue that the factor price is generally ignored due to the underlying assumption that labor is the only production factor. Moreover, the secondary magnification effect (SME) is commonly neglected in most of the empirical work on HME which focuses only on the primary magnification effect. Therefore, the authors have two objectives in this study, which are (1) to confirm the existence of HME through modeling regional wage disparities in terms of transport cost and (2) to sort out the SME from the HME. Based on a new trade theory model developed by Takahashi et al. (2013), the authors derive an estimating equation to test the relationship between wages and transport costs. Transport costs are measured with distance as well as with the level of infrastructure. The authors use the density of transport networks (highway and railway networks) as a proxy to quantify the accessibility in terms of regional trade. The empirical results show that regional inequality exists in wages between the coastal and interior regions and develops to an inverted U-shape relationship between these regions during the regional integration period. The authors recognize that wages in the coastal region are higher than wages in the interior region because of the difference in regional scale and also the concentration of well-educated workers and manufacturing production in the coastal region since 1980.

The fourth and final paper by Yasuhide Okuyama examines the effects of one of the major destructive experiences (earthquake) in Japan in 1995 at Kobe City. The consequences of such an event are significant for the regional economy, and a number of studies have investigated the long-run effects and structural changes in the Kobe economy. The author is one of the contributors to this literature. His prior work has studied the economic impacts in 1999 and performed a similar analysis in 2014 to observe the structural change in the Kobe economy after the earthquake. While his study in 2014 revealed some useful findings from time series analysis using Kobe regional input–output (IO) tables, the study lacks the crucial 1995 regional IO table

due to its unavailability because of the earthquake. The author tries to fill the gap with his current study by employing the 1990 and 1995 IO tables constructed in 2001. The 1995 IO table is further modified by two versions (95II and 95III) with a series of assumptions about reconstruction activities and limited production capacity. In order to observe how the damage caused by both the earthquake and the immediate recovery efforts created structural change, the author employs shift-share analysis to present the sign and quantity changes of the regional shift by sector and the multiplicative structural decomposition of the regional shift to extract the influence of different factors.

The results demonstrate that significant structural changes occurred in the damaged region. Given the vulnerable damaged transportation network, the manufacturing sector intensifies regional interindustry relationships during the recovery period, whereas the labor-intensive service sectors weakened their regional interindustry relationships due to limited supply of human capital in the damaged region. Another interesting finding is that the results of the current analysis contradict the results of his study in 2014. The regional purchase coefficient matrix of multiplicative decomposition for manufacturing and service sector has opposite results to what was found in 2014. The author argues that the contradicting results are due to different geographical units and different time periods used in the analysis, as well as the hollowing-out process—which is a weaker regional interindustry relationship founded by structural decomposition after the event.

The four papers in this special issue provide critical empirical assessments of the human capital and spatial development in the NEAC. They advance our understanding in the range of importance issues considering the rapid progress and transition that occurred in these countries. Yet, one of the significant and emerging developments that occurred in two of the main countries in NEAC, Korea and Japan, is the rapid progress toward an aging society. This demographic change is expected to decrease population shares of the working age groups as well as the total population size, which could also cause negative effects on regional and national economies. Therefore, it is imperative to address further research issues on population aging in terms of human capital in the NEAC.

The spatial mobility of population (including human capital) can be a key variable for long-term economic growth. The net inflows of population from foreign countries into a region and its labor force can lead to a significant contribution to sustaining regional economic development. Therefore, it is worth noting how these migrants are sensitive to the regional policies regarding employment, immigration, public assistance and residential development. It is also important to understand and evaluate the impacts of both quality and quantity of labor inputs on economic losses due to the population aging. Regional policy options for human capital formation and labor supplies to compensate the losses could be concerned with implementing training programs and technology education for immigrants, retirees and women and thus increase their labor market participation rates.