Abstract

The Impact of Automation on Jobs and Wages

The rapid automation, which will be rapidly progressed by the Fourth Industrial Revolution, is expected to lead to a decrease in employment and an increase in the wage gap as well as manufacturing innovation. This study analyzes the effects of manufacturing automation on jobs and wages by analyzing the manufacturing industries that are most influenced by automation. From 1999 to 2016, this study conducted data analysis, correlation analysis, and panel analysis of fixed effects model for the manufacturing sectors.

According to the estimation, automation and digitization in the nation and in Gyeonggi-do have not yet caused massive job destruction or drastic drop in wages. The automation reduced the number of workers in the nation, but increased employment in Gyeonggi-do. In particular, the automation has reduced the wages of workers in the nation to a lesser extent, but the wage level of workers in Gyeonggi-do has also risen somewhat.

The use of new technologies has been gradually introduced and the replacement of technology in labor force due to economic, social and legal regulations and obstacles may not have occurred as expected. Until

automation is radically generalized, automation based on partial needs may not have a significant impact on jobs and wages. However, if the technological innovation of the Fourth Industrial Revolution is accelerated, the negative effects of automation on jobs and wages will increase.

In the case of Gyeonggi-do, the reason why automation has a positive effect on job and wage levels can be deduced as follows. First, because the level of automation in Gyeonggi-do manufacturing industry is not relatively high, there is a complementarity between labor and capital. Second, it can be interpreted that the manufacturing automation of Gyeonggi-do was more effective in promoting the shift of the labor force among the sectors than the effect of reducing the employment of the whole sector. Third, it may be interpreted that technological change in Gyeonggi-do manufacturing has created additional jobs through demand for new technologies and higher competitiveness. Fourth, as semiconductor and machinery, which are the main industries of Gyeonggi-do, are led by large corporations, it can be said that the increase of automation, the enforcement of manpower and wage increase were induced. Fifth, the demographic structure that Gyeonggi-do has a steady increase because of social inflow compared to other regions and relatively low level of aging can be considered. Sixth, it can be interpreted that the automation of the manufacturing industry in Gyeonggi-do resulted in the increase of wages due to the creation of new jobs and the enhancement of work. This may be due to the fact that Gyeonggi-do manufacturing industry is still high in labor productivity and the necessity of labor substitution through automation is not urgent.

As a preemptive countermeasure against the negative effects of future automation, this report suggests education policies based on

lifelong education, field-based job policies by regional and local governments, expansion of flexible stability of employment, labor policies centered on vulnerable working classes, and promotion of social policy.

Key Word The 4th Industrial Revolution, Automation, Automation Index, Jobs, Wages