

Construction, Nursing Care, and Agriculture: Economic Impacts of the Policies of Introducing Additional Foreign Workers Limited to Certain Industrial Sectors

Considering a small country with four industries where we assume the productivity of agriculture sector should be damaged by the smokestack construction activities, we examine the impact on trade, natural environment, wage gap, and economic welfare of policies to increase the number of foreign workers in the construction, agriculture, and nursing care sectors, each of which plays a different role in the economy.

We construct a static model of a small open economy representing a developed country such as Japan, with free international capital mobility. The production side consists of four sectors: the agricultural sector (A), the construction (building) sector (B), the nursing care sector (C), and the high value-added manufacturing sector (M). The agricultural sector operates in rural areas, whereas the other three sectors are located in urban areas.

The study here has four notable features. First, we focus that the construction industry often causes serious negative effects on the productivity of the agriculture. For example, large-scale tunnel construction has caused groundwater levels to drop, significantly impacting agriculture in some cases. Thus instead of manufacture industry (in this study we assume this sector is highly skilled), we consider smokestack industry which causes negative externality on the agricultural productivity is construction. Second, we introduce the nursing care service sector into the ordinary Copeland and Taylor's model. This sector is publicly managed, where only labor is invested to provide services and receives a competitive urban wage, which is funded by nursing care insurance premiums charged to all domestic residents. In addition, the productivity of foreigners is discounted because it requires more communication skills than other sectors. Third, in the agricultural sector, foreigners are introduced by taking advantage of abandoned farmland. Therefore, land scarcity does not constrain agricultural production; labor productivity is determined only by environmental levels. Forth, we consider urban-rural migration caused by wage arbitrage, instead of the Harris-Todaro style urban unemployment caused by urban fixed wage, which is usually considered in development economics, we introduce commuting time loss of rural workers employed in urban area.

We obtain the following results.

PROPOSITION #1

Under the assumptions that the urban-rural wage gap is sufficiently small and there is no motivation of urban-rural migration. Then,

1). The inflow of foreign workers to either to the construction or nursing care sector will expand the urban-rural wage gap, reduce the stock level of natural environment, enhance the magnitude of

international trade, and reduce the income and economic welfare of domestic residents.

2). The inflow of foreign workers to agricultural sector will expand urban-rural wage gap, reduce the stock level of natural environment, reduce the magnitude of international trade. The income and economic welfare of domestic residents will decrease at the beginning but those will turn to increase after the introduction of sufficient number of foreign workers.

PROPOSITION #2

Under the assumptions that the urban-rural wage gap is increased and after migration following the wage arbitration, we have labor re-distribution in equilibrium. Then, The inflow of foreign workers to either to the construction, nursing care or agricultural sector will reduce the stock level of natural environment, enhance the magnitude of international trade, and reduce the income and economic welfare of domestic residents.

PROPOSITION #3

Under the assumptions that all of the domestic rural workers have moved to the urban area due to the urban-rural wage gap. Then,

1). The inflow of foreign workers to either to the construction or nursing care sector will expand the urban-rural wage gap, reduce the stock level of natural environment, enhance the magnitude of international trade, and reduce the income and economic welfare of domestic residents.

2). The inflow of foreign workers to agricultural sector will reduce the stock level of natural environment, reduce the magnitude of international trade, and enhance the income and economic welfare of domestic residents. Whether the effects on the urban-rural wage gap depend on parameters

As a summary, we find that if the urban-rural wage gap is small enough, under certain conditions, introducing additional foreign workers to the agriculture sector may cause positive effects on domestic economic welfare regardless of expanding urban-rural wage gap and a declining natural environment. While introducing foreign workers to the construction or nursing care sector will surely reduce domestic economic welfare. If the urban rural wage gap is large enough to encourage rural domestic workers to move to urban area, foreign workers' introduction to any sector must reduce domestic economic welfare.

In this study, different from Kemp (1993), introduction of foreign workers to any sectors may deteriorate domestic residents' welfare. This is because of the existence of the negative externality caused by the expansion of construction sector, which harms natural environment and reduce agricultural productivity. When urban-rural wage gap is sufficiently small and rural workers have no motivation to move to urban area, under certain conditions, introduction of foreign workers to agricultural sector might be welfare improving. This is the one possible case that immigration causes

positive effects on the economy of the host country. Another positive results may occur when this country introduces additional foreign workers to the rural area just for the agricultural sector where no domestic workers are remaining.

There remain several future subjects to be studied. Especially, possible further extension is the consideration of the endogenously determined nursing care service. Also it might be necessary to consider another real case in which all of the immigrants also pay tax and receive the nursing care.

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