

Demographic Change, Capital Accumulation, and Agriculture in Japan

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Abstract

This research analyzed the effects of demographic change on industrial structure in terms of capital accumulation, revealing that demographic change considerably affects capital accumulation, which plays an important role in transforming the industrial structure. We combined the overlapping generations model formulated by Kinugasa and Mason (2007) and the general equilibrium growth accounting model of Yamaguchi (1982) for simulating the effects of demographic change on agricultural and nonagricultural outputs, labor, and capital. The effect of changes in the number of children, adult longevity, and child survival rate on capital growth was analyzed using the overlapping generations model. We investigated the effect of capital growth on agricultural and non-agricultural outputs and inputs using the general equilibrium growth accounting model. The simulation analysis conducted using Japanese data revealed that a rapid decline in the number of children and a rapid increase in adult longevity stimulated capital accumulation and increased the importance of non-agricultural constituents from the 1960s to the 1990s. Simulated capital growth not only increased non-agricultural output and capital to a greater extent than it did the corresponding agricultural constituents, and increased non-agricultural labor and decreased non-agricultural labor. In recent years, there has been a decrease in the working age population, which comprises people whose savings are normally higher than those of the other generations though the adult longevity in Japan had moderately increased; hence, we cannot expect a rapid increase in aggregate capital in the future. Therefore, the advantages of the non-agricultural sector in Japan could disappear, and agriculture could become increasingly important in the near future.

Key words: Demographic change, Industrial structure, Overlapping generations model, General equilibrium growth accounting, Capital accumulation

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